



# Asphaltum (bitumen) production in everyday life on the California Channel Islands



Kaitlin M. Brown

Department of Anthropology, University of California, Santa Barbara 552, University Rd., Santa Barbara, CA 93106, United States

## ARTICLE INFO

### Article history:

Received 1 June 2015

Revision received 12 November 2015

Available online 15 December 2015

### Keywords:

Asphaltum

Bitumen

Sequential model

*Chaîne opératoire*

Production system

GC/MS

Spatial distributions

Social relations of production

California Channel Islands

## ABSTRACT

Sequential models can be used to connect raw material culture to broader social, economic, and religious processes. The present study explores an asphaltum (bitumen) production sequence at Tule Creek Village, CA-SNI-25, a large Late Holocene site on San Nicolas Island, California. Three conclusions have been drawn from this investigation: (1) island populations used asphaltum for a variety of activities that supported everyday needs, (2) male and female tasks were spatially unsegregated, and (3) everyday asphaltum use appears in the same space as ceremonial activities, suggesting spiritual and secular realms were intricately linked. The asphaltum production sequence model built and applied here can be used to address a variety of broad anthropological questions and is applicable in regions that contain naturally occurring seeps across the globe.

© 2015 Elsevier Inc. All rights reserved.

## 1. Introduction

Material residues left behind by peoples of the past are the primary means by which archaeologists access information on social and economic organization in antiquity. The ways people made and interacted with things offers insight into past technologies, techniques of production, and broader socio-political processes. Each technological act holds valuable clues to the social production, reproduction, and organization of daily life (Appadurai, 1986; Dobres and Hoffman, 1994; Heidegger, 1977; Ingold, 1993; Lechtman, 1977; Schlanger, 1990). Following Bourdieu (1977:80), insignificant and taken-for-granted practices have more meaning to us than we are aware, forming an “orchestration of habitus” that creates our understanding of how the world works. It is through reconstructing the sequence of craft production that theoretical implications concerning unseen structures governing everyday lives can be better understood (Lemonnier, 1986, 1992, 2012).

Middle range interpretive methodologies such as the *chaîne opératoire* (Leroi-Gourhan, 1964) provide a direct link between empirical observations of material culture and the social relations of production (Dobres and Robb, 2005). The *chaîne opératoire* traces the production sequence—beginning with the acquisition of the raw material—following its transformation (i.e. pyrotechnology),

application, use, and final disposal. The step-by-step reconstruction of events is not only helpful in understanding human relationships with their physical environment, but yields evidence regarding cognitive aspects of technology as well. The *chaîne opératoire* along with other theories arising from the French structural school access emic dimensions of daily life by identifying the internal logic of production techniques (Bleed, 2001:105–108; Lemonnier, 1992; Leroi-Gourhan, 1964; Mauss, 1973). Technical gestures expressed over the course of many generations form a habitual and learned course of social practice, which on the one hand has aided in analyzing material practice, embodiment, agency, and identity (Dobres and Hoffman, 1994; Dobres and Robb, 2005; Dietler and Herbich, 1998; Peelo, 2011; Sinclair, 2000), and on the other hand has allowed archaeologists to interpret socio-economic organization through fine-grained intrasite analyses (Dufraisse, 2011; Van Peer et al., 2008; Wilson, 2011).

The present study does not focus on the production sequence of any one particular craft item, but instead is concerned with the organization of an asphaltum (bitumen) industry in which many crafts were produced. Because asphaltum was applied to a variety of primary and secondary technologies (i.e. watercraft construction, everyday adhesive, waterproofing agent, and as a masonry element) archaeologists around the world have been able to address a broad array of theoretical issues. In the Old World, asphaltum sourcing has helped determine changing trade routes that coincided with major cultural and political shifts (Connan,

E-mail address: [kbrown@umail.ucsb.edu](mailto:kbrown@umail.ucsb.edu)

1999, 2012; Connan and Deschesne, 1992; Connan and Van de Velde, 2010; Schwartz and Hollander, 2008; Schwartz and Stein, 2000). Geochemical analysis has been especially advantageous for the identification of bituminous mixtures utilized in the construction of reed and wooden boats, embalming mummies, as well as smaller scale applications such as making beads for necklaces and gluing flint to wooden handles (Connan, 1999, 2012; Connan et al., 2005). Asphaltum studies taking place in the New World—especially in the Olmec region of Mesoamerica—have focused on examining regional systems of exchange, ancient building techniques, and even assessing the presence of specialized processing activity areas (Kita et al., 2014; Wendt, 2009; Wendt and Cyphers, 2008; Wendt and Lu, 2006).

Within California's Channel Islands and mainland coast, asphaltum use and exchange has been brought to the forefront in debates regarding emergent socio-political complexity (Gill and Erlandson, 2014; Fauvelle, 2013, 2014). Fauvelle (2011, 2012, 2013, 2014) has argued that "high grade" asphaltum, only available from mainland terrestrial seeps, was essential to island populations for the construction and maintenance of the Chumash sea-going plank canoe, the *tomol*. Fauvelle (2012:150) asserts that island Chumash did not have direct access to mainland seeps for *tomol* construction, causing a "lopsided trade network with significant implications for regional sociopolitical development." Gill and Erlandson (2014), however, reject the notion that asphaltum was a major commodity in mainland-island trade systems; rather, they suggest the relative abundance of asphaltum is a part of the islands' natural resources, as large quantities of tarballs wash up on the shore from submarine

seeps. Indeed, this natural substance was utilized by the Chumash and their southern neighbors, the Gabrieliño, in numerous technologies, including skirt weights, baskets, fishhooks, knives, pendants, and whistles (Hudson and Blackburn, 1982, 1983, 1985, 1986, 1987). These artifacts are found in archaeological contexts throughout the Santa Barbara Channel area, more specifically on the Northern and Southern Channel Islands, around the modern-day Los Angeles region, and also in the southern San Joaquin Valley (Erlandson et al., 2008; Hodgson, 2004; McCawley, 1996; Salwen, 2011; Reinman and Townsend, 1960). Across this macroregion, frequently occurring artifact types illustrate that multiple groups utilized asphaltum in similar ways across the landscape. Microscale analysis, at the level of the village or household, also features diverse ways in which the substance was utilized, detailing the variety of activities that occurred within a village space.

Asphaltum is a well-preserved artifact class and leaves behind a distinctive archaeological signature, allowing for its typological classification and placement in a sequence of production. This study utilizes an asphaltum artifact typology, in conjunction with gas chromatography/mass spectrometry (GC/MS) and spatial distributions, to elucidate the social and economic organization of people living on the California Channel Islands, more specifically on San Nicolas Island. San Nicolas Island offers an ideal opportunity to study asphaltum use relative to the other Channel Islands because it is the farthest and most remote of the eight islands off the California coast (Fig. 1). The island is situated approximately 122 km (75.8 mi) southwest of Los Angeles and 110 km (68.4 mi) from the nearest point on the mainland. It is one of three other

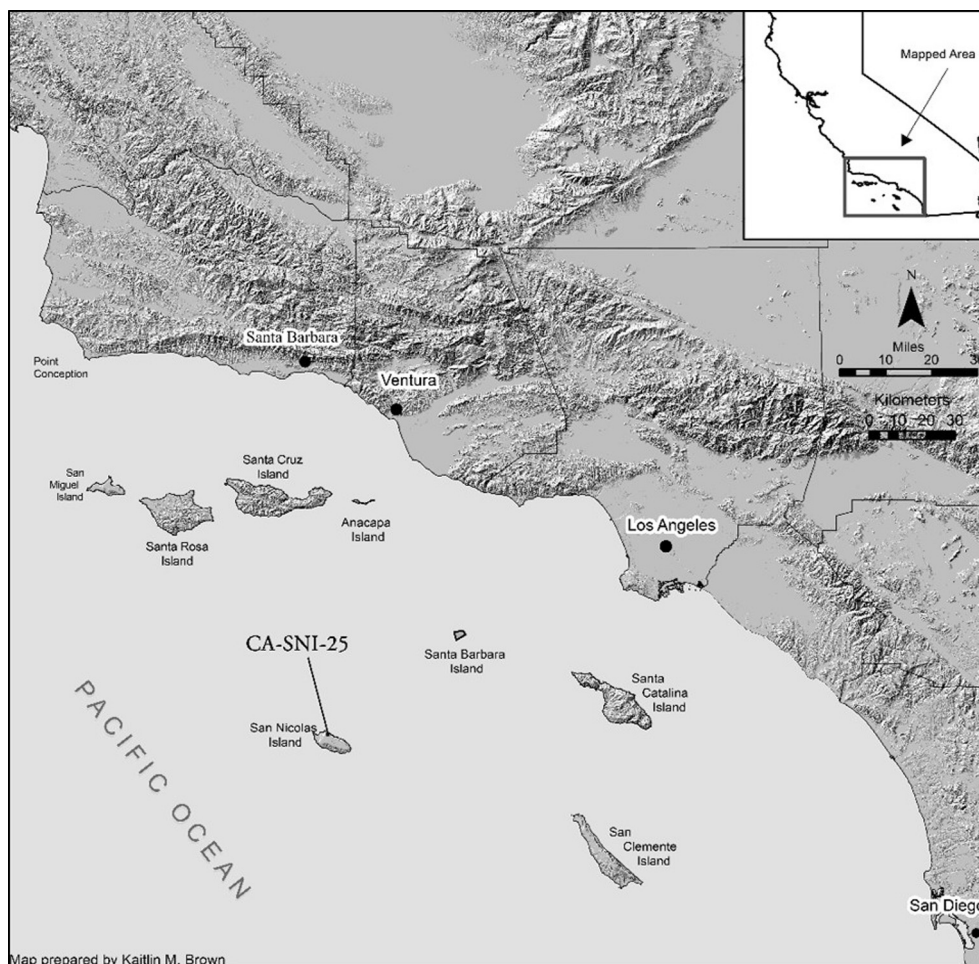


Fig. 1. Southern California Bight showing the location of CA-SNI-25.

Download English Version:

<https://daneshyari.com/en/article/1034874>

Download Persian Version:

<https://daneshyari.com/article/1034874>

[Daneshyari.com](https://daneshyari.com)