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Ceasing Production in Favor of Consumption: Diachronic Analysis of the Rincon Point (CA-VEN-62) Microlithic Assemblage

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

by

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ABSTRACT OF THESIS

Ceasing Production in Favor of Consumption: Diachronic Analysis of the Rincon Point (CA-VEN-62) Microlithic Assemblage

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Master of Arts in Anthropology

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Professor Gregson Schachner, Chair

This thesis focuses on the diachronic analysis of microlithic tools over the late Middle to proto-Historic occupation of the Chumash village *Shuku,* or Rincon Point. Based on criteria put forth by Arnold (1987, 1990), two separate VEN-62 lithic assemblages were re-evaluated for the presence of microblades, microdrills, microlithic cores, and flake drills. Frequency and density values for artifact type and material composition were calculated for Middle, Transitional, Late, and proto-Historic period deposits. In order to explore the legitimacy of mainland microlithic production after the Middle period, the Rincon Point data is then juxtaposed with sites located on the northern Channel Islands and coastal mainland. The results of this research suggest the Chumash living at *Shuku* acquired small amounts of microliths via cross-channel exchange and minimal on-site production throughout all chronological phases.

The thesis of Brian Elliott Holguin is approved.

Charles S. Stanish

Paul Jeffery Brantingham

Gregson T. Schachner, Committee Chair

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For my Mother and Father

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Introduction

The Chumash and their ancestors have inhabited the Santa Barbara Channel and Northern Channel Islands region of California for at least thirteen millennia and are considered one of the most complex maritime hunter/gatherer societies in the world. When first contacted by the Spanish, groups living on both the Channel Islands and mainland coast were engaged in intensive cross-channel exchange made possible through the use of the Chumash plank canoe, or *tomol*. Olivella beads manufactured on Santa Cruz Island functioned as a form of proto-currency that could be exchanged throughout the Chumash region for goods otherwise not available or in scarce supply on the Channel Islands (Arnold, 1987, 1990; King, 1976, 1990). To perforate these beads, specialists used a specific type of microdrill manufactured almost exclusively from chert sourced from quarries on eastern Santa Cruz Island, as well as small outcrops located on San Miguel (Arnold, 1987; Erlandson et. al, 1997; Perry, 2010). Olivella beads made from the callus portion of the shell and the chert microdrills used to perforate them, were intensively manufactured by specialists located primarily on the western and eastern regions of Santa Cruz Island, respectively. Archaeological research indicates the origin of these island based production monopolies is linked to the reorganization of labor that took place during the Transitional period (AD 1150-1300); likely stimulated by environmental perturbations brought on by the Medieval Climatic Anomaly (Arnold, 1993; Johnson, 2000; Raab and Larson, 1997).

Extensive archaeological research on the Channel Islands microlithic industry has contributed substantially to our knowledge of economic exchange and the emergence of ascribed leadership in the prehistoric Chumash region (Arnold, 1987, 1990, 2001). While specialized production appears to only occur on Santa Cruz Island during the Late and early Historic periods, low densities of microlithic artifacts have been observed at mainland sites located between the cities of Malibu and San Luis Obispo; the southern and northern boundary of the Chumash region, respectively. Over the past century, extensive construction and land development on the Santa Barbara coastline has led to an immeasurable degree of site destruction; no doubt responsible for the limited archaeological research in this region. Preliminary observations and research limited by time and methodological constraints have led to discussions of a mainland "microlithic industry" paralleling that which arose on Santa Cruz Island beginning during the Transitional period, leading some to suggest mainland groups played a larger role in the production of money beads (Blake, 2010; Hoover and Sawyer, 1977; Price et al., 2009; Santoro, 1990).

Identified as the historic Chumash village *Shuku*, Rincon Point (VEN-62) lies in close proximity to the Pacific Ocean and adjacent to Rincon Creek. The occupation of this site spans the late-Middle period up through the early Historic, and is contemporary with the onset and evolution of the Channel Islands industry (roughly AD 1150- AD 1782). This site is therefore likely to have undergone changes in craft production, specifically in regards to beads and microlithic tools. The goal of this thesis is to evaluate microblade and microdrill typologies in addition to raw material variation of the full microlithic and flake drill assemblages recovered from the 2004 and 2013 excavations of Rincon Point. To better understand the mainland Chumash role in production of microlithics, both Rincon assemblages will be discussed within a regional context.

Hypothesis

Archaeologists have identified small amounts of both microlithic artifacts and expedient flake drills in site assemblages located throughout the Chumash mainland (Arnold, 1987; Blake, 2010; Erlandson, 1988; Santoro, 1990), however the majority of this research has focused on the presence/absence and typological variation of microblades and microdrills within a single temporal component; the Late period within the Channel Islands chronology (see table 1).

TABLE 1.

Chronology of the Santa Barbara Channel (Arnold, 1992).

Period	Date
Historic Period	A.D. 1782+
Late Period	A.D. 1300-1782
Transitional Period	A.D. 1150-1300
Middle Period	600 B.C.-A.D. 1150
Early Period	5500-600 B.C.

Ambiguous or incorrect artifact classifications, infrequent or non-existent radiocarbon dates, poor site preservation and non-research focused excavations are all challenges that limit the insights of many archaeological studies on the mainland. Conclusions drawn from this research often rest on the incorrect assumption that 1) the presence of microdrills and olivella callus beads within a single site component correlates with the manufacture of the latter (Blake, 2010; Hoover and Sawyer, 1977; Santoro, 1990); 2) mainland microdrills perforated *only* olivella money beads and; 3) standalone production of olivella callus beads or microlithic tools is indicative of an increased level of socio-political complexity (Blake, 2010).

Considering the location of Rincon Point along the tomol route (Arnold, 2001) and cross-channel relationships with east end villages on Santa Cruz Island at contact (Johnson, 1982:Table 15: 123, 1988b), I propose the presence of microlithic tools will be observed in soil deposits dating exclusively to the later Middle period (AD 600-1150), in a much lower frequency relative to contemporary island sites; consistent with the model proposed by Arnold (1987, 2001). To the knowledge of this author, evidence for low intensity microblade/microdrill production has so-far only been observed at a single mainland site in the Santa Barbara Channel region (Arnold, 1987; McKusick et al., 1961; Munns, 2004). Only finished microdrills have been identified at other mainland sites, which has lead Arnold (1987) to suggest their acquisition occurred via trade with island residents. Therefore, I suspect only finished microdrills will be present at Rincon Point. The artifact assemblage is expected to be consistent with other mainland sites with specimens manufactured almost exclusively from island chert, or possibly from locally sourced chert varieties (Arnold, 1987, 2001; Blake, 2010; Erlandson, 1988; Santoro; 1990).

By the beginning of the Late period (AD 1300), Island Chumash groups appear to have monopolized the production of money beads and microblades through the reorganization of labor, ownership of the plank tomol, and restricting access to the eastern Santa Cruz Island chert quarries. Control of these geographically circumscribed quarries was essential for they yielded the highest quality chert within the Santa Barbara Channel region. Craft specialists located at China Harbor and a small number of other east end villages used this raw material to manufacture an innovative, highly efficient type of microblade which they traded to bead specialists on the west end of Santa Cruz Island, where the bulk of olivella callus beads were manufactured (Arnold, 1990, 1993; Nigra and Arnold, 2013). Differential access to this innovative microblade technology as well as the aforementioned quarries helped to ensure the Island Chumash's access to terrestrial food supplies through trade with the mainland. Therefore, I do not expect to observe microblades/drills in Late period components, however expedient flake drills manufactured from local Monterey or Franciscan cherts may be present in low densities, as the need to perforate shell and other materials during the production of other types of ornaments or beads likely endured.

The Channel Islands Microlithic Industry

Over the past 30 years, archaeological research focusing on the punctuated co-rise of the bead and microlithic industries on Santa Cruz Island during the Transitional period (see table1for chronological sequence) has had a profound effect on archaeological theories surrounding emergent socio-political complexity not only among the Chumash, but in prehistoric hunter/gatherer societies as a whole (Arnold, 1987, 1993,2001; Arnold et al., 2015; Kennett and Kennett, 2000; Perry and Jazwa, 2010). Beads of varying types (excluding those made from the callus portion of the olivella shell) have been present in the Santa Barbara Channel region for over 10,000 years, although production intensity appears to have reached its peak during the Late period, or post-AD 1300 (Arnold, 1987, 2001; King, 1990).

Prior to the emergence of formalized microdrills, shell bead perforation was accomplished through the use of drills expediently manufactured from small flakes of chert or quartzite. These non-standardized *flake drills (*figure 1*)* are commonly found on both sides of the channel by about AD 650, with the largest densities appearing in sites located on the Channel Islands (Arnold, 1987, 2001). Recent archaeological research by Sunell and Arnold (in press) has led to the identification of two types of flake drills used by the Chumash on Santa Cruz Island. *Type A* flake drills produced through ad-hoc manufacturing methods dominate most island assemblages up until the terminus of the Middle period, at which point they are rapidly replaced by early microdrills (roughly AD 1000). *Type B* flake drills are less common and have yet to be identified outside SCRI-474, located in Posa Creek canyon on Santa Cruz Island. Geographic restriction could be due to recent identification, however their appearance is contemporary with an increase

Figure 1: Flake Drills (Nigra and Arnold, 2014:3650).

in olivella bead production just prior to the adoption of more formalized microdrills (Sunell and Arnold, in press).

The emergence of formalized microblades on Santa Cruz Island strongly indexes the growing regional importance of olivella bead production during the terminal Middle period (AD 800-AD 1150). Unlike flake drills, microblades were almost exclusively manufactured from chert endemic to quarries on the east end of Santa Cruz Island. A total of 26 outcrops collectively form one of the largest sources of raw material in the Chumash region, each of which appears to have been utilized to varying degrees throughout prehistory (Arnold, 1987; Perry and Jazwa, 2010). Other sources of chert located on Santa Rosa and San Miguel were also used as raw material in the manufacture of microblades, but the bulk of the production occurred on Santa Cruz Island (Arnold, 2004; Erlandson, et. al., 1997; Rick, 2004). Visually distinct from mainland Monterey cherts, Santa Cruz Island chert (SCRI) is easily identified by its "blonde" or yellowish-brown color (Arnold, 1987). Given the superior knapping properties of island chert, it is no surprise small chunks of raw material and low numbers of finished tools have been observed in sites on both sides of the channel, suggesting access to the east end quarries had not yet been restricted during the Middle period (Arnold, 1990, 1992, 2001; Nigra and Arnold, 2013).

Island chert microblades manufactured during the late Middle Period are characteristically thin, displaying a *trapezoidal* (TRAP) cross-section and overlapping blade scars located on their dorsal surface (figure 2) (Arnold, 1987, 2001). Narrow microblades with a thick, *triangular* (T-UN) cross-section are also present in contemporary assemblages, but are not temporally diagnostic of the Middle Period (figure 3). During the late Middle period, microblade densities at sites located on Santa Cruz Island

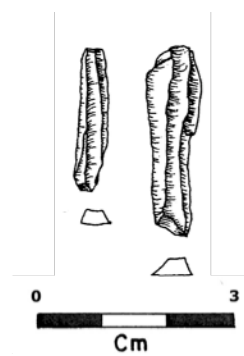

Figure 2: Trapezoidal Microblades (Arnold, 1990:165).

varied between 200-300 specimens per cubic meter (Arnold, 1987). Associated microblade cores are identified by the repeated use of multiple striking platforms, each exhibiting parallel, unidirectional blade scars oriented proximal to distal (figure 4). Following detachment, one or both ends of a microblade would be retouched into a drill bit. Once this occurs, the tool is no longer considered to be a microblade, but a microdrill (Arnold, 1987). Middle period sites near the chert quarries on eastern Santa Cruz Island often contain remnants of each step of the microblade and microdrill manufacturing process. Although infrequent, island chert microblades and microdrills are observed at contemporary sites located on the mainland coast, suggesting small amounts were incorporated within the growing cross-channel exchange network (Arnold, 1987,1995). This brief, cross-channel export of microblades abruptly halted by the end of the Middle period (Arnold, 1987, 1990, 2001; Erlandson, 1988).

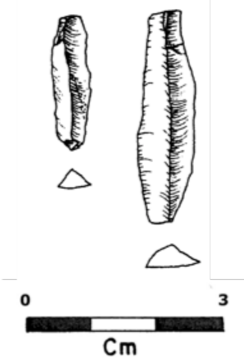

Figure 3: Triangular-undiagnostic Microblades (Arnold, 1990:165).

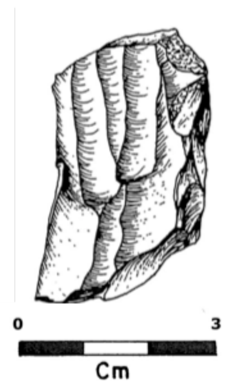

Figure 4: Microblade cores exhibiting overlapping or "repeat" blade scars (Arnold, 1990:165).

Occurring roughly at the start of the Transitional Period (AD 1150-1200), craft specialists living in a handful of villages on eastern Santa Cruz Island began to manufacture large numbers of a highly-specialized type of microblade; thick, narrow and triangular in cross-section with observable retouch scarring on the dorsal surface (Arnold, 1987, 1990, 2001). *Triangular with dorsal retouch* (TDR) microblades, illustrated in figure 5, were manufactured from raw material procured from east end chert quarries; a continuation of the pattern first observed in the Middle period. A maximum of one or two TDR microblades were detached from a single microblade core. Percussion retouch along 1-2 prominent ridges allowed for more predictable fracture patterns, resulting in the detachment of a more standardized microblade (figure 6). This served to increase structural durability and overall efficacy of each specimen (Nigra and Arnold, 2013).

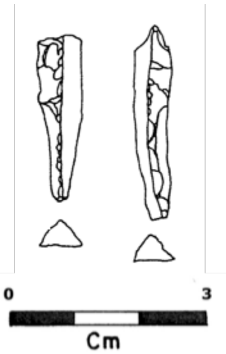

Figure 5: Triangular-dorsally retouched microblades (Arnold, 1990:167).

Microblade densities increased remarkably over those observed during the Middle period, reaching upwards of 1000 specimens per cubic meter in the Transitional period and over 2,000 per cubic meter at SCRI-240 during the Late period (Arnold, 1987, 2001: 118-119). A new type of olivella bead made from the thick callus portion of the shell began to appear in contemporary assemblages, suggesting their production was likely tied to the new microdrill type. Previous olivella beads were fashioned from fragments of the shell wall, which are much thinner and easier to perforate with microdrill types commonly used in the preceding Middle period (Arnold, 1987, 2001; Nigra and Arnold, 2013). Increasingly restricted access to technology, geographic resources, and community or elite reorganization of labor served as the foundation for the development of a complex cross-channel exchange system with island-based bead and microlithic production monopolies in place by AD 1300, or the start of the Late period (Arnold, 1993, 2001).

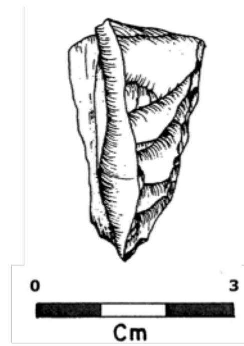

Figure 6: Edge-retouched microblade core exhibiting TDR blade scar (Arnold, 1990:167).

For nearly 500 years after the onset of the Late period, TDR microblades were produced by specialists on eastern Santa Cruz Island and traded to bead specialists located on the west end of the island. Here one or both ends of the microblade would be finished into a bit and used to perforate bead blanks. Finished beads were then used to acquire additional microblades from the east end villages or funneled through the village of *Xaxas*; the latter is predicted to be the optimum center for exchange on the Channel Islands due to its location along the tomol route and the presence of disproportionately high numbers of finished trade goods (Arnold, 1987, 1993, 2001; Johnson, 1993, 2000, Kennett and Kennett, 2000). This reorganization of labor towards segmented production resulted in the manufacture of beads and microblades at an exponentially higher rate relative to the Middle period, far surpassing individual or community needs. Beads were clearly used as the primary medium of trade throughout the region, however the highly efficient TDR microblades/drills do not appear outside the Channel Islands. The exclusivity of this technology helped to limit production competition by making it more efficient for mainland groups to acquire beads in return for resources desired by the Island Chumash (Arnold, 1987, 1992, 2001; Johnson; 2000).

Microlithic Tool Technology and the Mainland Chumash Region

The region I refer to as the Chumash mainland encompasses the coastal territory between the cities of San Luis Obispo and Malibu, moving inland towards the Cuyama Valley and San Emigdio mountains; an area of over twenty-five thousand square kilometers. This area is commonly parsed into two sub-regions (northern and central), which can be further divided into five to eight sub-groups, all based on branches of the Chumashan language family (Arnold, 2001; Gamble, 2008; Golla, 2011; Grant, 1978; Johnson, 2000). Site assemblages covered within this thesis are associated with five Chumash groups, which I will discuss below.

The central Chumash region, illustrated in figure 7, consists of four sub-groups, each speaking closely related languages that diverged from a central branch sometime between the end of the Middle period and start of the Late; roughly 1200 years ago (Johnson, 2000; Klar, 1977). The four groups are: the Purismeño (area around Lompoc and Point Conception), Ineseño (Santa Ynez Valley), Barbareño (Goleta and Santa Barbara coastline), and Ventureño (coastal region stretching from Ventura to Malibu).

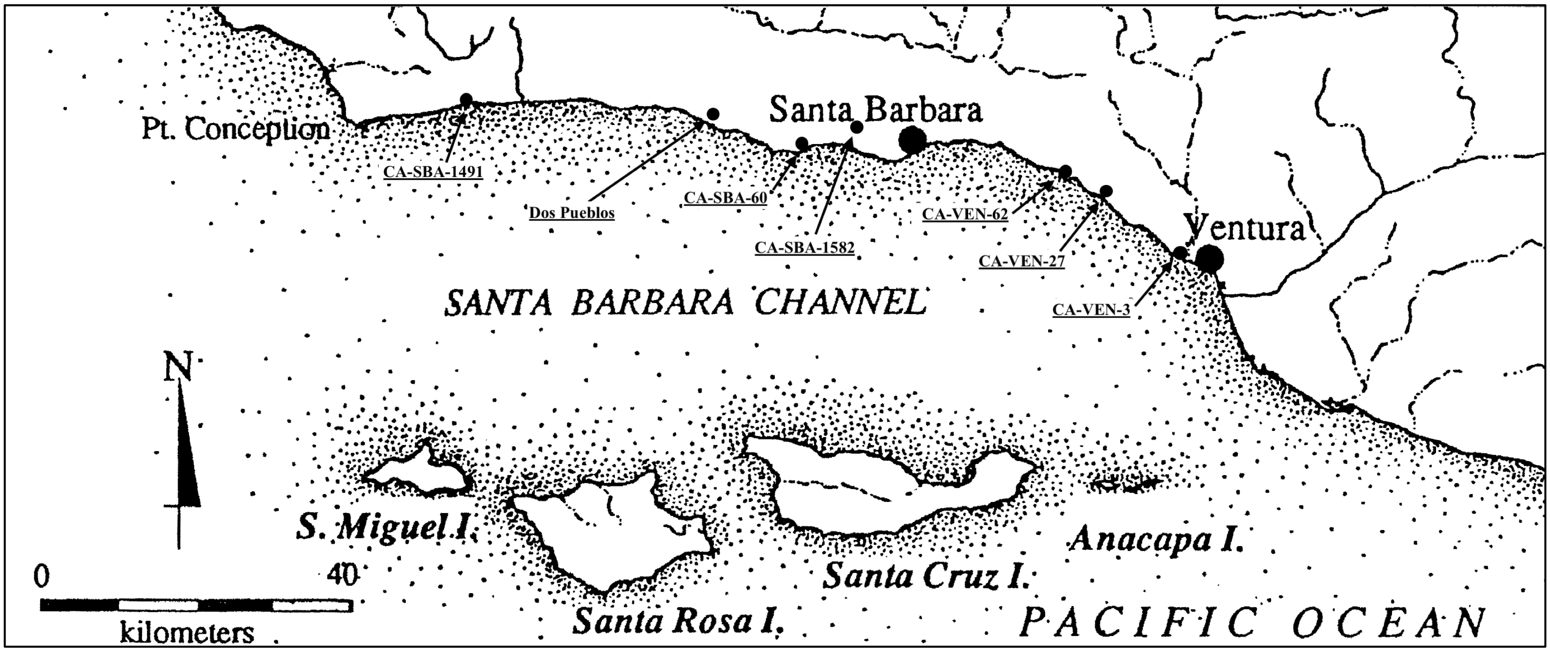

Figure 7: Map of the central Chumash region that depicts the general location of archaeological sites (all but SLO-44 and SLO-214) discussed within this thesis. Base map taken from Arnold (1990:159).

In the Ventureño Chumash region, microblades/drills, small numbers of blade cores, and non-microlithic flake-drills have been observed in assemblages excavated from Pitas Point (VEN-27) and *Shisholop* (VEN-3), the locations of both are illustrated in figure 7. At VEN-27, the majority of microdrills observed by Gamble (1983) and further analyzed by Arnold (1987) appear to be manufactured from chert imported from east-end quarries on Santa Cruz Island (Arnold, 1987, 2001; Greenwood and Browne, 1969). Microblade and microdrill types are consistent with the trapezoidal type appearing on the Channel Islands during the terminal Middle period. Additional support for their use in the Middle period is the co-occurrence of split punched olivella beads in the assemblage from Pitas Point (Arnold, 1987: 222). Microdrills recovered from Shisholop appear to be of the same type, but are found in greater numbers and manufactured from local lithic material. No samples from the site were submitted for radiocarbon dating, however 70% of microdrills and slightly more than 50% of all olivella wall beads were recovered from the same two levels. This suggests microdrills from at least these two levels likely date to the Middle period (Greenwood and Browne, 1969).

Despite heavy development within the Barbareño region, low numbers of microlithic artifacts have been recovered from sites in and around the Goleta estuary. Island chert microblades were observed at the village of Dos Pueblos (figure 7); however, the absence of blade cores led Arnold (1987) to suggest they were obtained through exchange rather than production. The largest collection of microlithic artifacts recovered on the mainland was from the village of *S'axpilil* (SBA-60), located near the Goleta estuary. Over three hundred microblade cores, at least seventeen microdrills, and a large number of microblades were recovered during McKusick's 1959-1960 excavations of *S'axpilil*, making it the location of the most intensive microlithic tool production on the mainland (Arnold, 1987; McKusick et al., 1961; Munns, 2004). Unlike specimens observed at Dos Pueblos, microblades and microdrills at SBA-60 were removed from cores manufactured from locally sourced Monterey chert. The assemblage from SBA-60 was dominated by trapezoidal microblades and cores of the "repeat" type commonly associated with the Middle period (Arnold, 1987). A more recent study produced radiocarbon dates that suggest these artifacts are associated with the proto-Historic/Historic period, although poor provenience information from McKusick's (1961) excavation cannot be used to support or refute these dates (Arnold, 1987; Munns, 2004).

The manufacture and use of microdrills in the context of bead making is also thought to have taken place at SBA-1582, a site located not far from S'axpilil. Erlandson (1988) concluded the presence of stone drills and the abundance of olivella waste flakes suggests the primary function of this Late period site was the manufacture of callus beads. The material used to manufacture the stone drills is unclear, however drill type is described as bi-conical (Erlandson, 1988). This type of drill is different from the trapezoidal and triangular cross section microdrills associated with Middle or Late period bead production on Santa Cruz Island. Instead Erlandson's description of these bi-conical drilling implements suggests their shape more closely resembles the *type 1* macrodrills discussed by Arnold (Arnold et al., 2001:126). Despite the use of non-microlithic drills, this site provides evidence for the limited production of callus beads by the mainland Chumash *after* the Transitional period.

Santoro's (1990) analyses of Purismeño stone drills recovered from SBA-1491, located on the Gaviota coast near Point Conception (figure 7), has served to reinforce the idea of continued bead production by the mainland Chumash during the Late period; when island bead and microblade production was at its peak (Arnold, 1987, 2001). Although the drilling implements analyzed by Santoro appear to be similar to type A flake drills discussed at length by Sunell and Arnold (in press), it is worth noting the presence of a unique type with a parallelogram cross-section not (as of yet) found in other assemblages in the Barbareño or Ventureño sub-regions. Of the 157 flake drills observed at the site, a total of 13 (9.4%) were classified as parallelogram drills. The rest of the identified drilling implements were either trapezoidal (110) or triangular (15) in cross-section, all of which lacked dorsal retouch (Santoro, 1990). Again, while appearing to be of the ad-hoc variety, the presence of flake drills with a unique parallelogram cross-section is of interest as it breaks from the typical pattern observed in sites along the mainland coast south of Point Conception.

At the time of Spanish contact, the Obispeño Chumash occupied the area surrounding the modern-day cities of Morro Bay and San Luis Obispo; collectively forming the Northern Chumash region. Linguistically, the Obispeño language is thought to have diverged from the Central and Island branches (or regions) by about 3000 B.P; almost two thousand years prior to the divergence of the Central Chumash branch into the groups discussed above (Johnson, 2000; Klarr, 1977). Microlithic artifacts have been recovered from a small number of sites in the vicinity of San Luis Obispo, California. Although the presence of “bead drills” has been recognized for some time, detailed research focused specifically on drill characteristics is relatively new; a result of the shadow cast by the Channel Islands microblade industry. The two Obispeño microlithic assemblages discussed in this thesis were recovered from Late period components of SLO-44 and SLO-214; perhaps the most studied sites within their respective region.

Artifacts representing all stages of microblade production have been observed at SLO-44, a large site located in the vicinity of San Luis Obispo (Blake, 2010; Price et. al., 2009). A total of 21 microdrills collectively make up 36% of the flaked stone tools recovered from SLO-44. Small cores and debitage flakes likely associated with the manufacture of microblades were noted as well. Microscopic use-wear analyses revealed only four total microdrills showed signs of usage; two exhibited only shell polish, and two were revealed to have been used during the drilling of “other hard materials” (Price, et al., 2009; Blake, 2010). This led Price and colleagues (2009) to suggest SLO-44 microdrills functioned as a tool used in the perforation of shell beads, however this conclusion is rather premature, and should not be made based on a total of two microdrills exhibiting shell polish.

SLO-214 is located on a sand dune south of the city of Morro Bay and is considered to be the largest prehistoric site in the region. Of the 54 microdrills recovered from six cubic meters of excavated soil, only four exhibited signs of wear indicative of shell perforation (Blake, 2010:95). All microdrills were described as fragmented to some degree and manufactured from local

Chorro Valley Monterey chert. Consistent with SLO-44, small locally manufactured chert cores and debitage were observed at this site, however formal analysis did not take place.

Microdrill assemblages at both SLO-44 and SLO-214 are dominated by the parallelogram cross-section variants; 81% and 48%, respectively (Blake, 2010; Price et. al., 2009). The most defining feature of parallelogram microdrills is a square to rectangular cross-section; steep lateral edges perpendicular with the dorsal and ventral service of the blade/drill (Price et al., 2009). Parallelogram microdrills are produced from cores subjected to bi-polar percussion, with bits fashioned through the use of bi-polar retouch (Blake, 2010; Price et al., 2009). This technique is considered to reflect a limited, inefficient skillset which resulted in the production of the “weakest drill type” in the Chumash region (Blake, 2010: 108; Odell, 2001). Very few trapezoidal microdrills were recovered from either site, however the SLO-214 assemblage is described as containing 18 microdrills (or drill fragments) exhibiting a triangular cross-section similar to undiagnostic microblades/drills found throughout the Chumash region during the Middle and Late phases of the Channel Islands Chronology (Blake, 2010).

TABLE 2.

Microblade and Microdrill Density (n/cubic meters) at CA-SLO-214

		Microblades		*Microdrills*	
Period	Ex. Vol (m^3)	Qty. (#)	Density	Qty. (#)	Density
Late	6	36	6	18	3

Note: Calculations based on data presented in Blake (2010:68)

At first glance, SLO-214 appears to contain more than two times the number of microdrills recovered from SLO-44, however this is due to the incorrect assignment of artifact types at SLO-214. In order for a microblade to be considered a drill, it must possess either a fully formed drill bit, or the distal portion must exhibit signs of possible retouch flaking. Although it is possible that all fragments recovered from SLO-214 were indeed those of microdrills, their designation as microblade fragments is considered more accurate (Arnold, 1987, 2001:114). If the data are reorganized based on this assumption (represented in table 2), only 18 total microdrills were recovered from SLO-214; 1 triangular-undiagnostic and 17 parallelogram cross-section drill fragments (Blake, 2010:86-87). This lowers the microdrill total of SLO-214 near that of SLO-44, also changing the percentage of parallelogram cross-sectioned microdrills to 94% of the total assemblage. This suggests microdrills with a parallelogram cross-section were heavily favored as drilling implements by the Obispeño Chumash during the Late period.

Archaeological Research at Rincon Point: The Chumash Village Shuku

VEN-62 is located in close proximity to the Pacific Ocean, east of Rincon Creek and is one of the largest sites in the Rincon Point region. Journals kept by father Crespí during the 1769 Portolá expedition estimated that *Shuku* was home to around 300 individuals, 60 round houses, and he observed several planked tomols fishing right off the coast, likely just outside the estuary observed during the same expedition (Johnson, 1988b; King, 1980; Victorino et al., 2004). While it is likely the Spanish overestimated the population at Shuku, its location near a perennial water source and resource rich estuary would have enabled a larger population to aggregate.

Over the last one hundred plus years, Rincon Point has been subjected to numerous archaeological excavations, each of which varied in both size and duration (King 1980). As a result, separate trinomials (SBA-1, SBA-119, SBA-141, VEN-62) have been assigned to various sections of what is collectively known as Rincon Point, which moving forward I will sometimes use to refer to the trinomial VEN-62, the location of the assemblage analyzed in this thesis. Archaeological collections from these excavations are numerous and often contain both human and artifactual remains, the majority of which remain either missing or unstudied. The two main trinomials, VEN-62 and SBA-1, essentially make up most of Rincon Point. This bifurcation results from Rincon straddling the line between the counties of Santa Barbara and Ventura. Bead and artifact typologies, along with radiocarbon dates recovered during numerous excavations spanning the last century suggest the occupation of VEN-62 began during the Middle period and continued up through the beginning of the Historic period (King, 1980; Stone, 2016; Victorino et al., 2004). Given the site's size and continuous occupation, it appears the founding of Shuku occurred during the mid to late Middle period and was home to a much larger population than earlier villages in the area (King, 1980). Since a thorough synthesis of Rincon Point's excavation history pre-1980 already exists (see King, 1980), the summary below will focus mainly on the three plus decades that followed.

The occupation of VEN-62 appears to have begun at about the start of the first millennium AD, and remained continuous up to the Historic period; a span of roughly 2000 years. While small numbers of burials are routinely present in sites throughout the region, the sheer number uncovered at VEN-62 is staggering. Stephen Bowers (1884) alone was responsible for the removal of over one hundred burials from a single cemetery. Artifact records are lacking, however Bowers (1884) does note ollas made from Catalina Island steatite were present in some of the burials. In 1966, representatives of the University of California, Los Angeles excavated a 6m x 8m area down to approximately 75cm. The objective of this research was to excavate a house floor. Unfortunately, excavations appear to have halted prior to reaching sterile soil (King, 1980).

In 1988, John Johnson of the Santa Barbara Museum of Natural History conducted field excavations at VEN-62 with the goal of documenting and removing a Chumash burial that had been exposed during landscaping activities. The preliminary report denotes the excavation of a

1.5m x 1.5m unit in order to remove the burial. Backhoe trenches had been previously dug to install a water line, so two column samples were taken from sidewalls at either end of the backhoe excavation. Other samples were taken from previously removed back-dirt. All excavated soils were water-screened through 1/16" mesh, followed by the subsequent removal of botanicals (Johnson, 1988a).

In 2004, test excavations carried out by the cultural resource management company SAIC totaled 16 trenches, measuring roughly 8ft x 2ft each, and 28 auger holes. All soil was wet-screened through 1/8" mesh and sorted according to generalized classificatory criteria. Once this was completed, five test units were excavated during data recovery along the proposed sewer line. Three of the units measured 1m x 1m, with the final two measuring 1m x .5m. All units were excavated in 20cm levels, with soils water-screened through 1/8" mesh. At this time, all artifacts recovered from the three 1m x 1m units underwent a detailed laboratory analysis by SAIC technicians. A total of five samples were taken and submitted for radiocarbon dating; two from unit 1, one from unit 2, and two from unit 3. Analysis is limited by an insufficient number of radiocarbon dates, although those obtained suggest soil deposition occurred during the first century AD and up to the end of the Late period (Victorino et al., 2004: 56). Despite poor temporal resolution, microlithic data associated with this excavation is used to evaluate conclusions drawn from the analysis of the 2013 assemblage.

The most recent excavation of Rincon Point took place in 2013, where a total of 16 1x1 meter units were dug in the area of the site located east of Rincon creek. Unit placement was based on the proposed construction of a sewer line that would run throughout the eastern third of the Rincon gated community. All units were excavated in either 10cm or 20cm levels, depending on the depth at which excavators reached sterile soil. All removed soils were dry and wet screened through 1/8” mesh, after which all artifacts were taken back to the lab for initial sorting. Nineteen shell samples were taken and submitted for radiocarbon dating from a total of eight selected units (Victorino, 2004).

TABLE 3.

2013 Excavated Soil Volumes at CA-VEN-62.

Period	Volume (m^3)
Historic	0.4
Late	1.8
Transitional	1.6
Middle	4.5
Total	*8.3*

Radiocarbon dates indicate the material recovered during this excavation was deposited over a period of almost 1500 years, beginning squarely within the Middle period and continuously up to the beginning of the Historic period. Table 3 illustrates the total volume (in cubic meters) of soil removed from the dated units, as well as excavated volumes by chronological period. Table 4 specifies each chronological component found within each of the sampled units. Collectively, artifacts from these units account for the vast majority of the assemblage recovered during this particular excavation of Rincon Point.

TABLE 4.

2013 Unit Chronology at CA-VEN-62

	Unit Number							
Period	6	8	10	11	12	14	15	17
Historic								x
Late			x				x	x
Transitional				x	x		x	
Middle	x	x		x	x	x	x	

Methods

In order to ensure all microlithic artifacts were identified, I reanalyzed and resorted the entire lithic collection recovered from all 16 units excavated in 2013. At this time, all microblades/microdrills, flake drills and microlithic cores were identified and the material type of each artifact was determined through comparison with known material types in collections housed at the Channel Islands Lab at UCLA and the Anthropology department at the Santa Barbara Museum of Natural History. Artifacts analyzed within this thesis are those observed in the eight units (6,8,10,11,12,14,15,17) from which samples were taken and submitted for radiocarbon dating.

Microblades are defined as a microlithic artifact, either whole or fragmented, that has been knapped from a formalized microlithic core (see Arnold, 2001:114). An important morphological feature distinguishing microblades from microdrills is the absence of a bit, whether that be intentional or due to fragmentation. Microblade and microdrill types were determined through cross-sectional evaluation and morphological characteristics such as the presence of dorsal edge retouch, location of the striking platform vs. longitudinal access, and overlapping blade scars on the dorsal surface (Arnold, 1987, 2001). Microblades and microdrills were grouped into four possible types: triangular-undiagnostic, triangular with dorsal retouch scarring, trapezoidal, and parallelogram.

Microlithic cores were identified based on the orientation and number of blade scars they exhibited, repeated platform use, as well as the amount of retouch (if any) applied to either the striking platform(s) or along prominent ridgelines. Microlithic cores were grouped into four types; "repeat" cores used to produce trapezoidal and occasionally triangular-undiagnostic microblades, prepared cores used to produce TDR microblades, flake cores, and finally, other/undiagnostic cores. Flake cores are those similar to microblade cores in size, but exhibit small, multi-directional flake scars produced through an arbitrary flake removal process. Undiagnostic cores are those that did not fit any of the former three core types. The ad-hoc flake drills that characterized the pre-microlithic middle period on the Channel Islands were also observed within this assemblage. Type A/B flake drills were differentiated based on drill bit orientation and the location where force was applied during flake removal.

Results

Data resulting from the analysis of both Rincon microlithic assemblages are presented in separate sections below, with the discussion of the 2013 assemblage further organized by observed artifact typologies.

Microblades

As indicated by Tables 5 and 6, a total of 18 microblades or microblade fragments were recovered from the eight units that underwent radiocarbon sampling. Microblades recovered from Middle and Transitional period soils account for the majority of the site assemblage, nearly 89%. Within the Middle period, three of the five T-UN microblades are made from fine-grained quartzite, one from island chert, and one from Franciscan chert. A single edged surface of the Franciscan chert microblade appears to have been modified through retouch, however it appears to have occurred after being removed from a microblade core. All three trapezoidal microblades from the Middle Period are fragmented, each displaying overlapping blade scares on their dorsal surface; a by-product of their production process (Arnold, 1987). Low numbers of TDR microblades are found in middle period sites on Santa Cruz Island, however, to the knowledge of this author none have been manufactured from any material besides island sourced chert (Arnold, 2001). The presence of this type of microblade in no way suggests a mainland origin of TDR blade technology, as it is the only one and could likely be an unintentional by-product resulting from the production of a different tool.

The Transitional period component of the site yielded a total of seven microblades (Tables 5 and 6). The trapezoidal microblades all show similar overlapping blade scars on their dorsal surface. None of the five trapezoidal specimens are wholly intact, however one of the island chert microblades is only missing a portion of its distal end and is roughly 90% complete. Two microblade fragments (one quartzite and one island chert) and the 90% complete island chert microblade have undergone extensive single edge and double edge retouch, respectively. In all three cases, the entire length of each edge was retouched not with the intention of forming a bit, but to reduce overall width. The nearly complete microblade resembles a type that typically functions as a cutting implement (Arnold, 1987:66), however in the absence of use-wear analyses it is difficult to ascertain functionality based on morphology alone. Only a single triangular-undiagnostic microblade made of island chert was recovered from Transitional soils at VEN-62. A single flake scar is visible on the distal end of the microblade, however it is unknown whether this scar occurred before or after its deposition.

The final Transitional period microblade is a TDR type manufactured from island chert, and displays prototypical dorsal retouch scarring associated with similar examples found on the Channel Islands (Arnold, 1987, 1993). The presence of this microblade in the Transitional component of Rincon Point is unexpected, as TDR types become increasing circumscribed to contemporary villages located near the quarries on eastern Santa Cruz Island (Arnold, 1987, 1990, 1993). The extreme lateral curvature of this TDR microblade may explain its presence at VEN-62. Following Preziosi (2001), microblades become increasing standardized moving from the Middle to Late period, supported by increases in production consistency and a "narrowing range of acceptance of microblade shapes to be worked into microdrills (2001:161)". It is therefore reasonable to suggest the lateral curvature indeed rendered the TDR microblade less effective as a potential bead drilling implement. In his analysis of the cross-channel exchange of bifaces, Pletka (2001) posits the continued importation of mainland produced bifaces by island residents during the Transitional and Late periods, as a strategy that served to establish or maintain a wide array of social relationships (146-147). The TDR microblade from VEN-62 could have been obtained under a similar context, as specimens of this type were rarely exchanged with villages outside the Channel Islands (Arnold, 1987, 2001; Kennett and Kennett, 2000).

A substantial decline in the number of microblades is observed within the Late period component, despite an increase in soil volume over the preceding Transitional period (see table 3). Only a single triangular-undiagnostic microblade fragment was identified within Late Period soils. This single specimen is manufactured from quartzite and displays no signs of retouch scarring. Soils dating to the Historic period also yielded a single, but intact quartzite microblade. Although microblade frequency is expected to be lower relative to the Middle and Transitional periods, the decline in frequency at VEN-62 could also be a function of the lower volume of historic deposits excavated during the 2013 project.

TABLE 5.
2013 Microblade Count, Density, and Percent through Time at CA-VEN-62.

Period	Microblades	Density (per/m³)	Percent (%)
Historic	1	2.5	5.6
Late	1	0.55	5.6
Transitional	7	4.37	38.8
Middle	9	2	50

Looking at table 5, it is clear overall microblade density is highest during the Transitional period, averaging just under 4.4 specimens per cubic meter. Average density during the Transitional period is more than double that of the preceding Middle period and nearly eight times higher than the average density in the following Late period. The average microblade density of 2.5 specimens per cubic meter during the historic period is much higher relative to the Middle period, however as previously stated, interpretation is difficult due to the low volume of excavated soil attributed to this phase.

TABLE 6.
2013 Microblade Density (n/ cubic meters) based on Typology through Time at CA-VEN-62.

Period	Triangular-Undiagnostic	Trapezoidal	Triangular-Dorsal Retouch
Historic	2.5	-	-
Late	0.55	-	-
Transitional	0.62	3.12	0.62
Middle	1.11	0.67	0.22

Table 6 presents data on microblade density at VEN-62 based on their typology through time. The density of triangular-undiagnostic microblades is highest during the Middle period, subsequently decreasing as occupation moves up through the Transitional and into the Late period. Trapezoidal microblades show an inverse pattern, as their density during the transitional period is close to five times that observed in the Middle period. TDR type microblades increase in density during the Transitional period, however interpreting this is difficult due to such a small sample size.

TABLE 7.
2013 Microblade Density (n/cubic meters) based on Raw Material Type through Time at CA-VEN-62.

Period	Island Chert	Quartzite	Franciscan Chert
Historic	-	2.5	-
Late	-	0.55	-
Transitional	3.12	1.25	-
Middle	0.67	0.89	0.44

Data organized in table 7 suggests the density of microblades made from both island chert and quartzite increased moving from the middle period into the Transitional period, while microblades made from Franciscan chert are only found in the Middle period. These patterned increases in density moving into the Transitional period are not surprising given a similar increase occurred on the Channel Islands during this span, albeit on a much larger scale (Arnold, 1987, 2001; Kennett and Kennett, 2000). It is interesting quartzite was utilized during the production of microblades at VEN-62, particularly because the majority of microblades recovered from contemporary mainland sites are often manufactured from island chert with few, if any, made from quartzite (Arnold, 1987; Munns, 2004). The continued presence of island chert microblades in the Transitional component of VEN-62 could perhaps be related to social ties with island Chumash villages, or that control over eastern chert quarries on Santa Cruz Island had not yet occurred. The sharp decline in microblade density during the Late period at VEN-62 likely reflects their reliance on island based bead production at that time, however additional data and a larger sample size is needed from other mainland sites in order to verify this.

Microdrills

TABLE 8.
2013 Microdrill Count, Density (n/ cubic meters), and Percent through Time at CA-VEN-62.

Period	Microdrills	Mean Density	Percent
Historic	1	2.5	11.1
Late	-	-	-
Transitional	6	3.74	66.6
Middle	2	0.44	22.2

Table 8 shows the total number of microdrills, their mean density and overall percentage by period at VEN-62. A pattern similar to microblades appears as Middle and Transitional period specimens account for nearly 89% of the entire VEN-62 microdrill assemblage, although this is to be expected given the depositional proportions assigned to each chronological phase. Microdrill type and material variation is presented in table 9.

TABLE 9.
2013 Microdrill Count by Type and Raw Material Variation through Time at CA-VEN-62.

Period	*Triangular-Undiagnostic*				*Trapezoidal*			
	Island Chert	Franciscan Chert	Monterey Chert	***Total***	Island Chert	Franciscan Chert	Monterey Chert	***Total***
Historic	1	-	-	*1*	-	-	-	-
Late	-	-	-	-	-	-	-	-
Transitional	2	1	-	*3*	2	-	1	*3*
Middle	-	-	1	*1*	1	-	-	*1*
Site Total	3	1	1	***5***	3	-	1	***4***

One interesting feature of the Middle period Monterey chert triangular-undiagnostic microdrill is the clear use of heat during its production. The entire drill is an ash-white color and has a wax-like texture near the bit. It is possible this occurred after the drill was discarded, however there is a blade scar running down the dorsal surface, revealing the dark black color associated with this type of chert. This dorsal blade scar is characteristic of the production of Middle period microblades and is not a result of heat treatment (Arnold, 1987). The second and final Middle period drill is a fragment with overlapping blade scars on the dorsal surface, with the ventral and lateral sides displaying extensive retouch.

Six microdrills were collected from the Transitional site component; three triangular-undiagnostic and three trapezoidal. The two island chert microdrills are intact specimens with well-developed bits and visible blade scars covering the most proximal portion of their dorsal surface. One of the island chert drills is retouched along both lateral edges, similar to three contemporary microblades discussed above. Overlapping blade scars are visible on the dorsal surface of the Monterey chert microdrill, which, similar to the Middle period drill, shows evidence of heat alteration. The Transitional period specimen has an under-developed bit relative to its Middle period counterpart, which could be related to a small pot-lid fracture located just above the bit. The lone microdrill dating to the Historic period is a fragmented triangular-undiagnostic type manufactured from island chert. This specimen is uniquely translucent, as opposed to other, more opaque island chert microblades/drills throughout the site.

At VEN-62, overall microdrill density follows a similar trajectory as that observed in the microblade assemblage. Density peaks during the Transitional period and then declines, or specifically in the case of microdrills, drops to zero during the Late period (see table 8). Although microdrill and microblade densities are higher in the Transitional period than in the Middle period, drill type densities are not inverted like those of microblades. Table 10 reveals identical numbers of T-UN and trapezoidal microdrills during the Middle period, as well as for the Transitional period. Material type density and variation increases from the Middle into the Transitional period, and is presented in table 11. Conversely, microblade material variation is highest in the Middle period, although sample size affects this pattern. The increase in density of island chert

TABLE 10.
2013 Microdrill Density (n/ cubic meters) based on Typology through Time at CA-VEN-62.

Period	Triangular-undiagnostic	Trapezoidal
Historic	2.5	-
Late	-	-
Transitional	1.87	1.87
Middle	0.22	0.22

TABLE 11.
2013 Microdrill Density (n/cubic meters) based on Raw Material Type through Time at CA-VEN-62.

Period	Island Chert	Franciscan Chert	Monterey Chert
Historic	2.5	-	-
Late	-	-	-
Transitional	2.5	0.62	0.62
Middle	0.22	-	0.22

microdrills in the Transitional period is consistent with contemporary microblades. While expected, the absence of quartzite microdrills contrasts with the recovery of contemporary microblades made of the same material. This could indicate a separate function for quartzite microblades since they do not appear to have been retouched into microdrills. Given the infrequent identification of quartzite microlithics, more data from the Chumash mainland region is needed to better assess the presence and possible function of these specimens.

Microlithic Cores

Twenty-one microlithic cores were collectively identified over the four phases of occupation at Rincon Point (see table 12 and 13). Of the thirteen that date to the Middle period, eight are "repeat" core types used in the manufacture of trapezoidal and triangular undiagnostic microblades (Arnold, 1987, 1993). Only four of these cores are complete specimens, each displaying overlapping microblade scars systematically located along a prepared striking platform; two are manufactured from fine-grained quartzite, one from Monterey chert, and one from island chert. Roughly 40% of the Monterey chert core retains its original cortex material, suggesting it was manufactured from a small, river worn cobble. The absence of shale lamina would make the quality of this chert far superior to the commonly observed banded Monterey chert. The dark black color and texture of this core closely resembles the Tuqan chert identified on San Miguel Island (Erlandson et al., 2008). The island chert core appears to have been utilized to a lesser degree than the rest, exhibiting three to four blade scars. The presence of large inclusions and multiple step fractures suggest this core is of poor quality relative to other island chert artifacts observed at VEN-62.

TABLE 12.

2013 Microlithic Core Count, Density (n/cubic meters) and Percent through Time at CA-VEN-62

Period	Microlithic Cores	Mean Density	Percent
Historic	1	2.5	4.8
Late	4	2.22	19
Transitional	3	1.87	14.3
Middle	13	2.89	61.9

The single flake core dating to the Middle period is made of a similarly high quality quartzite that characterized the "repeat" cores. This flake core displays two lightly retouched platforms and visible scarring that resulted from the removal of small flakes. The difference between this core and the above "repeat" variety is the inferred shape of the flakes and their removal location. Flake scars are not uniform either in size or shape, and appear to be removed in a non-systematic fashion that suggests no final shape was perceived prior to their removal (Arnold, 1987). The final four microlithic core fragments are considered to be un-diagnostic, as a single blade scar, partial or full, cannot be used to assign them to a specific core type.

Three microlithic cores were identified in the Transitional component of VEN-62, a much smaller quantity than in the previous Middle period. Two of these are "repeat" type fragments, one comprised of island chert and the other Franciscan chert (see table 13). Both fragments exhibit part of a striking platform and at least two blade scars on their dorsal surfaces. The single quartzite flake core is complete and retains a small amount of the original cortex. Crushed edges and several multi-directional flake scars cover the core surface, the former suggesting this core was utilized to some extent as a battering tool. Material quality of this core is consistent with other fine-grained quartzite specimens, but it does not appear to have been used in the production of microblades.

TABLE 13.
2013 Microlithic Core Count by Type and Material Variation through Time at CA-VEN-62.

	Repeat Cores					*Flake Cores*					*Undiagnostic*				
Period	Island Chert	Quartzite	Franciscan Chert	Monterey Chert	***Total***	Island Chert	Quartzite	Franciscan Chert	Monterey Chert	***Total***	Island Chert	Quartzite	Franciscan Chert	Monterey Chert	***Total***
Historic	-	-	-	-	-	-	1	-	-	*1*	-	-	-	-	-
Late	-	2	-	1	*3*	-	-	-	-	-	-	1	-	-	*1*
Transitional	1	-	1	-	*2*	-	1	-	-	*1*	-	-	-	-	-
Middle	1	3	3	1	*8*	-	1	-	-	*1*	-	2	1	1	*4*
Site Total	2	5	4	2	***13***	-	3	-	-	***3***	-	3	1	1	***5***

Four microlithic cores were collected from levels dating to the Late period: three “repeat” and one undiagnostic core. Two repeat cores were fragments, each exhibiting a single platform and microblade scar. The quartzite core fragment is of substantially poorer quality than artifacts from preceding periods, as large inclusions led to step fracturing during microblade removal. The Monterey chert fragment is the same dark black color observed in the “repeat” core from the Middle period, and also retains traces of the original cortex on the dorsal surface. The third repeat type is a complete core manufactured from a finer-grained quartzite that exhibits two microblade scars, each located on a separate side. This is a departure from the overlapping orientation that is characteristic of typical “repeat” cores (Arnold, 1987). Although only two microblades appear to have been removed, this core is considered to be of the repeat variety as prominent ridgelines were not prepared via retouch flaking. The final microlithic core is an undiagnostic fragment exhibiting only a single blade scar. Two step fractures can be seen crossing the vertical axis of the blade scar, which likely resulted in the fragmentary removal of the microblade. The large numbers of inclusions seem to have rendered this quartzite core brittle and unusable, likely the cause of its discard.

Finally, only a single quartzite flake core displaying multi-directional scarring was recovered from the Historic site component of VEN-62. Several step fractures are visible on the surface of the core, some overlaying what appear to be thin flake or blade scars. This ambiguity is what led to this artifact being designated as a flake core.

Minor fluctuations in microlithic core densities occur throughout the occupation of Rincon Point (Tables 12-15), although more data are needed to interpret the extent to which this is meaningful. Middle and Late period densities are higher relative to the density of microlithic cores during the Transitional period. Unfortunately, the observed density value from the historic component can almost certainly be attributed to the small soil sample size, and thus unlikely to reflect actual core density during this phase of occupation.

TABLE 14.
2013 Microlithic Core Density (n/cubic meters) based on Typology through Time at CA-VEN-62.

Period	Repeat Cores	Flake Cores	Undiagnostic
Historic	-	2.5	-
Late	1.67	-	0.55
Transitional	1.25	0.62	-
Middle	1.78	0.22	0.89

Core type data presented in table 14 indicate repeat cores were the most frequent type observed at the site. Table 15 reveals a general decline in material type variation for VEN-62 with the most variation observed during the Middle to Transitional periods. It difficult to determine if the observed variation is meaningful, as its occurrence could be attributed to small sample sizes.

TABLE 15.
2013 Microlithic Core Density (n/cubic meters) based on Raw Material Type through Time at CA-VEN-62.

Period	Island Chert	Quartzite	Franciscan Chert	Monterey Chert
Historic	-	2.5	-	-
Late	-	1.66	-	0.55
Transitional	0.62	0.62	0.62	-
Middle	0.22	1.33	0.89	0.44

When density patterns observed in microblades/microdrills are compared with those of microlithic cores (see table 16), an interesting juxtaposition emerges. The highest microblade/drill densities co-occur with the lowest density of microlithic cores during the Transitional period. This suggests a potentially meaningful increase in microblade and microdrill frequencies during the Transitional period, despite very little observed change in their production.

TABLE 16.
2013 Density (n/cubic meter) of Microblades, Microdrills, and Microlithic Cores through Time at CA-VEN-62.

Period	Microblades	Microdrills	Microlithic Cores
Historic	2.5	2.5	2.5
Late	0.55	-	2.22
Transitional	4.37	3.74	1.87
Middle	2	0.44	2.89

A contemporary rise in the overall density of island chert microlithics relative to Middle period values is also observed (see tables 6, 10 and 14). Together this may indicate that residents during the Transitional period acquired microblades and/or microdrills through exchange with island residents, as opposed to utilizing more localized production during the Middle period (Arnold, 1987, 1990, 2001). Although quartzite microlithic cores and a single microblade are observed in the Late period site component, the absence of microdrills of any type suggests the former were not used for drilling. The absence of "single edge retouch" cores in the 2013 VEN-62 assemblage further supports the idea that Island Chumash individuals held differential access to this technology by the onset of the Late period (Arnold, 1987, 2001; Johnson, 2000).

Flake Drills

As antecedents of microdrills, it is surprising that flake drills were the least common drilling implements recovered from Rincon Point. Seven total flake drills were identified at VEN-62 (Table 17). All flake drills are categorized as *Type A* drills, as the point of applied force is either missing or perpendicular to the longitudinal axis of the tool (Sunell and Arnold, in press).

Two Middle period Monterey chert flake drills are distal snaps of larger flakes that have been retouched at a single end, resulting in the formation of a bit. The other two specimens, one quartzite and the other island chert, also appear to be retouched fragments of larger flakes. While a refined bit is not visible on the quartzite drill, retouch scarring is present on the dorsal and lateral sides of a single end. The island chert flake drill appears to have been manufactured from the medial portion of a larger flake, with both lateral edges showing signs of retouch similarly observed in some of the microblades discussed above.

TABLE 17.
2013 Flake Drill Count, Density (n/cubic meters) and Percent through Time at CA-VEN-62.

Period	Flake Drills	Mean Density	Percent
Historic	*1*	2.5	14.3
Late	*2*	1.11	28.6
Transitional	-	-	-
Middle	*4*	0.89	57.1

Late period flake drills appear to be manufactured from large quartzite flakes. One drill has been slightly retouched at a single end, however, it was not completed prior to discarding. Drill width and knapping difficulties associated with the hard, coarse-grained structure of quartzite may explain why further reduction was abandoned. The second quartzite flake drill is morphologically unique in the assemblage. The overall shape of this drill is similar to an elongated semi-circle, with a very sharp point at one end and a dull (relative) bit retouched on the other. The dorsal surface of the flake drill exhibits scars similar to those found on trapezoidal microblades, however they do not overlap as in the case of the latter. These flake scars create a semi-serrated edge that may be useful for fishhook production or any tasks that requires cutting or scraping.

Only a single flake drill fragment manufactured from Monterey chert was recovered from the Historic period deposits. The ventral edge has undergone minor retouch, most notably at the distal end in the attempt to form a bit. The bit itself appears crushed, but it is unclear if it occurred during production or during use. Similar to microlithic artifacts discussed above, the material variation of flake drills is highest during the Middle period, although this is expected based on differences in excavated soil volumes for each time period (see tables 18 and 19). The absence of flake drills in the Transitional period could be related to contemporary microblade/drill densities and the growing regional focus on callus bead acquisition, however more robust research is needed to further explore this idea.

TABLE 18.
2013 Flake Drill Type and Raw Material Variation through Time at CA-VEN-62.

	Type A Flake Drills			
Period	Island Chert	Quartzite	Mont-Chert	***Total***
Historic	-	-	1	*1*
Late	-	2	-	*2*
Transitional	-	-	-	-
Middle	1	1	2	*4*
Site Total	1	3	3	*7*

TABLE 19.
2013 Flake Drill Density (n/cubic meters) based on Raw Material Type through Time at CA-VEN-62

Period	Island Chert	Quartzite	Monterey
Historic	-	-	2.5
Late	-	1.11	-
Transitional	-	-	-
Middle	0.22	0.22	0.44

The 2004 Microlithic Collection

After reanalysis of all lithic artifacts recovered during SAIC's excavation of three units or 2.6 cubic meters of soil in 2004, a total of sixty-five microblades were identified. Specimen typology and material variation within the total assemblage is presented in table 20.

TABLE 20.
2004 SAIC Microblade Assemblage recovered from CA-VEN-62

Material	T-un	Trap	TDR	Total (%)
Island Chert	30	12	1	43 (*66.1*)
Franciscan Chert	3	2	-	5 (*7.7*)
Monterey Chert	5	2	-	7 (*10.8*)
Quartzite	9	1	-	10 (*15.4*)
Total (%)	47 (*72.3*)	17 (*26.2*)	1 (*1.5*)	65 (*100*)

Limited radiocarbon samples make chronological refinement difficult to assess at this time, however the majority of specimens were recovered from soils that date well into the Transitional period or Late period of Arnold's (1992) Island Chronology. Triangular-undiagnostic and trapezoidal microblades are the most frequent types identified in this assemblage, which follows the pattern typically observed in Middle period sites on Santa Cruz Island (Arnold, 1987, 2001). Microblades fashioned from island chert and quartzite dominate the 2004 assemblage with the former accounting for 66% of the total number of specimens. High proportions of island chert and quartzite microblades are also observed in the assemblage excavated by Dudek in 2013, however percentages vary between each collection.

TABLE 21.
Unit 1 Microblade Frequency by Type and Raw Material (2004 SAIC)

	Material Type					Typology		
Level	Island	Monterey	Franciscan	Quartzite	Period	T-un	Trap	TDR
0-20	1	2	1	2	-	5	1	-
20-40	-	-	3	-	-	2	1	-
40-60	4	-	-	-	-	3	1	-
60-80	5	-	-	2	Transitional	5	2	-

TABLE 22.
Unit 2 Microblade Frequency by Type and Raw Material (2004 SAIC)

	Material Type			Typology		
Level	Island	Quartzite	Period	T-un	Trap	TDR
0-20	6	1	-	6	1	-
20-40	4	2	Transitional	5	1	-
40-60	-	-	-	-	-	-
60-80	-	-	-	-	-	-
80-100	1	-	-	1	-	-

TABLE 23.
Unit 3 Microblade Frequency by Type and Raw Material (2004 SAIC)

	Material Type					Typology		
Level	Island	Monterey	Franciscan	Quartzite	Period	T-un	Trap	TDR
0-20	1	-	1	2	-	2	1	1
20-40	3	4	-	-	-	6	1	-
40-60	10	1	-	1	-	6	6	-
60-80	8	-	-	-	Middle	6	2	-

Tables 21, 22, and 23 summarize microblade distribution based on specimen type and raw material variation for each unit. The juxtaposition of microblade frequencies by unit suggests the highest incidences of trapezoidal specimens occurred during the terminal Middle and Transitional periods, although their numbers never surpass those of triangular-undiagnostic types. This pattern is consistent to some degree with that observed in the 2013 assemblage although this comparison should be considered tentative due to a lack of radiocarbon samples for the 2004 units. Frequencies of island chert microblades in both the 2004 and 2013 assemblages are highest during the terminal-Middle and Transitional periods, however a key difference between the two lies in the continued Late period presence of specimens in the former assemblage. The 2004 assemblage also suggests a clear increase in raw material diversity occurs right about the time frequencies of island chert specimens begin to decrease. Without more detailed radiocarbon sampling it is difficult to attribute this shift to any one period, however it is appears likely to have occurred around the end of the Transitional or beginning of the Late period.

TABLE 24.
2004 SAIC Microdrill Assemblage recovered from CA-VEN-62

Material	T-un	Trap	Total (%)
Island Chert	17	6	23 (*82.1*)
Franciscan Chert	1	-	1 (*3.6*)
Monterey Chert	4	-	4 (*14.3*)
Total (%)	22 (*78.6*)	6 (*21.4*)	28 (*100*)

Raw material variation and specimen typology for the entire 2004 microdrill assemblage is presented in table 24. Similar to the microblade assemblage, the majority of microdrills are of the triangular-undiagnostic variety with a high percentage manufactured from island chert. Trapezoidal microblades and microdrills are almost exclusively manufactured from island chert, while specimens manufactured from other raw materials make up a much higher percentage of triangular-undiagnostic types. Quartzite microdrills are not present in either the 2004 and 2013 assemblages despite the presence of quartzite microblades, which further supports the interpretation that their usage occurred outside the realm of bead drilling. The frequency of trapezoidal microdrills is highest during the earlier periods of this assemblage (see tables 25, 26, and 27), which is consistent with the pattern observed for microblades in the same assemblage.

TABLE 25.
Unit 1 Microdrill Frequency by Type and Raw Material (2004 SAIC)

	Material Type					Typology		
Level	Island	Monterey	Franciscan	Quartzite	Period	T-un	Trap	TDR
0-20	1	-	-	-	-	1	-	-
20-40		-	-	-	-	-	-	-
40-60	3	-	-	-	-	3	-	-
60-80	1	-	-	-	Transitional	-	1	-

TABLE 26.
Unit 2 Microdrill Frequency by Type and Raw Material (2004 SAIC)

Level	Material Type: Island	Material Type: Franciscan	Period	Typology: T-un	Typology: Trap	Typology: TDR
0-20	2	1	-	3	-	-
20-40	-	-	Transitional	-	-	-
40-60	-	-	-	-	-	-
60-80	-	-	-	-	-	-
80-100	-	-	-	-	-	-

TABLE 27.
Unit 3 Microdrill Frequency by Type and Raw Material (2004 SAIC)

Level	Material Type: Island	Material Type: Monterey	Material Type: Franciscan	Material Type: Quartzite	Period	Typology: T-un	Typology: Trap	Typology: TDR
0-20	5	4	-	-	-	9	-	-
20-40	4	-	-	-	-	3	1	-
40-60	4	-	-	-	-	2	2	-
60-80	3	-	-	-	Middle	1	2	-

Raw material diversity also increases in shallower levels, however there is greater overall variation in raw materials used in the production of microblades relative to microdrills. Nevertheless, this increase in raw material diversity is presumably in response to east end villagers restricting access to the island chert quarries sometime within the Transitional period (Arnold, 1987, 2001).

TABLE 28.
Microlithic Core Frequency by Type and Material (2004 SAIC Collection)

Level	Unit 1						Unit 3					
	Repeat core			Edge retouched core			Repeat core			Edge retouched core		
	Island	Franciscan	NC	Island	Franciscan	NC	Island	Franciscan	NC	Island	Franciscan	NC
0-20	-	-	-	1	-	-	-	-	1	-	-	-
20-40	-	-	-	-	-	-	-	-	-	-	-	-
40-60	-	1	-	-	-	-	-	-	-	-	-	-
60-80	-	-	-	-	-	-	-	-	-	-	-	-

Table 28 summarizes the material type and morphology of the three-microlithic cores that were identified within the 2004 assemblage. All three cores were manufactured from different raw materials, with two of the three classified as repeat cores. Interestingly, the island chert microlithic core exhibits edge-retouch synonymous with the production of triangular-dorsally retouched microblades (Arnold, 1987, 2001). One edge is intact while the other contains a single blade scar indicative of the removal of a TDR-type microblade. Although only a single edge-retouched microlithic core is observed across both the 2004 and 2013 assemblages, its presence potentially signifies very small-scale production of TDR type microblades occurred sometime during the later occupation of Rincon Point.

Microblade and microdrill densities within the 2004 assemblage are much higher than those observed in the 2013 assemblage. The most likely explanation for this variation involves unit chronology and placement, with the latter presented in figure 7. The eight units excavated in 2013 can be divided into two groups based on their position within the project area. Units 6, 8, 14, and 17 form one group, as their location is considered to be within the northwestern portion of VEN-62. Microblades and microdrills from these four units account for a small percentage of the 2013 assemblage. This is expected given radiocarbon samples from units 6, 8, 14 indicate artifact deposition occurred between AD 200-900, while samples from unit 17 indicate artifact deposition occurred after AD 1600. AD 200-900 reflects a span of time preceding intensive microblade production and use within the Chumash region (Arnold, 1987). The three units excavated by SAIC are located in the northeastern corner of Rincon Point, and in close proximity to Dudek units 10,11,12,15. Specimens recovered from the latter four units account for 55% and 89% of the total microblade and microdrill assemblage recovered in 2013, respectively. Radiocarbon dates from all seven units (3 SAIC and 4 Dudek) suggest occupation of the northeastern most area of Rincon Point occurred primarily between the late-Middle period and end of the Late period (AD 900-1500).

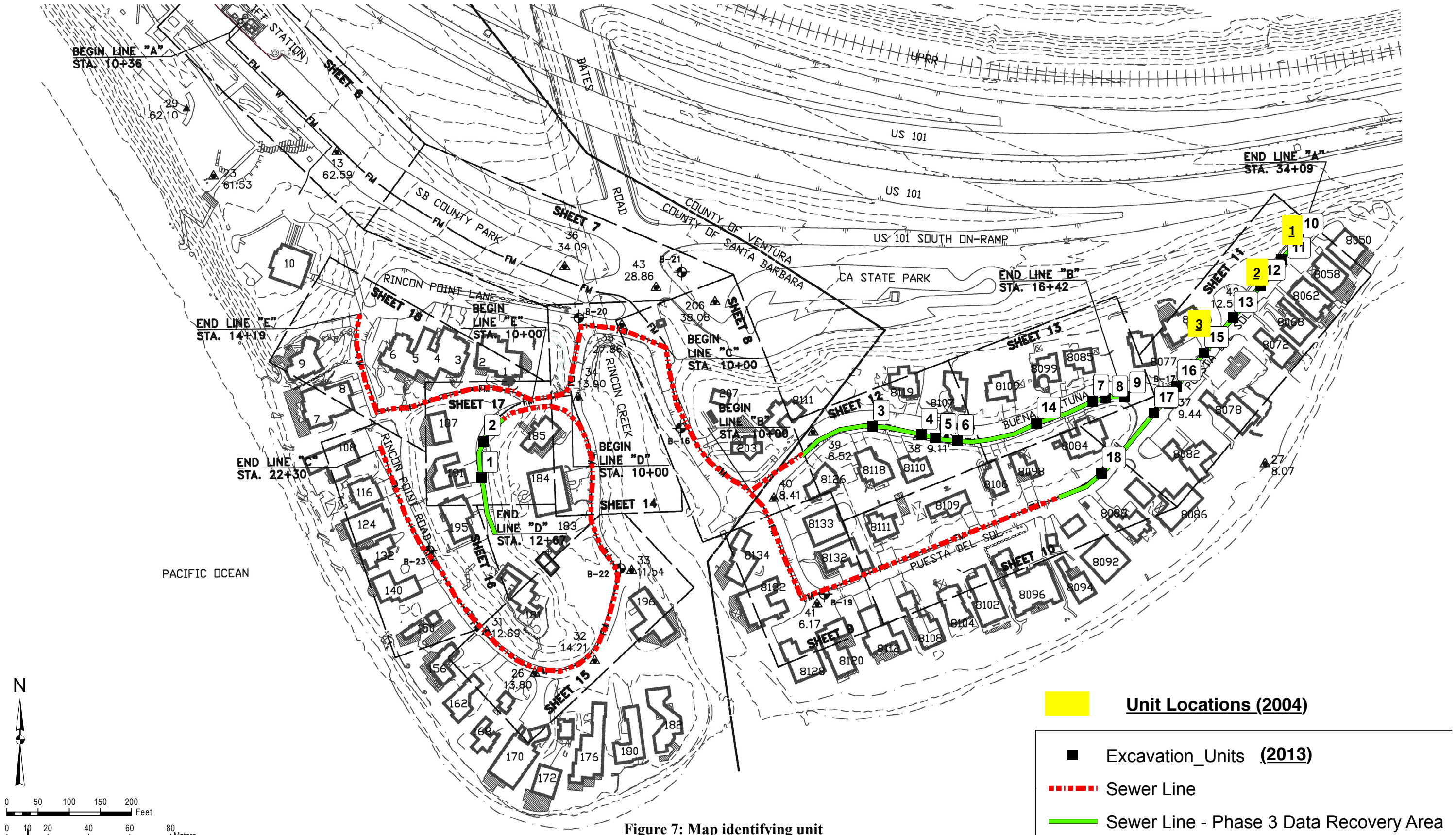

Figure 7: Map identifying unit location at VEN-62 (Victorino, 2004 and in progress).

Over this span of time, the Island Chumash dramatically intensified bead production to meet the demand of mainland consumers, which required increased production of microblades and microdrills to accommodate the needs of bead makers (Arnold, 1987, 2001). Therefore it is reasonable to assume the elevated microblade densities observed in the northeastern units is reflective of increased microlith production during this period.

Regional Variation in Microlithic Tool Technology

When viewed within a regional context, the microlithic artifacts recovered from Rincon Point resemble, at least morphologically, those observed in sites within the Ventureño and Barbareño Chumash regions. As at sites such as Pitas Point, *S'axpilil*, and Dos Pueblos Canyon, triangular-undiagnostic and trapezoidal microblade/drill types account for the majority of microlithic artifacts observed at VEN-62 (Arnold, 1987; McKusick et al., 1961; Munns 2004). However, unlike other site assemblages discussed above, some microblades at Rincon Point show signs of retouching along the entirety of one or both lateral edges, which could suggest extensive modification was needed prior to their use as microdrills, or they functioned in a different capacity all together. It is difficult to determine if this pattern is unique to specimens at Rincon, as specific microblade characteristics have not been consistently recorded within the Chumash region.

Rincon microlithic cores consist primarily of Arnold's (1987) "repeat" type, most commonly found in terminal-Middle and Transitional period sites located on the Channel Islands. While microblades and microdrills produced from repeat cores are found throughout the Barbareño and Ventureño regions, the cores from which they are struck appear only in the assemblage from *S'axpilil*, and they are loosely associated with the proto-Historic occupation of the site (Arnold, 1987; Munns, 2004). Although core types are similar between *S'axpilil* and

Rincon Point, the overall number recovered from the former (300+) is much greater than at the latter (21), suggesting greater overall production took place at the *S'axpilil*. Poor controls from McKusick's excavation of *S'axpilil* makes it very difficult to associate all microlithic artifacts with the correct volume of excavated soil or chronological phase, however a portion of the assemblage was reanalyzed during 2004 (Munns, 2004).

TABLE 29.
Microdrill and Microlithic Core Density (n/cubic meters) from AU1 at CA-SBA-60

		Microdrills		*Microlithic Cores*	
Period	Ex. Vol (m^3)	Qty. (#)	Density	Qty. (#)	Density
Proto/hist	15.8	21	1.33	154	9.75

Note: Density calculations based on data presented by Munns (2004:12.4)

Table 29 was constructed using the data presented in the reanalysis of McKusick's analytic unit 1 (AU1). The density of microlithic cores within the proto-Historic component of SBA-60 is nearly five times the mean density of the entire multi-component 2004 and 2013 assemblages from VEN-62. In order to further evaluate production intensity at VEN-62, the number of microlithic cores from Johnson's (1988a) excavation would have to be synthesized with the current total.

Although morphological similarities exist between microlithic artifacts from VEN-62 and other Barbareño / Ventureño sites, there appears to be inter-site variation with regards to material type. According to Arnold (1987), all microdrills recovered from Dos Pueblos and Pitas Point were manufactured from island chert, whereas those found in site assemblages from *S'axpilil* were manufactured from local variants of Monterey chert and cores associated with *Shisholop* are largely Monterey chert as well (Greenwood and Browne, 1969; Munns, 2004; McKusick et al., 1961). Island chert was the primary raw material used by microblade specialists on the Channel Islands, although Tuqan and Cico cherts from San Miguel Island were used to a lesser extent (Erlandson, 1997, 2008). While it is clear microlithic tools were manufactured from various types of stone regionally, most individual site assemblages appear to stick with a single raw material that could be acquired locally. Table 30 illustrates the variation in raw material used to manufacture microlithic tools at Rincon Point, suggesting a potential deviation from this pattern of in-site homogeneity. One explanation for greater raw material variation could be the location of Rincon Point within the extensive cross-channel exchange network. If Rincon functioned as a major center of exchange, greater material diversity would be expected given the amount of goods that would have flowed through the village. Conversely, the observed variation could reflect a strategy of obtaining multiple types of localized stone, as Rincon Point is not in close proximity to any substantial source of high quality tool stone.

The Late period Purismeño drills discussed by Santoro (1990) substantially differ from Rincon Point microlithics due to the former's status as flake drills; therefore a true comparison is not practical. This fact notwithstanding, some characteristics of the flake drill assemblage from SBA-1491 are important for this discussion. First, all 157 flake drills were recovered from a single site component dating to the Late period. This is interesting given how infrequent microblades/drills or flake drills of any type appear in the Late period component at Rincon or most mainland sites within the Barbareño/Ventureño regions. Unfortunately, data does not exist for Middle or Transitional components (if present) of SBA-1491, and therefore there is no way of knowing if the number of Late period drills reflects an increase or decrease from earlier periods. Second, with regards to raw materials, intra-site variation is non-existent as all of the drills appear to be manufactured from local Monterey chert. Finally, trapezoidal and triangular (without dorsal retouch) cross-sectioned flake drills are the most common types observed at SBA-1491, but do not account for the entire assemblage.

TABLE 30.

Raw Material Variation in Microblades, Microdrills, and Microlithic Cores from at CA-VEN-62

Microblades				*Microdrills*			*Microlithic Cores*			
Island Chert (%)	Quartzite (%)	Monterey Chert (%)	Franciscan Chert (%)	Island Chert (%)	Franciscan Chert (%)	Monterey Chert (%)	Island Chert (%)	Quartzite (%)	Franciscan Chert (%)	Monterey Chert (%)
61.5	21.7	8.4	8.4	78.4	5.4	16.2	12.5	50	25	12.5

About 10% of flake drills retain what Santoro (1990) describes as a parallelogram shaped cross-section, a variation yet to be identified south of the Purismeño region. Again, while flake drills are not typically considered part of the microlithic assemblage, the appearance of drills with a parallelogram cross-section in the central Chumash region could reflect minor technological permeation given the intermediary location of SBA-1491 relative to Obispeño (northern) and Ventureño/Barbareño (southern) groups.

When microblades and microdrills from central Chumashan regions are juxtaposed with those from Obispeño (northern) site assemblages, several key differences emerge. Microdrills observed from SLO-44/214 date to the Late period and are almost exclusively parallelogram in cross-section. Parallelogram microblades are produced through a unique process involving bi-polar percussion, after which a bit is fashioned at one end via bi-polar retouch (Blake, 2010; Price et al., 2009). The primary source of raw material used in their production is what some authors refer to as “Chorro Valley” chert, the location of which lies in the Chorro Valley area of San Luis Obispo (Blake, 2010; Price et al., 2009). Focusing on a single raw material type is not unique to SLO-44 and SLO-214, rather the source of it is. A widely-held belief by archaeologists working in the Channel Islands region is most, if not all, Monterey chert was collected in cobble form along the coast or sourced from the large quarries located on Vandenberg Air Force Base, in the Purismeño region (Arnold, 1987, 2001; Erlandson et al., 2008; Johnson, 2000). While this assumption is likely true in most cases, the presence of what appears to be a regionally specific microdrill type contemporary with Island-based bead and microlithic production monopolies is a radical departure from patterns observed at Rincon Point and other central Chumash sites. Possible reasons for why the Obispeño Chumash (and to some extent the Purismeño) loosely participated in bead and microblade production during the Late period are discussed below.

Recall the Obispeño language is projected to have diverged from the central branch roughly 2000 years earlier than the central branch divergence into the Purismeño, Barbareño, Ineseño, and Ventureño languages (Johnson, 2000). The former is posited to have occurred roughly 3000 years B.P., after which it is possible the Obispeño remained relatively independent of other Chumash groups over the two-thousand-year period leading up to the internal divergence of the central branch. Frequencies of radiocarbon dates suggest the latter was accompanied by population expansion within the region (Glassow, 1996; Johnson 2000). Assuming these estimations are true, the later linguistic divergence appears to be somewhat contemporaneous with the emergence of trapezoidal and triangular-undiagnostic microdrills in sites on Santa Cruz Island and along the mainland coast (Arnold, 1987, 1990; Kennett and Kennett, 2000).

Early microblade technology could have easily been transmitted among Barbareño, Ventureño, and Purismeño speaking sub-groups as their populations expanded during the late-Middle period. This may explain why microlithic artifacts are commonly observed below Point Conception, in coastal sites containing late-Middle or Transitional period components. Most of these sites contain low frequencies of microlithic artifacts relative to contemporary sites on Santa Cruz Island (Arnold, 1987, 2001). The mainland Chumash were clearly capable of producing microblades from local materials, yet it appears Chumash individuals at Rincon Point continued to acquire the higher quality island chert specimens up through the Transitional period and likely into the Late period (Arnold, 2001; Nigra and Arnold, 2013). Bead and microlith production at other villages in the Ventureño and Barbareño regions is subsequently abandoned by the start of the Late period, as the exponentially high numbers of TDR microblades and callus beads produced by Island specialists could not be matched (Arnold, 1987, 1990, 2001). The continued

Late period production and use of microdrills by the Obispeño Chumash is likely tied to their inability to directly acquire trade items via coastal trade routes, as tomols did not travel north of Point Conception.

The plank tomol allowed for more efficient cross-channel travel and offered a much greater cargo capacity than previous water going vessels, making it essential to the intensification of exchange during the Transitional period. Through manipulation of this watercraft, owners could regulate the transport of large amounts of trade goods, information, and cross-channel social contact (Arnold, 1992, 1995, 2001). After departing the Channel Islands, the first stop on the tomol trade route was the village at Point Mugu military base. From there the tomol would traverse up the coastline as far as Point Conception; poor ocean conditions made traveling further up the coast impractical (Arnold, 2001). This northern boundary likely relegated trade with Obispeño Chumash groups to strictly land based routes, thus diminishing the amount of goods available.

Assuming some degree of systematic exchange took place at sites along the coast, tomols would presumably be bereft of most of their cargo by the time they reached SBA-1491 and other villages near Point Conception. While land based trade certainly occurred throughout the Chumash region, the high capacity tomol was still the most efficient means of transporting goods. This likely placed some groups within the Purismeño and Obispeño regions at a disadvantage in the acquisition of goods and information. This would in theory have created, or rather continued a need for drilling implements throughout the Late period in order to manufacture various types of beads and ornaments for individual consumption. Purismeño flake drills with a parallelogram cross-section could reflect a small degree of technological permeation resulting from trade relations with the Obispeño Chumash. If the Obispeño were indeed politically decentralized as Jones (2007) has suggested, access to the Chorro Valley chert source may not have been restricted in the same way as the east end quarries on Santa Cruz during the Late period, providing ample raw material for use in small-scale production of microlithic tools at both SLO-44 and SLO-214.

Conversely, this pattern of microlithic tool distribution along the mainland coast could be linked to marriage ties identified by Johnson (1982). Mission records suggest marriages took place between parallel villages on opposite sides of the Santa Barbara Channel, with strong kin ties existing between villages on eastern Santa Cruz Island and those located along the adjacent mainland coast (Johnson, 1982: Table 15). Such kin ties could have mandated island-mainland trade routes follow a more direct path across the channel rather than systematically moving up the coastline after landing at Point Mugu. If tomols crossed the channel directly, trade goods from villages on eastern Santa Cruz would have been almost exclusively available to individuals living at Rincon or other villages at or below *Syuxtun* in Santa Barbara.

Conclusion

Despite small quantities of Late period microblades, tool distribution patterns observed at Rincon Point fit within the model set forth by Arnold (1993, 2001). Small-scale production and use of microlithic tools appears to have taken place throughout each chronological phase of occupation, although the apparent variation in intensity could be a function of unequal excavated volumes. As expected, the majority of microblades and microdrills are trapezoidal or triangular (no retouch) in cross-section, with their highest frequencies observed in Middle and Transitional period site components. High frequencies of both microblades and microdrills during the Transitional period may reflect an attempt to accommodate the increasing demand for shell bead currency within the region. Two microblades clearly have a triangular cross-section and visible dorsal retouch scarring, although the extreme degree of curvature of one specimen suggests it would not have made an efficient drilling implement. Limited onsite production of TDR microdrills at some point during the occupation of VEN-62 is supported by the presence of a single edge-retouched microblade core. Low intensity, non-standardized Late period production of quartzite microblades and microlithic cores occurred at Rincon Point, however the absence of microdrills suggests they did not function as perforation implements.

Similar to Rincon, early microlithic technology is observed in Middle period site components all along the Santa Barbara and Ventura coastlines below Point Conception, subsequently vanishing by the end of the Transitional/beginning of the Late period. This pattern likely reflects a shift in production foci by mainland Chumash villages, influenced by the Late period production monopolies on Santa Cruz Island (Arnold, 2001).

The continuance of flake drill and microdrill technology in sites within the Purismeño and Obispeño sub-regions is surprising given their participation within the regional exchange network. If tomol travel was truly limited to the waters below Point Conception, the presence of what appears to be the production of a regionally specific microdrill by the Obispeño Chumash may indeed reflect marginalized access to shell beads and other trade items, or is perhaps indicative of an independent exchange system. Even if existing data are (Blake, 2010; Price et al., 2009) supported the exclusive use of parallelogram microdrills as shell perforation tools, it is highly unlikely they even came close to rivaling the production output by specialists on the Channel Islands (Arnold and Munns, 1994).

Future Research Strategies

In order to better understand the distribution of microlithic tools in the greater Chumash region, more data are needed from mainland collections with rigorous documentation of sample proveniences and tighter chronological controls. Reanalyzing the countless number of existing collections would no doubt reveal a more substantial regional presence of microblades and microdrills, as many of these artifacts are not identified during initial sorting. Archaeologists must also make a conscious effort to understand the specifics used to define flake drill and microlith types associated with the Channel Islands production industry.

To reiterate, almost all excavation of mainland Chumash sites are completed by cultural resource management companies operating on a strict budget. While not ideal, this type of excavation is necessary for the preservation of Chumash archaeological sites that would otherwise be destroyed during commercial development. If studied in more detail, resulting collections can still provide insights into the prehistoric lifeways of the Chumash people. Unfortunately, most collections are just shelved in curatorial facilities already bereft of storage space. Although traditionally avoided, increased discourse between academic and professional archaeologists will provide an opportunity to share perspectives and ideas, setting the groundwork for methodological innovations capable of generating data useful to both parties.

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