"Play items used by children in San Mateo, including a toy pot, a toy mano, and a toy metate. Play manos and metates in poorer households often consisted simply of locally available flat slabs of rock and cobbles on which dirt was ground; scale = 15 cm." [From *Lithic Studies among the Contemporary Highland Maya*]

zation, and the emergence of social stratification. Hayden's chapter "Past to present uses of stone tools" is particularly innovative. By assessing overall tool requirements of modern Maya households he is able to derive a reasonable extrapolation of pre-Columbian tool needs. On the basis of modern tasks he suggests that, pre-Hispanically, tools for working wood should have been the most common, a conclusion verified by rigorous and detailed archeological studies such as that reported by Lewenstein.

A necessary adjunct to Hayden's "ethnoarcheological" approach to mid-range theory is the experimental approach exemplified in Lewenstein's work. Experimentation is necessary to recreate prehistoric behaviors that can no longer be observed or inferred from modern groups. Lewenstein's experiments concerned the use of modern replicas of ancient tools on a variety of materials that would have been processed by Maya Indians living in Belize about 1600 years ago. Detailed study of modifications to modern tools caused by processing various raw materials (such as stone, bone, wood, leather, fibers, and meat) provides the basis for inferring how archeological specimens were used. Technological and functional analyses of these chert and obsidian tools allowed Lewenstein to reconstruct the economic system characteristic of the coastal community of Cerros and to determine the relative unimportance of craft specialization in the evolution of this ancient community.

The singular weakness of these two volumes is inherent in their restricted community focus. Neither considers sophisticated chipped-stone technologies (those requiring apprenticeship) or complex craft organizations engaged in economies of scale and inter-regional exchange. Fortunately these topics are central to Torrence's analysis of production and exchange of obsidian tools in the Aegean. Torrence's reliance on ethnohistory for determining the material manifestations of large-scale production and exchange also complements the ethnographic and experimental approaches of Hayden and Lewenstein. Although all three books are strongly empirical, their express purpose is to evaluate general anthropological theories by means of bridging arguments based upon verified mid-range theory. Unlike most archeological tomes on stone artifacts, these books focus on complex societies and neolithic technologies rather than nomadic hunters and gatherers. Consequently, one of the specific concerns of each is the relationship between production, craft specialization, control of critical limited resources, and the evolution of cultural complexity. The refinement of general theory already necessitated by these pioneering studies bodes well for the future of lithic studies. The end of the rainbow still holds much promise.

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The American Depopulation

Vectors of Death. The Archaeology of European Contact. ANN F. RAMENOFSKY. University of New Mexico Press, Albuquerque, 1988. xvi, 300 pp., illus. $27.50.

The magnitude, timing, and causes of the demographic collapse of Native Americans following European contact elude resolution. Depopulation had readily apparent consequences, however, including the termination of pre-Columbian cultural evolutionary trajectories and the displacement of indigenous peoples by newcomers from the Old World.

In *Vectors of Death* Ramenofsky employs archeological and historical information in an effort to determine when appreciable population decline began, whether it was sudden or gradual, and whether introduced infectious diseases can be implicated in the process. The timing of the depopulation is a central element of her argument. To state the matter simply, epidemics must have played a causal role in population decline if the reduction began before significant direct contact. Furthermore, early depopulation would indicate that ethnohistorical accounts portray unstable cultural systems that are imperfect reflections of precontact conditions.

The discussion focuses on cultures spanning the prehistoric, protohistoric, and historic interface in the Lower Mississippi Valley, central New York, and the Middle Missouri Valley. These regions are best known historically for the organizationally complex Natchez chiefdom, the warlike Iroquois Confederacy, and the eastern Plains village farmers. Different histories of persistence in the face of pressures deriving ultimately from European (and later American) expansion into the interior require explanation.

The late-prehistoric through historic sites are treated as a series of components assigned to several temporal periods. Sites, with few exceptions, are considered to have had single-component occupational histories. The periods can be subsumed further under three general categories. Postcontact sites yield European materials, and the amount and diversity of these items further differentiate the later sites.

Separate tabulations document change over time in the number and size of sites, the area covered by roofs, and the total settlement area. Levels of analytical precision differ according to the effectiveness of these indicators of relative population size as well as the quantity and quality of readily available data. The diachronic trends in settlement characteristics and inferred population size are often ambiguous and subject to biases,

many of which Ramenofsky discusses.

Disease-induced population decline began in the 16th century in the Lower Mississippi Valley, a conclusion that supports Henry Dobyns's controversial work on Florida Indians (*Their Number Become Thinned*, University of Tennessee Press, 1983). This process was initiated in the 17th century in central New York and the Middle Missouri Valley, although Ramenofsky believes that population decline may have started a century earlier. This possibility could not be evaluated with available data. In any event, the earliest historical censuses record greatly diminished populations. Ramenofsky estimates the North American precontact population as over 12 million, although the calculation procedure is not described.

These data when combined with those of other researchers represent a clear argument for demographic and cultural collapse far in advance of the Colonial-era penetration of the continent. Ramenofsky focuses on the spread of new pathogens through virgin-soil populations, resulting in high mortality and an eventual amalgamation of formerly separate groups. Protohistoric demographic collapse, however, was undoubtedly a more complex process than is outlined in her book, which despite a claim to the contrary is not the first application of epidemiological models to postcontact North America. Additional attention should be directed toward the synergism between nutrition and infection, the nature of social and natural barriers that would have interfered with the spread of diseases, particularly acute crowd infections, as well as the short- and long-term consequences of high-mortality diseases on societies that differed in organizational complexity, population distribution, subsistence security, and intergroup relations. In addition, the impact of indigenous diseases, specifically tuberculosis and one of the treponematoses, cannot be dismissed easily given their debilitating effect on stressed populations, such as those repeatedly subjected to a suite of newly introduced pathogens and experiencing pervasive social disintegration.

Ramenofsky succeeds in calling attention to the quite early and catastrophic loss of human life following European discovery of the Americas. More sophisticated epidemiological and cultural models, finer chronological controls, rigorously collected and analyzed archeological data, and a greater sensitivity to the subtleties of regional prehistoric sequences are needed to address adequately the issues raised in this book.

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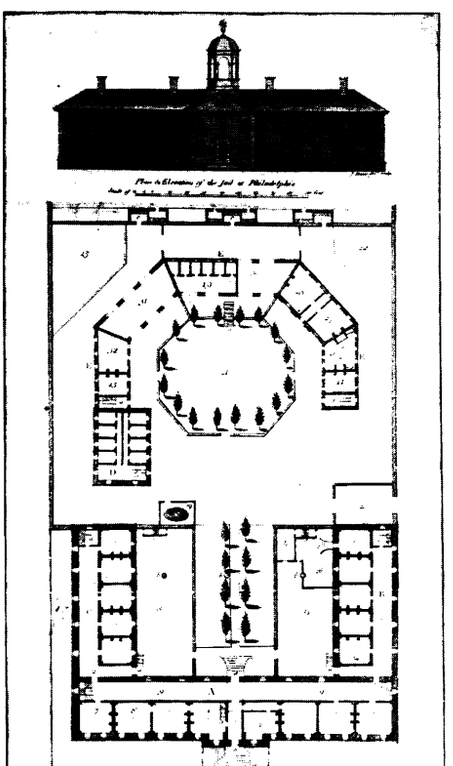
Historical Remains

The Walnut Street Prison Workshop. A Test Study in Historical Archaeology Based on Field Investigation in the Garden Area of the Athenaeum of Philadelphia. JOHN L. COTTER, ROGER W. MOSS, BRUCE C. GILL, and JIYUL KIM. The Athenaeum of Philadelphia, Philadelphia, 1988. 95 pp., illus. Paper, $7.50.

Always in historical archeology there is the question "What do we know from the excavation that we did not know before, that we also find interesting?" The excavation at the Walnut Street Prison Workshop not only provides answers but demonstrates the methods of detailed analysis that are crucial to proper use of historical archeology.

The Walnut Street Prison was erected in 1775 by the city of Philadelphia, near Independence Hall, as a new and model gaol for reforming, not just incarcerating, prisoners. The building was designed by Robert Smith, a leading architect, was used by the British during their occupation of Philadelphia as a place to let American prisoners of war die, became the prison it was intended to be after Independence, and was worn out and torn down by 1835. Pictures and plans survive, so the appearance of the building as a conventional colonial public structure is available. The interior plan of the prison and the 1790s workshop associated with it make most of the internal arrangements clear. The



Plan and elevation of the Walnut Street Prison. [From *The Walnut Street Prison Workshop*]

Part of the excavation of the Walnut Street Prison Workshop. [From *The Walnut Street Prison Workshop*]

Philadelphia Athenaeum was built on the prison location around 1845, and its garden sits over part of the prison workshop and thus has preserved the only archeological record of the prison.

The idea of reform behind the prison design was associated with Quaker philosophy as well as with early American social philosophy. Prisoners were to help earn their keep by learning and practicing a trade—nail-making and stone-sawing and polishing, for instance—which netted them some income and taught them a skill useful after their term. The Walnut Street Prison is compared briefly with the Public Hospital for the mentally ill built at the same time in Williamsburg, which looked rather like it on the outside. The hospital's philosophy, implemented a little later and derived partly from practices in Philadelphia, involved the use of music, games, and dance to ease insanity. Both asylums were a product of the Enlightenment. But how do we know what went on in the Philadelphia prison? The authors cite a small amount of textual evidence, but not really enough to hear from the prisoners themselves, if that were even possible. They cite the low rate of recidivism recorded in the prison's official records.