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# Uneven lithic landscapes: Raw material procurement and economic organization among the Late/Terminal Classic Maya in Western Belize

Rachel A. Horowitz

Department of Anthropology, Tulane University, New Orleans, LA 70118, United States

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## ABSTRACT

Examinations of landscape-level resources, particularly lithic raw material sources, are generally associated with hunter-gatherer and mobile societies; the distribution and source locations of such materials are used as proxies for mobility and territorial ranges. The variable locations of lithic raw material sources also affect sedentary societies, influencing the economic role of these materials and the administration of the raw material sources. This paper addresses the effect of uneven resource distributions across the landscape in sedentary societies, specifically the Late to Terminal Classic Maya (670–890 CE), through a case study of chert resources from the Mopan Valley, Belize. This paper discusses the role of the localness and commonality of lithic raw material sources in influencing individuals' access to source areas and involvement in lithic production, illustrating that not only the local or non-local nature of the source area, but also the frequency of source areas within a region, influence the economic organization of lithic resource extraction and production.

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## 1. Introduction

Examinations of landscape-level resources, particularly lithic raw material sources, are generally associated with hunter-gatherer and mobile societies; the distribution and source locations of such materials are used as proxies for mobility and territorial ranges (i.e. Binford, 1980; Jones et al., 2003, 2012). The variable locations of lithic raw material sources also affect sedentary societies, influencing the economic role of these materials and access to raw material sources. Discussions of lithic sourcing in sedentary societies frequently address long distance trade, such as the trade of obsidian in Mesoamerica (see Gaxiola and Clark, 1989; Hester, 1978; Hirth, 2003, 2006; Hirth and Andrews, 2002; Levine and Carballo, 2014). However, these studies focus on the importance of long distance trade for economic and political power rather than the impact of locally available materials on resource acquisition and production.

In this paper I address the effect of uneven resource distributions across the landscape in sedentary societies, specifically the Late to Terminal Classic Maya (670–890 CE), through a case study of chert raw material access in the Mopan Valley, Belize. In particular, I examine the role of the localness and abundance of lithic raw material sources on differential access to source areas and lithic production, focused on the local availability of goods, illustrating that not only the local availability of a resource, but also the abundance of a raw material within a region,

influence the economic organization of resource extraction and production, particularly the impact of elite and non-elite individuals.

## 2. Region of study

Here, I use the Late to Terminal Classic Maya of western Belize, particularly the Mopan Valley, as a case study for examining the impact of resource distribution on lithic economies (Fig. 1). The role of elite and non-elite individuals in different facets of the economy is a highly debated topic for the Late to Terminal Classic. Theories range from the independence of small scale communities (Golitzko and Feinman, 2015; Dowling, 2012; Sheets, 2000; Sheets et al., 2015; Shaw, 2012), to discussions of top-down elite centered economies (Aoyama, 1996; McKillop, 2002; Pohl, 1994), to everything in between. A recent trend in the study of ancient Maya economies is the examination of variability in economic interactions (see Masson and Freidel, 2012); this paper takes a landscape approach to examine what the role of environmental variability, and in particular resource variability, is on ancient Maya economic practices and how resource distributions can help us explain the variation present within ancient Maya economies.

The Mopan Valley is an excellent region within which to study such issues due to the prevalence of previous research in the area (see Chase and Garber, 2004; Houk, 2015; Willey, 2004 for overviews of research). Previous investigations suggest that a variety of exchange mechanisms were employed in the region including marketplace exchange, the non-market distribution of certain goods, non-elite household production, and elite production, both within elite households and in other spaces (see Yaeger, 2010 for an overview of production and economic

E-mail address: [rhorowit@tulane.edu](mailto:rhorowit@tulane.edu).

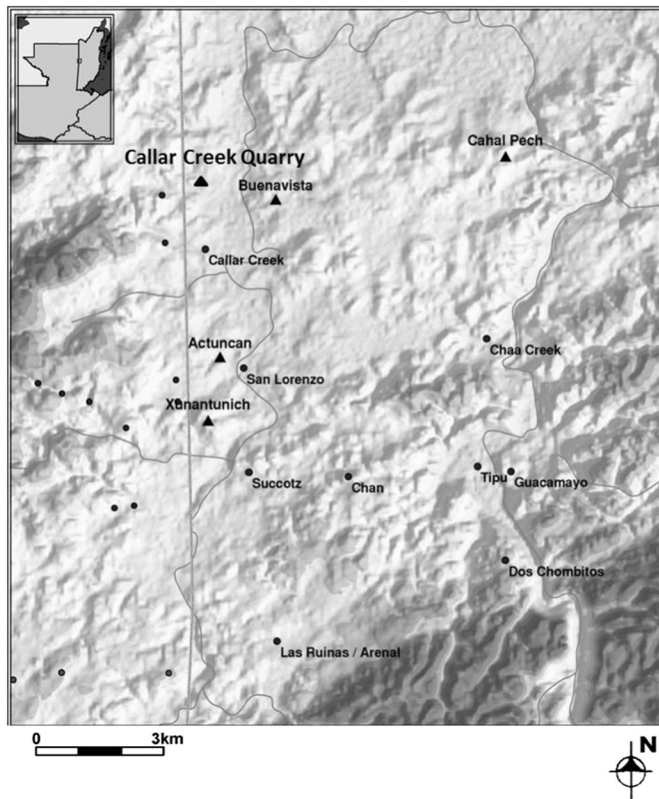


Fig. 1. Map showing locations of sites in the Mopan Valley discussed in the text.

activities in the Mopan Valley). Marketplaces are present at two major sites in the valley – Xunantunich (Keller, 2006) and Buenavista del Cayo (hereafter Buenavista) (Cap, 2015a, 2015b) – both of which were identified as such through architectural patterns, microartifact analysis, and soil chemistry. The Buenavista marketplace was the location of final stage lithic production including finishing and retouch of chert and limestone bifaces and obsidian blade production (Cap, 2015a, 2015b; Heindel, 2010).

In addition to the evidence for marketplace exchange, research indicates the concurrent operation of other exchange mechanism such as gift giving and redistribution. Items which were probably exchanged through gifting include certain types of polychrome ceramics (see Ball and Tashchek, 2004; Reents-Budet, 2001; Reents-Budet et al., 1994, 2000; Yaeger, 2010). Polychromes, often produced by elites, were distributed between elites during feasting and other ceremonies as a way of creating and maintaining elite social networks (see Neff, 2010; Reents-Budet, 1994, 2001; Yaeger, 2010). The items distributed through elite exchange networks seem to have been produced in elite sponsored workshops or by elites themselves, as seen from the polychrome production area at Buenavista (Reents-Budet, 2001; Reents-Budet et al., 1994, 2000; Yaeger, 2010).

Large numbers of quotidian items were also produced at non-elite households including chert bifaces and drills, manos and metates, and agricultural items (Chapman et al., 2015; Hearth, 2012; Kestle, 2012; Robin, 2013; VandenBosch, 1999; VandenBosch et al., 2010; see also Ford and Olson, 1989). The majority of the evidence for non-elite household production in the Mopan Valley is for the production of lithic materials, particularly tools such as bifaces. Households at Chan (Hearth, 2012), Chaa Creek (Connell, 2000), and Succotz (VandenBosch, 1999) produced chert bifaces in amounts which indicate exchange within the community. In each case, only one household in each community produced the bifaces, indicating they exchanged them with other households although informal lithic production occurred at most households within the Mopan Valley.

Investigations in the Mopan Valley indicate that market exchange, redistribution, and gift giving were all important parts of the economies of the Late Classic Maya. The variability in which tools operated through which type of exchange can be addressed by examining the variation in access to local versus non-local raw materials and the ease of accessibility of these materials for non-elite individuals.

### 3. Resource distribution in the Mopan Valley

Throughout the Maya area chert was one of the most commonly used lithic materials for flaked stone tools. Generally, chert was used for utilitarian tool production, although some prestige objects were also produced with chert. Other commonly employed lithic raw materials include obsidian and limestone. Obsidian, found only in highland areas of Guatemala and Central Mexico, was used for the production of prismatic blades, prestige objects, and high quality projectile points. Limestone, found ubiquitously across the Maya lowlands, was used in situations of lithic raw material scarcity and when the attributes of the generally poorer-quality limestone proved advantageous, such as for the production of heavy duty chopping/farming tools in chert-bearing zones (Horowitz et al., n.d.). Limestone was available in the Mopan Valley although the exact location of the source of knappable limestone is not currently known.

The Mopan Valley contains a plethora of chert resources. The bedrock in the Mopan Valley consists of chert bearing limestones from the Paleogene (Cornec, 2004); the nature of the bedrock formation resulted in pockets of chert bearing areas throughout the region. The chert also varies greatly in quality, with high and low quality cherts co-occurring. Chert is found in primary deposits, known sources of which are Callar Creek Quarry (Horowitz, 2017), Succotz (VandenBosch, 1999; VandenBosch et al., 2010), and in the bedrock under the site core of Xunantunich, in secondary deposits from fluvial and alluvial processes, such as those deposited from previous flooding events at San Lorenzo (Yaeger, 2000), and in and along the river bed. All of these chert resources are still extant; that is they were not completely exploited by previous occupants of the region. Chert cobbles are still present and visible at many of the quarries and a walk along the river bed illustrates the plentiful nature of redeposited cobbles (Fig. 2).

The chert in the Mopan Valley varies in quality for knapping. Many of the sources have intrasource variability, in some cases with fine and



Fig. 2. Visible chert cobble showing extant chert resources at Callar Creek Quarry.

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