An Ancient Sacred Center

Ancient Chalcatzingo. DAVID C. GROVE, Ed. University of Texas Press, Austin, TX, 1987. x, 571 pp., illus. $75. Texas Pan American Series.

Chalcatzingo has attracted the interest of archeologists and art historians alike ever since the first report, over half a century ago, of some spectacular bas-relief carvings on the rocky faces of the twin hills that mark the ancient settlement in highland Mexico. Now estimated to date from about 700 to 500 B.C., these petroglyphs have been identified stylistically with the Olmec, whose heartland lay over 300 mountainous kilometers to the southeast, down on the steamy Gulf Coast. Unending debates over the nature of Olmec society and whether it exercised political or economic hegemony over far-flung regions of Mesoamerica have been fed by the Chalcatzingo rock carvings, all the more so because of a seemingly militaristic scene depicted on one of the reliefs. Should Chalcatzingo and other sites with related rock carvings found from central Mexico to El Salvador be shown to have been part of an Olmec empire, it is argued, we would have revealed America's earliest indigenous instance of imperialism.

No archeologist has worked more diligently than David Grove toward providing level-headed answers about the highland Olmec presence, and *Ancient Chalcatzingo* is the product of his most ambitious effort. The book reports on an important collaborative project he initiated in 1972 with the Mexican Instituto Nacional de Antropología e Historia aimed at a comprehensive understanding of the site and its significance to the dramatic social, political, and economic developments by which Mesoamerica's Formative period is defined. In 28 chapters and ten appendixes authored by Grove and his co-workers are reports on excavation and mapping, on a survey of surface archeological remains and vegetation, on the many artifactual finds, human burials, architectural remains, carved stone stelae, some heretofore little-known wall paintings, and, of course, on the famous stone reliefs. Chronology, settlement pattern analysis, palynological studies, raw materials source identification, and other specialized topics are also the subjects of separate chapters. Most of the text is heavily descriptive, intentionally so, states Grove, so that other researchers might more easily utilize the data for their own analytical purposes. Indeed, the many scholars who will, no doubt, do so will be grateful for the legacy of information and ideas he has provided them.

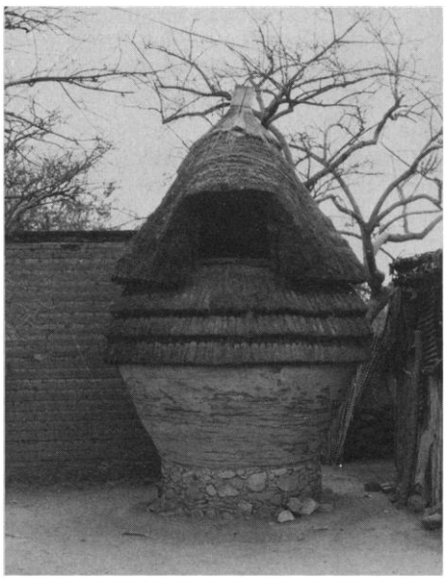
Where the various authors reach out for interpretations, their conclusions are sometimes at odds with each other. Despite his expressed apologies for editorial heavy-handedness, Grove was apparently willing to sacrifice a consistent point of view in the book for a diversity of stimulating opinions on the nature of Chalcatzingo. Thus, for example, he and Kenneth Hirth reach different conclusions about the Middle Formative size of the site: Hirth's surface survey analysis led him to categorize Chalcatzingo as one of the largest settlements of its time in central Mexico; Grove and Mary Prindiville, relying on data from excavations, see a much smaller village and, contrary to Hirth, one completely abandoned by 500 B.C.

With regard to the reasons for Chalcatzingo's development and distinctive features, Grove and Hirth again present different perspectives. Hirth, more persuaded by internal economic factors, would conceptualize Chalcatzingo as a "gateway community" whose importance was attributable primarily to its function in funneling exotic exchange goods from central and western Mexico to Olmec settlements on the Gulf Coast. While attracted to the "gateway community" concept, Grove finds this and other economic exchange models inadequate insofar as they tend to minimize the importance of Chalcatzingo as a sacred center.

As to the messages communicated through the iconography of Chalcatzingo's art, we are again treated to a divergence in interpretation. Predicated on a broad spatial and temporal continuity in Mesoamerican ideology, Jorge Angulo's analysis of the rock carvings allows him to draw explanatory analogies from Postclassic and early Colonial native documents of highland Mexico. Grove disagrees, arguing that the meaning of the Olmec iconography can be inferred only from the specific lowland tropical forest belief systems of Central and South America from which he sees it as being derived. Interestingly, neither Grove nor Angulo finds evidence to support the popular interpretation of the well-known "Marching Olmec" relief as signifying militarism, political intimidation, or conquest. Why then do we find all this Olmec art at Chalcatzingo?

The reader of the first 26 chapters of this lengthy volume may be surprised to discover how little attention is devoted to Chalcatzingo's bearing on the Olmec question. This de-emphasis apparently is due in part to Grove's determination that the Olmec character of Chalcatzingo has been exaggerated and perhaps also to the fact that in the more than ten years that have elapsed since the project's fieldwork was completed Grove and his colleagues have published several articles specifically addressing that issue. In any event, most of the book reads much like a traditional archeological site report. On balance it is an excellent one, notwithstand-

Part of the "Marching Olmec" relief from Chalcatzingo. [From *Ancient Chalcatzingo*; Chappie Angulo]



Cuexcomate, or structure for storing food supplies, from present-day Chalcatzingo. The occurrence of such structures "should mark an important shift in the strategy and capacity of the subsistence system [but] no definite examples have been found archaeologically." *Cuexcomates* are still made at Chalcatzingo, "although there are now only two men who are considered to be experts in their construction." [From *Ancient Chalcatzingo*; reprinted by permission of the University of Texas Press, © 1987]

ing a few shortcomings in its lack of direct archeological evidence of prehistoric diet, an eschewing of statistical sampling in a number of the analyses, the lack of microscopic study for the purpose of determining stone tool function, and the almost inevitable discontinuity between the separate, independently written, mostly narrowly focused chapters.

It is to this last listed concern that Grove addresses himself in the book's final two chapters. Serious Mesoamerican scholars will be well rewarded by careful reading of these offerings, for in them he pulls together the diverse data from his project toward a succinct but critically comprehensive survey of current knowledge about Chalcatzingo as an early agricultural village, as a regional center, as a sacred shrine, and—probably of most general interest—as a community somehow related to Olmec culture. Grove and his collaborators are still uncertain about why Chalcatzingo, of all places, came to produce such a prodigious array of monumental art and architecture, but they are agreed that its location under the awe-inspiring twin hills, along a major avenue of commerce and communication, drew Olmec attention to the site.

The many detailed cultural similarities to the Middle Formative Gulf Coast ceremonial center at La Venta suggest direct Olmec contact, but Grove stresses the underlying autochthonous character of Chalcatzingo. If there were Olmec artisans and traders actually in residence, they were few and probably only transient. The special "frontier Olmec" art they introduced to outlying sites such as Chalcatzingo may have been directed, Grove suggests, at communicating the legitimacy of Olmec presence or, alternatively, may have served to enhance the authority of local rulers by demonstrating their ties to the prestigious Gulf Coast lowlanders. In either case, when other local centers throughout Mesoamerica, such as Cuicuilco in the Basin of Mexico, finally developed to the point where they could successfully compete in long-distance commerce and cultural prestige, the Olmec presence faded, and with it places like Chalcatzingo.

Grove and his colleagues are to be commended for their well-documented, carefully considered report on the rise and decline of what is, in its own right, a most important Formative period Mexican settlement. The results of their efforts stand as further testimonial to the admonition that only by studying the nature of intersocietal interaction can we fully comprehend the processes that produced the great pre-Columbian civilizations of Mesoamerica and, in a broader sense, begin to understand how civilization got started in the first place.

ROBERT N. ZEITLIN
Department of Anthropology, Brandeis University, Waltham, MA 02254

Teratogenesis

Developmental Toxicology. Mechanisms and Risk. JOHN A. MCLACHLAN, ROBERT M. PRATT, and CLEMENT L. MARKERT, Eds. Cold Spring Harbor Laboratory, Cold Spring Harbor, NY, 1987. xviii, 362 pp., illus. $70. Banbury Report 26. From a meeting, Cold Spring Harbor, NY, Oct. 1986.

Academic developmental biologists, who seek basic mechanisms, are usually little interested in toxicology. Toxicologists for their part understand that completely effective human risk management will be possible only when underlying mechanisms of toxic phenomena are fully understood, but at present they must rely mainly on empirical testing. The Banbury Conference that gave rise to this book was convened in an attempt to promote interaction among leaders of these two endeavors.

In keeping with the tradition of this series, the authors are all authorities in their fields, and the 23 short chapters are, with few exceptions, clearly written and of some interest. The common theme is teratology, the aspect of developmental toxicology of greatest potential relevance to academic biologists. The book is divided into five sections: In Vitro Approaches, Molecular and Experimental Embryology, Nonmammalian Models, Experimental Animal-Human Comparisons, and Risk Assessment. The papers actually fall more naturally into three different groupings: basic mechanisms in development, in vitro systems for study of teratogenesis, and human effects and risk assessment. Viewed in this way, the book is an interesting if unusual addition to toxicologists' bookshelves.

Six papers in the first category illustrate how modern technology teamed with clever minds is beginning to resolve some traditionally recalcitrant developmental questions. The topics range from use of congenic chimeras and computerized pattern prediction for analysis of organogenesis (P. Iannaccone *et al.*) to in situ hybridization of cDNA probes following expression and interaction of genes during *Drosophila* development (C. Rushlow *et al.*). These papers offer a brief selective visit to the frontier of mechanistic developmental biology. They do not relate directly to, or comment on, toxicological effects.

The meat of the book for toxicologists, who will be its main users, is in the eight papers on in vitro systems for the study of teratogenesis. Models utilizing both mammalian embryos and cells and nonmammalian material such as fruit fly and frog embryos, and even hydra, are presented. All of these test systems appear to have potential for analyzing mechanisms of action of toxicants at the cellular level, as well as for screening, though most seem to be still at the stage of system characterization. Eventual integration of academic embryology and practical teratology is likely to be facilitated through such approaches; these lucid presentations of the models serve as a useful reference for all those interested in accomplishing this goal.

Notably absent from the book are chapters on animal teratogenesis in vivo, obviously a necessary bridge between in vitro experimentation and extrapolation to humans. The one paper in this category, by J. M. Rice *et al.*, addresses transplacental carcinogenesis and mutation and emphasizes that the consequences of prenatal genotoxic insult may be modified by postnatal exposures. One may conclude from this that experimental, as well as descriptive, studies with whole-animal models should not be neglected.

Finally, the eight papers related to human effects and risk assessment provide a well-balanced overview ranging from specific description of retinoic acid teratogenesis in