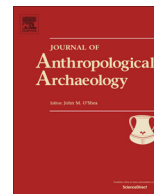


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Economic growth in Mesoamerica: Obsidian consumption in the coastal lowlands



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ABSTRACT

Economic growth is rarely examined for ancient states and empires despite its prominence as a topic in modern economies. The concept is debated, and many measures of growth are inaccessible for most of the ancient world, such as gross domestic product (GDP). Scholars generally have been pessimistic about ancient economic growth, but expectations derived from dramatic growth in modern economies can lead to overlooking important evidence about economic change in the past. The measure of economic growth that we adopt focuses on the economic well-being of ordinary households. We evaluate one domain of evidence: imported obsidian implement consumption in the coastal lowlands of Mesoamerica. We situate the obsidian study against a backdrop of ideas concerning economic growth in ancient societies because such topics have received only modest attention for Mesoamerica. For the major Mesoamerican ceramic periods, we (1) display the already-known early technological shift in predominant techniques of obsidian implement production—from percussion and bipolar flakes to prismatic pressure blades—that led to more efficient tool production for long-distance trade, (2) note other lithic technological improvements, and (3) evaluate increased obsidian access with a growing market system in the last centuries of the prehispanic record.

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1. Introduction

We contribute to the study of economic growth in ancient civilizations by evaluating one category of evidence in Mesoamerica, the household consumption of obsidian implements in the coastal lowlands. After introducing the study and the concept of economic growth, we briefly review proposals about Mesoamerican economic growth and how archaeologists can examine it, including our approach involving household consumption in the general population. We then mention contrastive ideas concerning obsidian in Mesoamerica, followed by an introduction to our sample of assemblages, the variables used, and our expectations. We close with results and conclusions.

Obsidian is volcanic glass found in varied locations in the Mexican and Guatemalan highlands. In the coastal lowlands, obsidian is not present geologically, and other cryptocrystalline raw materials also are largely absent, such as chert. Both the Gulf and Pacific coastal lowlands primarily relied on long-distance trade for obsidian. Further, these regions were moderately distant consumers and not the locations of powerful centers that at times controlled one or more highland obsidian sources. The coastal lowlands are defined here as the Gulf and Pacific lowlands below 500 m elevation (*tierra caliente* is below 1000 m); the settlements providing information are within 300 masl (Fig. 1), the highest being in the Tuxtla Mountains, which are low volcanics interrupting the Gulf coast. We exclude the Yucatan peninsula, which has a limestone substrate with chert deposits.

The empirical data were assembled and studied in a joint endeavor (Table 1). Many fields of modern research, such as genetics, accumulate large shared databases. Despite voluminous archaeological data, often they are used primarily at the site or regional level. Our cooperation to compile and analyze data, mostly unpublished, is an attempt to realize some of the archaeological potential of cooperative datasets. Certain research questions cannot be addressed piecemeal using individual sites or even regions, but instead require a larger-scale effort. Published sources may not provide the requisite basic data because archaeology does not enjoy agreement about standards for reporting. The data we employ are so basic that we hope they will be among those eventually enshrined as part of a baseline in dissemination.

We consider ancient economic growth to be economic change benefitting populations in general over a long time span through increasing per capita productivity. Two major rationales underscore the importance of considering economic growth in Mesoamerica or other areas of ancient civilization. Economic changes involving growth are a basis for comparisons among ancient societies to detect and understand common and exceptional situations, and economic growth may represent long-lived change in the archaeological record—for example, the “Neolithic Revolution,” the shift to food-producing economies, as described by Childe (1951).

We accompany our obsidian consumption study with a brief review of issues concerning economic growth for archaeology. Despite the rationales for considering economic growth in the ancient world, the prominence of agrarian pursuits and the frequent rise and demise of states that disrupted economic conditions make the topic an infrequent focus. Upper social strata often inhibited growth by fostering accumulations of land and labor as the basis for power, rather than investments in commerce or technology. In contrast, sustained increases in productivity are a main economic theoretical focus and empirical situation of modern times.

Not all modern economic models project continuing growth. Maintenance of growth poses theoretical problems (Hahn and Matthews, 1964; Kaldor and Mirrlees, 1961–1962; Sen, 1970; Solow, 1956; Swan, 1956; Todaro, 1997:88–91), especially if

non-renewable natural resources are considered (Erreygers, 2009; Malthus, 1997 [1798]; Snowdon, 2009). Technological change is an important contributor to recent economic growth (Sandilands, 2009), accounting for up to 87.5% in one analysis (Solow, 1957:418) and, possibly, combined with other factors, approximately half in another analysis (Blanchard and Fisher, 1989:4). Important externalities include not only technological innovations but also social capital development (such as education) (Snowdon, 2009:247) and urbanization, which improves communication and innovation as well as concentrating demand (Bettencourt, 2013; Kremer, 1993; Lee, 1988). Many recent innovations involve non-rival goods that are argued to both respond to and accommodate population growth and productivity increases, or create new demand (Jones and Romer, 2010). Social capital and technological innovation figure in arguments that economic growth can accelerate or even become indefinite without Malthusian checks. Fluctuations in growth, lags, and declines (“business cycles”) are another challenge for models (Blanchard and Fisher, 1989). Varied scales of analysis and time frames are crucial for evaluation of economic growth (Grief, 2005; Saller, 2005:229). In our obsidian analysis, we adopt a long time scale.

Ancient agrarian economies have profound contrasts with the modern situation in which industrial production, fossil fuels, and electronics play major roles, but growth is not thereby unimportant. Often archaeologists examine trajectories of economic change that do not necessarily imply economic growth. As one example, Sanders and Santley (1983) considered transport costs, urbanization, demography, and crafts to account for the economy of three major successive capitals in the central highlands of Mexico: Teotihuacan, Tula, and Tenochtitlan. They argued obsidian working was one key to economic power given foot transport on land and the nature of the obsidian craft. Although each of the three states and capitals had some unique characteristics, they are portrayed as repeating an economic pattern. Consideration of economic growth raises separate issues from those of economic change, such as portrayed in these three state cycles. In Mesoamerica, long-term changes in political economy have a history of important contributions (e.g., Sanders and Price, 1968; Blanton et al., 1993). These perspectives have been more concerned with factors to account for the rise and demise of states and empires than economic growth and its effects on the general population. Nevertheless, some proposals have implications for economic growth.

2. Mesoamerican proposals related to economic growth

Golitzko and Feinman (2015) examined sources of imported obsidian for a sample of sites over time using a network approach. They argued for intensified trade by the Late Postclassic period (AD 1350–1521) and chronicled a variety of fluctuations in network patterns through the Mesoamerican sequence. Important for our analysis, they observed that Mesoamerican obsidian distribution was never under highly centralized control by a single capital, as had been proposed for Teotihuacan (Sanders and Santley, 1983; Santley, 1983, 1984, 1989, 2007:163–174). Thus, we would not expect coastal lowland consumers to have had their access governed by a single distant authority, and we can reasonably examine consumption as related to wider characteristics of the Mesoamerican economy.

For other researchers proposing long-term schemata, the Late Postclassic period also was a time of heightened economic connections (Blanton et al., 2005:272–276). Blanton et al. (2005) see economic shifts during particular intervals in terms of the production and circulation of goods, especially “bulk luxuries.” Blanton et al. (2005:274) define bulk luxuries as “costly but widely distributed goods consumed across social sectors, occupying an economic

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