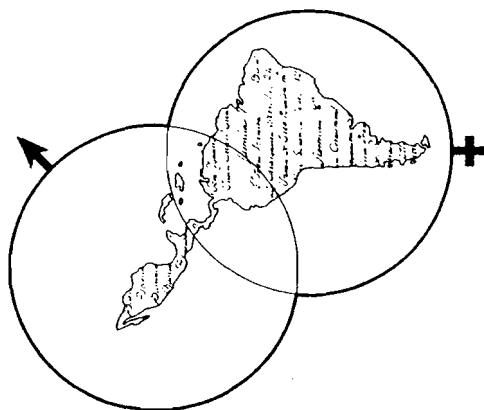


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## Hernán Cortés on the Size of Aztec Cities: Comment on Dobyns Michael E. Smith\*

Henry Dobyns (1993) in his reply to Henige (1992) cites urban population estimates made by Hernán Cortés to support the notion of very high population levels in Aztec central Mexico. Reluctant as I am to contribute to the debate between Henige and Dobyns, in which it seems clear that neither side will succeed in convincing the other, I do feel that some comments are in order on Dobyns' discussions of Aztec city size. That central Mexico at the time of Spanish contact had a large, dense population is beyond dispute; what is arguable is just how large was it? This is an important research issue, but the demographic statements of Cortés do not contribute to its resolution.

Cortés' population figures are erratic and frequently unreasonably high. For example, he reports 30,000 vecinos (household heads) at Texcoco (Cortés 1978:58), which would produce a population between 90,000 and 150,000, whereas the four estimates for the total population of the city made by modern archaeologists and ethnohistorians range from 18,500 to 30,000 persons (Hicks 1984:149; Hodge 1994; Parsons 1971:120; Sanders et al. 1979:154). Dobyns cites Cortés' statement of "doce o quince mil vecinos" (twelve or fifteen thousand household heads) for the population of Ixtapalapa, but this is an impossibly high number for the Aztec town. Blanton (1972:152-56) measured the site at 28 hectares, although he noted that some of the Aztec settlement was buried under the modern town. Hodge (1994:Table 2.1) agrees with Blanton's (1972:334) population estimate of 2,800 in 1519, but Sanders et al. (1979:197) advocate increasing this figure by 5,000 based upon colonial census data. Even if this increase is accepted, the resulting total urban population is far lower than Cortés' figure. Not all of Cortés' figures are wildly high; for example, he lists Otumba as a town with 3,000 or 4,000 vecinos (Cortés 1978:58-59), quite close to the archaeological estimate of 10,700 inhabitants (Charlton and Nichols 1990:2-3).

These inconsistencies in the population estimates of Hernán Cortés should not be surprising, since they were first pointed out over four centuries ago by Bernal Díaz del Castillo. Díaz del Castillo refrains from criticizing Cortés directly, but he expresses great scorn for the population figures of López de Gómara (1943), Cortés' secretary and biographer. Nearly all of López de Gómara's information was taken directly from the letters of Cortés. Among other critical remarks, Díaz del Castillo states that

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López de Gómara, "también dice de las ciudades y pueblos y poblaciones que eran tantos millares de casas no siendo la quinta parte..." (Díaz del Castillo 1983:267 [cáp. CXXIX]).

William Sanders (1992:108-112) has made the most systematic study of the population estimates of Cortés and other early Spanish observers in Central Mexico. Among Sanders' conclusions are that the various sources are not in agreement, that many were taken uncritically from Cortés' account, and that most of these first-hand "observations" contain unreasonably high population figures (see also Henige 1992:10-11). Unfortunately Díaz del Castillo reports very few actual population numbers. Because of these problems with Cortés' population figures, my colleagues and I did not even consider them in our recent review of data on Aztec city sizes (Smith et al. 1994; see also Hodge 1994).

#### The Size of Aztec Cities

The Aztec imperial capital Tenochtitlan had around 200,000 inhabitants in an area of 13.5 square kilometers (Calnek [1976:288] estimates 175,000 and Rojas [1976:35,66-68] estimates 250,000). This was a primate city, far larger than other Aztec cities and towns. A small number of major political capitals (e.g., Texcoco, Ahuahuac, and Cholula) had 20,000-30,000 inhabitants, while the more numerous city-state capitals of the Basin of Mexico had an average population of 7,000, and city-state capitals in Morelos (immediately south of the Basin of Mexico) averaged 3,000 inhabitants (Smith et al. 1994:Table 4). An interesting feature of Aztec demography was the consistency of urban population densities, most of which fell between 30 and 70 persons per hectare (3,000-7,000 per square kilometer). Again, Tenochtitlan was the exception, with a population density closer to 150 persons per hectare.

When both archaeological and ethnohistoric population estimates are available for Aztec cities, they are often reasonably close. For example, the extrapolation of 1551 census data back to 1519 for the city of Yautepec (in Morelos) produces estimates only slightly higher than an independent archaeological estimate. The application of Sanders' (1992:130-131) postconquest population decline rate to the 1551 data yields a population of 13,300 for urban Yautepec, while use of Whitmore's (1991, 1992) simulation-based decline model produces a 1519 population of 16,800 (see discussion in Smith 1994); the archaeological estimate is 11,500 persons. This latter figure is based upon an intensive archaeological surface survey of Yautepec that I directed in 1992 (Smith et al. 1994). It was possible to trace the boundaries of the Yautepec city with confidence, revealing a surface area of 209 hectares. To derive the archaeological population

estimate, we applied a population density constant of 70 persons per hectare that was taken from my excavation-based demographic analysis of the Late Postclassic town of Cuexcomate in Morelos. Cuexcomate is one of the only Aztec-period towns in central Mexico to be completely mapped (including all residential structures), thus permitting detailed demographic reconstruction (Smith 1992:335-345). Methods of archaeological demography are reviewed by Hassan (1981).

These archaeological and ethnohistoric data on urban population levels are in greater agreement with the large-scale demographic reconstructions of Sanders (1970) and Whitmore (1991, 1992) than with the reconstruction of Borah and Cook (1963). Sanders (1970; 1992) long ago pointed out numerous problems with Borah and Cook's assumptions and methods, estimating the population of the Basin of Mexico in 1519 at 1.2 million, considerably lower than Borah and Cook's estimate of 3 million. Subsequent archaeological survey of the Basin of Mexico by Sanders and others produced archaeological estimates for the Aztec population in substantial agreement with the lower figure (Sanders et al. 1979:38, 216-219). The most sophisticated analysis of sixteenth century population decline, Whitmore's recent simulation model (Whitmore 1991, 1992), is not even mentioned by Dobyns. Whitmore estimates the Basin's population in 1519 at 1.6 million.

In sum, recent research by archaeologists and ethnohistorians has produced new data on Aztec city sizes that reveal gross errors in the urban population figures of Hernán Cortés. These data appear to be in greater agreement with the lower population estimates of Sanders and Whitmore than with the higher estimates of the Berkeley school, but that is not my main point. Rather, I wish to stress, along with Henige and others, that demographic reconstructions must be based upon a critical evaluation of sources and upon as much empirical data as possible. Only then can we produce the kind of detailed local analyses required to address adequately the important question of pre-European population levels in the New World.

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