



I Mesoamerica: A Working Model for Archaeology

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The essays in this volume provide insight into the range of theoretical issues and topical debates of concern to archaeologists currently studying the Mesoamerican societies that flourished in Mexico and Central American prior to European contact and Spanish conquest in the sixteenth century. But what is meant by the term *Mesoamerica*, and why do we group together essays on widely separated sites, distinct groups of people, and vastly different time periods?

In this introduction, I will explore some of the meanings of Mesoamerica that have supported its use as an organizing framework for archaeological debate for over 50 years. In the process, I will make explicit a number of background assumptions shared by the contributors to this volume, and will specify some of the common knowledge that contributors have that readers may not share. Along the way, I will review some of the major theoretical and methodological approaches to Mesoamerican archaeology that have historically been important, many of which are mentioned in the chapters that follow. This discussion also touches on the complex relationships between the practice of archaeology and broader social and political developments, dramatized by the significance of archaeological materials in the development of nationalism in the region.

I also address where Mesoamerican archaeology stands today, introducing some of the critical concepts in contemporary archaeology shared by authors who have contributed to this volume, and some of the productive differences in their approaches to developing an understanding of the early history of the region through the study of material remains of past human action documented in context (a rough definition of archaeology as practiced by all the contributors).

Mesoamerica as an Object of Archaeological Research

Although it is sometimes treated as a spatial unit that can be delimited by northern and southern frontiers (Fig. 1.1), Mesoamerica is not really just a geographic



Figure I.1. Map of Mesoamerica

region. It is mainly a cultural and linguistic concept that anthropologists find useful as a way to refer to groups of people who lived within a defined geographic region over a long period time and who shared certain cultural and linguistic features. These shared features coexisted with and cross-cut social, linguistic, ecological, and political boundaries. The only viable social mechanism to explain the development of Mesoamerica as a cultural tradition, cross-cutting all sorts of other boundaries, is a long history of intensive interaction among social groups in the region.

In this sense, the term “Mesoamerica” is analogous to the term, “Western civilization.” Both suggest the existence of various kinds of historical connections among a set of interacting societies that led to shared values, practices, and institutions, despite variation in language, political structure, religion, and cultural practices (Joyce 2000c; see also Clark and Pye 2000; Pye and Clark 2000). Mesoamerican peoples had far less intensive and enduring interaction with the societies to their north and south, making it possible for archaeologists and ethnographers to discern boundaries to the area of intense interaction we call Mesoamerica. To understand Mesoamerica, we must consequently attempt to understand the development of networks of interaction between its distinct peoples over long periods of time. When archaeologists do not take the existence of Mesoamerica for granted, they are in the ideal position to provide an exploration of the historical development of these networks of interaction, their limits, and variation within the Mesoamerican tradition.

Mesoamerica as a culture area

Mesoamerica was originally defined as a culture area based on a checklist of traits ranging from basic religious concepts to minor details of costume (Kirchhoff 1968[1943]). The mere compilation of a trait list is now rejected by archaeologists as too crude a way to identify likeness or to group societies or archaeological sites because it treats all similarities as being of equal importance and provides no way to explain how such connections came into being or why. Archaeologists still find the concept of Mesoamerica useful, however, because it allows them to group together cultures which, through extensive interaction, developed a common set of values and practices that continued to develop over a long period of time, some 3,500 years before European contact. From this perspective, we can replace the Mesoamerican trait list by shared *practices* in a number of distinct social domains.

The most important of these practices are (1) a basic structuring economy, (2) beliefs about how the world works and the practices related to those beliefs, and (3) material signs of social stratification (Fig. 1.2). Mesoamerican peoples were agriculturalists, living in socially differentiated communities, understanding themselves to exist in specific kinds of relations to other people, in a natural and supernatural world with specific kinds of features. Although the details of beliefs varied, the basic elements of a Mesoamerican worldview were among the longest-lived Mesoamerican *structures*.

Arena of practice	Traits from original definition of Mesoamerica
subsistence production	agriculture based on corn, beans, and squash, dependent on human labor using digging stick agricultural intensification including raised fields (<i>chinampas</i>) plants raised for specialized uses: cacao, amaranth, <i>maguey</i> corn processed by soaking with lime and grinding on <i>metates</i>
long-distance exchange	valuables such as obsidian, cacao and jade
cosmology and ritual	numbers 4, 5, 7, 9, 13, and 20 significant shared calendars: solar year of 18 months of 20 days plus a set of 5 final days; 260-day ritual cycle of 13 day names combined with 20 numbers use of writing and positional mathematics to record astronomy and calendar, in paper and deer skin books (<i>codices</i>) and more permanent media ritual warfare, special warrior costumes, and human sacrifice specialized architecture for ritual: ball courts, temples, observatories, including use of stucco
social stratification	status expressed in costumes, including gender specific forms of dress, role-specific headdresses, warrior outfits, and ornaments such as lip plugs, pyrite mirrors and polished obsidian mirrors and ear plugs

Figure 1.2. Archaeologically identifiable defining traits of Mesoamerica, organized according to social and cultural practices

The production of structures and their reproduction over time does not happen automatically. They are the result of conscious and unconscious actions carried out by people as part of social groups. The active process of socialization and reproduction of values results from people acting as social *agents*. People in these societies reproduced and transformed social structures through their choices among the possible ways to act that they saw open to them. In the process of exercising agency and reproducing and transforming structure, people create and add to individual and group histories, shaping the constraints and possibilities of agents in succeeding generations. What we see today as a continuous tradition is actually the result of generations of practices by people working within the bounds of what they understood to be both possible and desirable. Both the continuity in the Mesoamerican tradition and its changes over time can be understood from the perspective of the transformation and reproduction of social structure by agents through practices.

A historically situated view like this implies that Mesoamerica, as a cultural tradition, had a beginning point, a period in the history of the indigenous societies of Mexico and Central America when the practices and beliefs we recognize as Mesoamerican are first identifiable. Gordon R. Willey (1966:78) long ago identified the emergence of archaeologically identifiable Mesoamerica with the time period around 2000 B.C. when village life dependent on corn agriculture took form. This volume also begins coverage of Mesoamerica at this moment. This is also the

time when, in early villages, social stratification first becomes evident (see Chapters 2 and 3). Many of the practices that archaeologists have identified as typical of Mesoamerican culture are expressions of social differentiation, and these practices first take shape in the early villages of Mesoamerica. The high number of specifically Mesoamerican practices that relate to cosmology and ritual underlines a point made by many authors in the chapters that follow: in Mesoamerica, social stratification was intimately bound up with propositions about the nature of the universe and the relations people had to other forces and beings. The centrality of certain economic practices to Mesoamerica is equally important. The agricultural economy of Mesoamerica provided surplus production that supported the development of distinctively Mesoamerican social complexity.

Mesoamerican societies are linked by continuity in the use of particular materials as items of wealth and standards of value, reflected in economic, social, and political practices. Craft specialists worked obsidian, jade and other greenstones, and feathers into signs of distinction; scribes, astronomers, and calendar specialists developed and recorded indigenous wisdom; and a select body of people who claimed legitimacy in exercising powers of governance consumed these and other forms of “high culture” (Joyce 2000c; see below). Concepts of social order, manifest in Mesoamerica as early as the Formative period, structured the actions of later social agents by providing them with particular ideas of value and legitimacy within which people carried out practices.

Craft production thus had both practical value and specific importance in the reproduction of a specifically Mesoamerican way of doing things. At the same time, the vast majority of people organized and carried out the work of cultivating fields, hunting, gathering, processing, and preparing foods, creating useful and beautiful objects for household consumption, and educating new generations in the traditions and practices that constituted Mesoamerica. Archaeological evidence demonstrates that most Mesoamerican villagers relied for subsistence on a combination of maize (corn), beans, and squash, complemented by chili peppers and supplemented by a wide variety of wild and cultivated fruits and tubers. Among the most important alternative staple crops in the dry highlands were other seed-bearing plants, amaranth and chenopods, including *chia*, used by the Aztecs to make images of supernatural beings displayed and consumed in ritual. In some parts of the wetter lowlands root crops, particularly manioc (or yuca) were cultivated.

Beverages prepared from certain plants were widely used in religious rituals and social ceremonies: cacao, made from chocolate beans (products of a tree growing in wet lowlands), and an alcoholic drink the Aztecs called *pulque*, made from fermented hearts of maguey, a succulent plant cultivated in drier areas. Native stingless bees were kept in lowland areas, and honey was used by the lowland Maya to brew another ritual alcoholic drink, *balche*.

Other than bees, domesticated animals were limited to the dog and turkey, the latter introduced rather late in Mesoamerican history from further north. The primary sources of animal protein suggested by archaeological remains of animal bones were land animals such as deer and peccary, hunted with blowguns, snares, and nets; birds, especially waterfowl such as ducks; and fish. In the absence of large

domesticated animals, all agricultural work was provided by human labor. With the work of subject populations, Mesoamerican societies built complex systems to intensify agriculture, improving production through irrigation, the construction of terraces on slopes, and raised fields built in swampy areas.

The combination of these traits of subsistence production characterizes Mesoamerican peoples, but was not unique to them. The same kinds of agricultural systems were found in North and South America. Corn, beans, and squash were raised throughout the Americas. But cultivation of the specialized plants raised in Mesoamerica and used for ritual purposes did not extend to other areas, and techniques of food processing, preparation, and serving that developed in Mesoamerica constitute a distinctive cuisine (Coe 1994). What was made of maize agriculture was a defining part of Mesoamerica: the elaboration of the maize- and chili-pepper-based cuisine, and of mythologies in which the survival of maize gods was attributed to the actions of nobles and the supernatural beings they claimed as their predecessors (Monaghan 1990; Taube 1985, 1989).

Myths about maize were part of a specifically Mesoamerican set of beliefs and practices concerning the relationship between human beings, supernatural beings, and ancestors. Mesoamerican peoples shared a view of the universe as composed of three levels, a supernatural underworld and overworld, between which was located the natural world of humans (see Chapter 7). Each level had four sides, the four world directions, conceived of not as the cardinal points of western European tradition, but as a segment of the sky traced by the annual movement of the sun. East and west were marked on the horizon by the northern and southern extreme positions of the sun on the solstices in December and June, and the midpoint position of the sun on the equinoxes in March and September (see Aveni 1980). The directions between east and west seem sometimes to have been thought of as north and south, and other times to have been thought of as up and down, two additional points in the daily path of the sun, across the sky during the day and through the underworld at night.

In Mesoamerican belief, contact could be made directly with the supernatural world, which was inhabited by personified supernatural forces. Access to the supernatural world took place through rituals, using certain pathways, particularly holes into the underworld (caves, wells) and mountains and trees which rose up into the upperworld (Gillespie 1993). Mesoamerican rituals, founded on shared cosmological ideas, took place in specially constructed architectural spaces. Such ceremonial or ritual centers were constructed according to cosmological concepts. Buildings were often placed in alignment with unmodified features of the landscape that were pathways to the upperworld, such as the alignment of the Temple of the Moon at Teotihuacan with the mountain Cerro Gordo (see Chapter 4). Buildings with distinct functions, such as ancestral temples and everyday residences, might be placed in regular directional relationships, although precisely which direction was appropriate for which activities varied (see Chapter 7). Architectural centers, from the earliest to the latest periods known, incorporated buildings which were stages for typically Mesoamerican rituals: ball courts, temples, and astronomical observatories. Timing of rituals performed in these locations was based on

calendrical and astronomical information, recorded in written texts, of which only examples recorded on durable stone monuments have survived from the earliest Mesoamerican societies. Among the repeated ritual actions represented in images, recorded in texts, and detectable from material traces, were the burning of incense, dances, games, and other dramatic performances, and also human sacrifice, often paired with militaristic symbolism.

The people who built these ceremonial centers lived in varied shapes, sizes, and styles of houses. Settlements in Mesoamerica were often composed of residential compounds large enough to house multiple generations of related families, or multiple families related as patrons and clients. Here, people lived and carried out the activities necessary for their subsistence and more specialized production. Here also they carried out rituals, especially those marking changes in the status of members of the group. Most evident in the material remains that archaeologists study are rituals transforming living members of the group into ancestors following death.

Formal tombs and less formal graves placed under the courtyards or house floors, and caches (unique deposits, containing particular parts of skeletons) are known at different Mesoamerican sites. The range of ways of treating the dead body in preparation for burial is extremely varied, from binding bodies in seated positions, so they form bundles, to laying the dead body out as if asleep. The bodies of the dead were sometimes carefully dressed in elaborate costume, and set in the ground with a wide array of objects (see Chapters 3, 4, 5, and 6). In other cases, dead bodies were apparently burned, as suggested by images in Postclassic Mixtec codices and texts written about the Aztecs in the sixteenth century A.D. Archaeologists have argued that conserving the bodies or body-parts of deceased members of a group might have been a means for Mesoamerican people to create historical continuity between generations (Gillespie 2001, 2002; McAnany 1995). Distinct practices of disposing of the dead employed by separate groups within each society would have contributed to differentiation within the community, like that noted between residents of individual household compounds at Teotihuacan (Chapter 5; see also Hendon 2000; Joyce 1999).

The social commemoration of other points in the lives of inhabitants of house compounds involving feasts, a practice attested in the latest periods through written descriptions created using the European writing system, is evident archaeologically in the remains of vessels and food consumed (see Chapters 10 and 12). House compounds in many areas incorporated special architectural features that were sites for household ritual (see Chapter 5). These were not merely places to live and work. They were imbued with the same cosmological structures as major architectural groups. The same kinds of principles associating directions with different activities affected the use of space within the everyday confines of house compounds. The integration of cosmological beliefs in everyday life at an intimate scale was critical to the reproduction of the structures of Mesoamerican societies (Joyce and Hendon 2000).

Household compounds were also sites of the structural reproduction of Mesoamerican economies and polities through the organization of domestic labor (Hendon 1996, 1997). Every community had to have its own agricultural base;

because of the reliance on human labor for transport, in general, it was not feasible to move significant quantities of food long distances (but see Chapter 7). Within Mesoamerican villages from the earliest times, some degree of craft specialization was also supported. The highest number of crafts, and the greatest intensity of production, has been documented in or near the larger and more lavish compounds that are interpreted as residences of rulers and other nobles (see Chapters 2, 3, and 6). In the most highly stratified Mesoamerican societies, craft specialization was shared by residents of groups of neighboring house compounds or whole communities (see Chapters 5, 8, and 11).

Products of specialized crafts (such as pottery, stone tools, and woven textiles) were presumably redistributed within the local community and beyond through a combination of social ties and markets. Exchange from particular craft-producing households and communities has been reconstructed using compositional analyses that create a chemical profile of the raw materials used in craft production (such as obsidian, iron ore, and jade) or the mixtures of clay and other materials that characterize pottery workshops (see Chapters 2, 10, 11). Craft production carried out within residential compounds was more than simply a source of subsistence. It helped define a person's place within his or her society. Throughout the history of Mesoamerica, participation in craft production as part of a group was intimately related to the constitution of personhood (see Chapter 12).

Many of the traits making up the original definition of Mesoamerica refer to objects used as markers of different kinds of personal and group status. As a historically linked series of socially stratified, economically differentiated, complex societies, the way people were placed in relation to each other was fundamental to the distinctive character of Mesoamerica. Long-distance exchange, one of the practices through which intensive interaction between different peoples within Mesoamerica was fostered, was centrally concerned with obtaining materials used for marking distinctions between commoners and nobles (Hirth 1992). Costume, a major means of marking distinctions between different kinds of people in Mesoamerica, and for signaling the roles of different people, was typically composed of textiles woven of cotton or maguey fiber. Feathers, polished mirrors, and carved greenstone ornaments were all important components of costumes indicating special status and rank.

The development of Mesoamerica, defined in the traditional manner, is centrally concerned with the ways distinctions in social status developed over time and were marked in the network of complex societies that made up Mesoamerica. The majority of the traits archaeologists have used as diagnostic of Mesoamerican civilization were part of a common "high culture" promulgated by individuals and groups, including elders within household groups, local community authorities, and political and religious leaders, who were interested in marking out differences between themselves and others in their communities (Joyce 2000c). The exclusive practices of cuisine, dress, and architecture through which select social groups at many scales distinguished themselves from others were supported by specific kinds of economic practices, including the production of agricultural surplus that supported some members of society as part- or full-time craft specialists. The use of calendars



Figure 1.3. Distribution of languages within Mesoamerica at the time of the Spanish Conquest

and writing to record patterns of social relations among diverse kinds of people through time was also part of Mesoamerican “high culture” (see Chapters 6, 7, 8, 9, and 12).

The shared use, across linguistic boundaries, of technologies for counting days, recording time, and representing texts through writing, inevitably affected the nature of the languages spoken by the peoples that were part of the Mesoamerican tradition. Intensive communication between different communities engaged in long-distance economic exchange and social relations would also have encouraged the spread of speech practices between speakers of unrelated languages. A second way of defining Mesoamerica as an object of study is based on such effects on language of the dialogues across linguistic boundaries over long spans of time that were part of the Mesoamerican tradition.

Mesoamerica as a linguistic area

The traits which are our evidence for the Mesoamerican tradition, and the practices they imply, extended across major language barriers (Fig. 1.3). Three major language families, Mixe-Zoque, Totonac, and Mayan, are composed of languages spoken only by Mesoamerican peoples (Campbell 1976). Another major family, Oto-Manguean, includes some languages in neighboring parts of Central America.

Nahuatl, the language of the Aztecs of central Mexico, is a branch of a language family extending through northern Mexico to North America. Smaller numbers of people in Mesoamerica spoke apparently isolated languages: Huave, Tarascan, Xincan, and Lencan.

These major Mesoamerican language families are entirely independent of each other, as distinct from each other as German is from Chinese. Despite the lack of genetic relationships between languages spoken by different Mesoamerican people, linguists note a variety of shared features in Mesoamerican languages. Such shared features are not found among all languages in a group, but rather those whose speakers were part of societies in intense interaction within Mesoamerica. For example, these features are found in Nahuatl, but not in its close northern Mexican relatives. Because they are found only in Mesoamerican languages, these features must have developed historically in that region. Because the features are found in unrelated languages, they must result from intensive contact between speakers of different languages. These patterns have been used to propose that Mesoamerica is a linguistic area: a zone in which, through intensive interaction, speakers of unrelated languages adopt common linguistic features (Campbell 1976; Campbell, Kaufman, and Smith-Stark 1986). Historical linguistic studies suggest that the Mesoamerican language area had taken its present form by about 1000 B.C., when a series of loanwords for important cultural concepts spread throughout Mesoamerica, apparently from a Mixe-Zoque source language (Campbell and Kaufman 1976).

Mesoamerican languages share features of grammar, sounds (phonology), and meaning (semantics). The shared phonological features mean that Mesoamerican languages sound similar to each other even when unrelated. This suggests that speakers of different languages adapted to each other's manner of speech. Grammatical and semantic features reflect the shared practices that resulted in the Mesoamerican tradition. Number systems based on 20 (in contrast with the western European decimal system, based on 10), and numeral classifiers, special forms used in counting different categories of things, are widely shared features of Mesoamerican languages. These are linguistic traces of the common use of calendar and mathematics that are a major part of the Mesoamerican tradition (compare Chapters 2 and 4).

Poetic aspects of speech are among other features found in unrelated Mesoamerican languages. Shared poetics hint at the ceremonial, ritual, and courtly contexts within which cross-language communication would have been most likely, as guests in other communities, including noble visitors, were entertained socially. Mesoamerican formal speech typically employs metaphors arranged in paired couplets. Many of the specific metaphors are shared by unrelated Mesoamerican languages. Locative words are often derived from parts of the body, for example the word "stomach" meaning "inside." Common figures of speech include calling the door of a building its "mouth," the bark of a tree its "skin," and the eye of a person the "seed of the face." Such verbal metaphors can be related to visual representation, for example, the construction of an image of an animal head surrounding doorways of Classic Maya temples, with the door to the temple located at the mouth of the animal.

The process through which independent, unrelated languages grew to resemble each other must be thought of as a historical process of mutual translation, like the process through which post-conquest speakers of Yucatec and Spanish clerics together created a new form of Yucatec (Hanks 2000). This documented historical process provides a useful model for thinking about the situations in which a Mesoamerican linguistic area could have taken form. Given the diversity of different languages spoken within a relatively restricted area, it is possible that many Mesoamerican people learned and spoke multiple languages. The Mesoamerican people pressed into service as interpreters for the first Spanish invaders certainly were fluent in several unrelated Mesoamerican languages. For those Mesoamerican people from one region who traveled to or lived in other areas, like the foreigners living in distinct neighborhoods in Teotihuacan (see Chapters 4 and 5), multilingualism would have been the norm. From the earliest periods for which archaeological evidence of human behavior is available, multiple opportunities for interaction across linguistic boundaries would have been created as members of different Mesoamerican societies sought materials only to be found in other places within Mesoamerica's complex geography.

Mesoamerica as a geographic space

From a geographic perspective, it is easy to define the Mesoamerican core (Fig. 1.1). The Isthmus of Tehuantepec, where Mexico reaches its narrowest point, serves as a major pivot for Mesoamerican geography. It divides western Mesoamerica, completely contained within Mexico, from eastern Mesoamerica, encompassing eastern Mexico, Guatemala, Belize, and parts of western Honduras and El Salvador. At the Isthmus of Tehuantepec, the Maya-speaking societies of eastern Mesoamerica abutted the territories of diverse non-Maya peoples of western Mesoamerica, often collectively referred to as Mexican: speakers of languages such as Zapotec, Mixtec, Totonac, and Otomi. At the Isthmus of Tehuantepec the territory inhabited by speakers of Mixe-Zoquean languages crosses from the Gulf coast of Mexico to the Pacific Coast of southern Mexico and Guatemala.

East and west of Tehuantepec, the contrast between lowlands and highlands structures Mesoamerican geography, but the balance of these two kinds of settings is profoundly different in the Maya and Mexican zones. In western Mesoamerica, the Mexican highlands are extensive, with a series of upland basins and valleys, extending from the Basin of Mexico to the Valley of Oaxaca, the home territories of distinct Mesoamerican societies. The lowlands of western Mesoamerica, located along the Gulf and Pacific coasts, are narrow strips formed by a series of rivers originating in the highlands.

In eastern Mesoamerica, the lowlands are much more extensive, and were the site of the development of the interconnected Classic Maya city-states. The Yucatan peninsula, a vast expanse of limestone, extends far into the Caribbean, surrounded on west, north, and east by ocean, navigable along an extensive coastline. Rainwater percolates through the porous limestone of the northern Maya lowlands, and

surface rivers are found only on the edges of the peninsula. Where the limestone sheet meets the base of the Maya highlands, composed of volcanic and metamorphic rocks, impressive tropical rivers run along the zone of contact. The Usumacinta river system on the west, and the Motagua river on the east, formed important corridors of population and communication, with tributaries reaching up into the highlands. The better-watered southern Maya lowlands, centered on the Guatemalan Department of Peten, and the drier northern Maya lowlands had distinct environmental conditions and histories of occupation.

Despite the ease of identification of the Mesoamerican geographic core, it is more difficult to define precise edges for Mesoamerican geography. Historically, maps of Mesoamerica have used the approximate location of an ecological boundary with more arid lands populated by mobile groups relying on gathering and hunting to demarcate the northern Mesoamerican frontier. This boundary-marking should imply that these hunter-gatherers lived outside the bounds of Mesoamerican society. But it is unlikely that these groups had no significant contact with the residents of city-states that were their southern neighbors. Central Mexican histories of the sixteenth century describe significant historical ties between the ancestors of the Aztecs and northern groups, whom the Aztecs collectively described as "Chichimecs." Aztec myths describe the origin of the founders of Tenochtitlan as a place called Aztlan, also said to be located to the north. Archaeologists do not treat these traditions as literal truth, since there is abundant evidence suggesting that the Aztec state developed from roots in place in the earlier Basin of Mexico (see Chapter 11). But these traditions should alert us to the fact that people of the Mesoamerican core did not view their northern neighbors as outside their social and historical world. Archaeologists working in northern Mexico and the US Southwest have repeatedly documented suggestive evidence of interaction between residents of sites in these areas and places in Mesoamerica.

The difficulty of defining a boundary for Mesoamerican geography is even more acute on the southeastern periphery of the core area. Here, the immediate neighbors of eastern Mesoamerican peoples were not mobile hunter-gatherers, but farmers, many organized in stratified societies that were important trading partners for Mesoamerican states. Objects made in the Maya area have been recovered archaeologically as far south as Costa Rica, and gold ornaments of Costa Rican or Panamanian style have been found in sites in the Maya lowlands. Definition of a southern boundary for Mesoamerica has thus been extremely arbitrary. Based on a review of relatively sparse archaeological data on distributions of selected settlement features and artifacts, the Ulua and Lempa rivers of Honduras and El Salvador were identified as the eastern geographic boundaries of Mesoamerica (Lothrop 1939). More recent archaeological research has shown that even the most complex settlement features proposed as diagnostic of Mesoamerica, ballcourts, were constructed in regions east of these river valleys (Joyce and Hendon 2000). From the lived perspective of local peoples themselves, it would seem that the rivers identified as boundaries of Mesoamerica were not edges separating people, but routes joining them together.

Mesoamerica as a lived place

Rather than being overly concerned with the identification of the edges of Mesoamerican geography, it might be more useful to take just such a lived perspective on the geography of the region. The juxtaposition of highland valleys, basins, and plateaus with lowland regions with markedly different environments and natural resources creates the potential for significant movement of natural resources between starkly different environments (Sanders and Price 1968). A major environmental contrast exists between the drier, cooler highlands and warmer, wetter lowlands. Steep mountain chains parallel both coasts, with active volcanoes on the Pacific side producing flows of lava, used for grinding stones, and of volcanic glass, used for cutting tools.

Marked wet and dry seasons affect the highlands and lowlands differently, and create varying conditions within each zone. Seasonal rainstorms move in across the coast, shedding most of their moisture where they first cross the drier, hotter land surface. As a result, rainfall decreases from east to west across the Maya lowlands and Gulf Coast of Mexico. Along the Pacific Coast, rainfall drops off sharply from the coast to the steep edge of the mountains. Heavy rainfall allowed the development of wet tropical forest in the southern Maya lowlands, eastern Yucatan peninsula, and Gulf Coast of Mexico, and in places along the coastal strip of the Pacific lowlands. Here, high canopies formed by tall trees screen the ground surface, so little undergrowth develops. In these tropical forests, a high number of plant and animal species are found, scattered over the area so that in any area there is a low number of individuals of each species. The ceiba tree and native fruit trees such as nance, sapote, and avocado grow in wet tropical forests. In western Yucatan, the Motagua river valley, and dry upland basins with less rainfall, dry tropical forests develop, also characterized by high species diversity. Lower forest canopy allows more undergrowth to develop. Dry plant communities include plants such as nopal cactus and maguey. In the highest mountain ranges, tropical forests give way to upland pine forests. These are the home of the quetzal bird, prized for its long green tail feathers, and of unique plants such as the bromeliads that grow clinging to the branches of other trees.

Mesoamerica's highlands and lowlands contrast in the distribution of a wide array of natural resources. The volcanic mountains that parallel the Pacific Coast include a series of obsidian flows used at different times by different groups within Mesoamerica. Guinope and La Esperanza in Honduras, Ixtepeque, El Chayal, and San Martín Jilotepeque in Guatemala, Tepeapulco, Pachuca, and Zinapécuaro in Mexico were all heavily exploited by Mesoamerican people, and the material and tools produced were traded over long distances. Distinct rock formations produced a variety of green stones, precious stones used for ritual implements and costume. Major serpentine resources are known in west Mexico and the upper Motagua valley in Guatemala, the sole confirmed source of jade, used for artifacts produced and consumed throughout eastern and western Mesoamerica (Lange 1993).

The lowlands have fewer mineral resources. In some areas, locally available chert and limestone were exploited in place of obsidian and lava. But lowland peoples also obtained minerals from the highlands through exchange for more perishable lowland resources. Precious substances employed in important Mesoamerican practices, including bird feathers used for costume, and cacao, used for a beverage with ritual and social importance, were products of the lowland tropical forests. Animals such as deer, tapir, peccary, jaguar, monkey, and crocodile, abundant in the wet tropical forests, were also exchanged with highland societies. Access to the coast provided lowland peoples with marine resources, including shells, stingray spines, and salt. The movement of local resources back and forth between highlands and lowlands, and within each zone, were among the practices through which diverse societies were integrated into a single Mesoamerican world. Such exchanges are already evident in the earliest phases of village life documented by archaeologists.

Time in Mesoamerican Archaeology

There is no single archaeological chronology that is employed by all archaeologists for all of Mesoamerica, but a broad division into Archaic, Formative, Classic, and Postclassic periods is generally recognized. (In Maya archaeology, Preclassic is often, but not always, used in place of the term Formative, which we use throughout the present volume.) Precise beginning and ending dates given for any of these periods vary with the region and often with the specific author. The contributions to this volume are no exception (see Figure 1.4). With slight differences, however, the contributors have conformed to a single chronological framework for the major periods (Fig. 1.5).

The words used to name these spans of time are significant; they demonstrate that this chronological framework comes from a particular theoretical perspective, one associated with the idea of cultural evolution. From a cultural evolutionary perspective, the history of a region like Mesoamerica is also the story of the gradual development of a cultural peak from its initial roots, and of the decline after that peak. The Classic period was seen as the development of highest cultural value or complexity. Every other period either led up to this peak (from Archaic beginnings, though Preclassic or Formative progressive development) or fell away from it (the Postclassic). Each of these spans of time had a particular character and a characteristic level of development. In the Archaic, people lived as mobile hunter-gatherers. The Formative was initiated by the advent of the first settled villages of farmers. While some Formative villages had leaders in ritual, war, and other activities, these forms of leadership were not codified into permanent, inherited statuses. With the Classic period, fully developed forms of permanent status, and extreme divisions among people, were realized in cities. The breakdown of the Classic cities was followed by the reorganization of new urban societies that were less impressive, smaller, more secular, or otherwise disadvantageously compared to their Classic predecessors.

Period	Dates	Chapter cited
Archaic (late)	8000–1600 B.C.	3
	2400–1600 B.C.	2
Early Formative	1600–1200 B.C.	3
	1200–900 B.C.	3
Middle Formative	900–400 B.C.	3
	850–300 B.C.	8
Late Formative	400 B.C.–A.D. 100	3
	300 B.C.–A.D. 100	8
Terminal Formative	100 B.C.–A.D. 200	8
Classic	A.D. 250–1000	7
	A.D. 200–800	8
Early	A.D. 200–500	8
	A.D. 500–800	8
Late	A.D. 600–1000	6
	A.D. 800–1000	12
Postclassic	A.D. 800–1521	8
	A.D. 950–1519	9
Early	A.D. 900–1100	10
	A.D. 1100–1200	10
Middle (transition)	A.D. 1200–1430	10
	A.D. 1430–1521	10
Late	A.D. 1350/1400–1521	11

Figure I.4. Chronological periods cited by contributors

<i>Dates in years</i>	<i>Period</i>
8000–1600 B.C.	Archaic
1600–900 B.C.	Early Formative
900–400 B.C.	Middle Formative
400 B.C.–A.D. 250	Late Formative
A.D. 250–600	Early Classic
A.D. 600–1000	Late Classic
A.D. 1000–1521	Postclassic

Figure I.5. Summary chronological framework for Mesoamerica

These broad time-spans, in other words, were not simply periods of abstract time, but rather stages of cultural development. Stages are diagnosed by specific features, which are adopted at various dates by different peoples. As a result, despite using the same broad categories, different researchers assigned slightly different dates to each of these stages, depending on the date of introduction of agriculture, pottery, settled villages, hereditary status, cities, and the like. The beginning of the

Classic period in the Basin of Mexico was correlated with the maximum development of the great city of Teotihuacan. In the Maya area, it was tied to the first use of writing and calendars on public monuments.

Despite a general move away from the underlying assumptions of this early form of cultural evolutionary theory, Mesoamerican archaeology is stuck using an inherited framework of time periods that are really stages. Characteristics that were supposed to define the beginning of a stage are now found to have begun before the initial date of the period of the same name. In the Maya area, for example, written texts and dates on monuments, though rare, are occasionally found in Late Formative sites. In general, archaeologists today treat these names as labels for arbitrary time segments. But they still are concerned with the correlation of developments at different sites, and much theoretical and methodological discussion has been devoted to a better understanding of chronologies across the region.

From superposition to relative chronology

Understanding why different dates are assigned to time periods with the same names in different regions introduces a range of topics often taken for granted by specialists: how archaeologists generate dates for *events*; how these are generalized to *time-spans*; and how theoretical assumptions have affected the development of regional chronologies. In order to construct sequences of events, archaeology is dependent on a number of techniques to establish the *relative* age of material traces: which came first, and which followed after. The fundamental principle of *superposition*, stressed in every introductory textbook as the key to relative dating, brings to mind an image of layers, one on top of another, corresponding to distinct time periods, with the most deeply buried being oldest and the others following in order. In reality, part of the process of establishing relative chronologies does depend on superposition, but in Mesoamerica, superimposed deposits are usually more discontinuous and fragmentary than the layer-cake image presented in most textbooks. In many parts of Mesoamerica, major architectural monuments were rebuilt multiple times, and the layering of stages of construction has been a key to establishing local chronological sequences (see Chapter 4, for example). But fine-grained histories of construction at particular buildings cannot be directly applied elsewhere, even in the same site: the layers superimposed in one place have to be tied to layers superimposed in another.

In the history of Mesoamerican archaeology, the main means of linking together different construction histories has been the identification of distinctive types of artifacts, especially ceramics, found in different layers at different locations within sites and across regions. Artifacts, and especially ceramics, were treated like the “index fossils” of geology, on the assumption that, like natural organisms, styles of pottery had histories with well-defined beginnings and endpoints. In actual practice, archaeologists are used to things being more messy, with examples of pottery types popular at different times becoming mixed together as human beings

remodeled buildings and reoccupied previously abandoned terrain. But in each region where any significant amount of work has been accomplished, sequences have been established in the introduction, popularity, and abandonment of groups of pottery types. Such pottery complexes, in combination with superimposed architectural sequences, have been the fundamental basis for local chronology-building. By convention, local units of time derived in this way, called *phases*, are given names unique to particular sites or regions: Barra, Locona, Ocos, and Cherla in the Mazatan region (Chapter 2) and Cuanalan, Patlachique, Tzacualli, Miccaotli, Tlamimilolpa, Xolalpan, and Metepec at Teotihuacan (Chapter 4), for example.

Once such sequences were established in one area, they could be used to help establish sequences in other regions, where items of known relative date had arrived through exchange. Even when items of exactly the type used to create the original sequence were not found, similarities between different regions could be attributed to contact between them, and local sequences coordinated on that basis. The assignment of pottery with Olmec motifs made in distinct local traditions to the period between around 1200 and 900 B.C. (Chapters 2 and 3) is precisely this kind of coordination of different local sequences, not by the presence of an actual “index fossil,” but by the common preference for particular ways of making pottery, or other artifacts distinctive of a specific period in time (see Chapter 12).

But this step of correlating different regional sequences raises a problem that Mesoamerican archaeologists continue to grapple with today. The assumption that has to be made is that sites with a shared artifact type or trait are (roughly) contemporaries. This is fine as long as the goal of chronology-building is getting places aligned in a common framework of general equivalence on the scale of centuries. This was the procedure of Mesoamerican archaeology through the first half of the twentieth century, when it was dominated by the approach now called “culture history.” Culture historians aimed to establish the distributions across time and space of different traits, understood as part of sets of traits characterizing distinct cultures. This was viewed as a first step required before more anthropological questions could be formulated and addressed, a position critiqued as early as 1948 (Taylor 1948).

The assumption of contemporaneity required to align chronological sequences is particularly problematic if the questions archaeologists want to explore deal with interaction at a human scale, where understanding the direction of interaction from one place to another will depend on finer-grained distinctions in chronology. When chronologies are aligned based on shared relative position and the necessary assumption of rough equivalence, it becomes difficult, if not impossible, to ask or answer questions like “Did the suite of practices recognized as ‘Toltec’ develop at Chichen Itza, or was the site rebuilt following a Mexican pattern originating earlier at Tula, Hidalgo?” (see Chapter 12). Even within single sites, the correlation of events across different contexts, which may be critical to understanding how the exercise of human agency affected different social segments or institutions, is made more difficult by the homogenizing effect of constructing chronological sequences composed of blocks of time, even relatively short ones like those recognized at Teotihuacan (Chapters 4 and 5). The issue is not simply that the blocks of time are

too large; the problem is that the construction of chronologies as blocks of time cuts into segments what may be better thought of as ongoing sequences of events.

In saying things like “hereditary social inequality developed in Oaxaca during the Middle Formative (850–300 B.C.)” (Chapter 8), archaeologists understand that the development described took place sometime during the block of time between the boundary dates. The actual date of the first successful institution of inheritance between generations of wealth, titles, and positions of power might have happened at a human scale during the lifetime of people living early in this block of time, or late. The change in social relationships that allowed such intergenerational transfers and legitimized them may have happened repeatedly during the chunk of time, so that in one village, hereditary social inequality “developed” around 800 B.C., in another around 600 B.C., in another only at 300 B.C., and in yet another, never happened during this span of time.

Archaeologists understand that the use of time segments to organize their discussions is a claim that a particular event or events of interest happened sometime during the block of time, not that the event lasted for the whole period. Archaeologists excavate and analyze the remains of a series of “depositional events,” human and natural actions that resulted in the deposit or transformation of material traces of past human activity. Depositional events, including erosion and removal of previously deposited materials, are continuous, but we excavate discontinuous identifiable depositional units in contact with each other at surfaces that may represent substantial gaps in time.

The amount of time it took to create the sediments included in a depositional unit can vary from a very rapid interval to a longer period of time. The amount of time it took to erode or remove deposits, creating interfaces between units, is equally variable. It is as if the layers of the simple model of superposition were created at different speeds. Part of the archaeologist’s craft is narrowing in on the length of time that it took to create a particular depositional unit, while simultaneously identifying the relative segment of time within which the activities resulting in that unit occurred. This dual movement is a fundamental requirement for archaeologists who are interested in interpreting large-scale depositional events, like the construction of monuments, in terms of human decision-making and action (Chapters 2 and 4). Knowing the relative order of things, and even the coordination of different relative orders across space, is not enough: the sequence has to be complemented by *measurements* of real time elapsed.

Measuring intervals of time

A number of methods have been used to tie relative chronologies to measured (chronometric) dates. Archaeologists working in areas of Mesoamerica where historical texts with dates are available have taken advantage of these unique resources. Accounts of Maya archaeology often refer to specific years and sequences of events happening over periods entirely encompassed within a named period, such as the Late Classic. This approach is made possible in the Maya area by the presence of

monuments with inscriptions using the Long Count calendar, for which scholars agree on a calibration with European calendars (see below).

We cannot assume that the dates inscribed on Classic Maya monuments are necessarily contemporary with the use of the sites where they are found, since historical texts can and do record earlier events. But most dates in Maya texts do appear to fall in the time-spans expected on other grounds. They consequently promise the possibility of interpreting sequences of development in precisely measured intervals, down to a day, for the specific constructions with which they are associated (see Chapter 7). The political histories of Postclassic Mixtecs (Chapter 9) also allow definition of events and spans of history measured in absolute terms. But in this case, the histories are not physically tied to the archaeological deposits, as Classic Maya inscriptions form part of the archaeological sites themselves. Determination of the chronometric dates represented in Postclassic codices helps single out likely candidates for the places that were sites of the events recorded, and provides further support for the definition of beginning and ending dates for specific intervals of time achieved with other archaeological methods of chronometric dating.

These other methods of providing chronometric dates for periods, phases, and depositional events can be applied more broadly, wherever the raw material necessary for analysis is found. Chronometric methods take advantage of natural processes of change that occur at known or precisely measurable rates and that affect common materials found at archaeological sites. A prime example is the use of the known rate of decay of radioactive carbon to produce estimates of the time elapsed from the death of plants or animals, by measuring the ratio between different types of carbon in organic materials that are the remains of these plants and animals. While radiocarbon dating is the most widely employed scientific method supporting Mesoamerican chronologies, other methods have been applied to other materials. Obsidian hydration has been employed at a number of sites, including Copan. This method exploits the natural tendency of volcanic glass to absorb water from the atmosphere, creating a "hydrated" rind on fresh glass surfaces exposed when tools were created. Specific rates of hydration have to be measured for obsidian from different sources used in sites with different environments, and fluctuations in climate over time have to be considered, but the method has the potential to provide estimated dates from material that is abundant in most Mesoamerican sites. Obsidian hydration is particularly promising because the *event* dated is the action of a human being making a tool, presumably for use at a time close to when it was made. This tie to human action is not always obvious, even when a chronometric method produces a precise date.

Chronometric methods produce estimates of an interval of time during which it is highly likely that a specific event took place. In the case of obsidian hydration, that event is the exposure of the fresh surface of obsidian. In the case of radiocarbon dates, the event is the death of the organism from which the carbon sample came. This introduces a series of potential problems well known to archaeologists. A sample could come from a plant that died long before it was used by human beings, or that was reused much later (as when a large piece of timber might be recycled from one building to another). Because trees grow by adding layers of

living tissue over dead tissue, even different parts of the same log from a long-lived tree can produce different age estimates. Any sample can be recovered from a deposit created long after the event that would be dated, for example, when trash containing obsidian tools and scraps of plant material was swept up and used as part of the construction fill when a building was remodeled. A single chronometric determination is, consequently, of uncertain significance. Archaeologists seek multiple samples from the same deposits, so that samples that do not belong will stand out.

For each sample evaluated, the possible date of the event that began the process on which the method is based is calculated as a relatively precise estimate. Those estimates are reported by the specialist labs that carry out these analyses as intervals around a central number. For example, Beta-129129, a sample from Puerto Escondido, a site in Honduras where I have excavated since 1994, was reported as 3320 +/- 40 BP ("Before Present," conventionally A.D. 1950). The reported date brackets an interval of 80 "radiocarbon years," and there is a 95 percent probability that the plant providing the carbon sent for analysis died sometime in that interval. Originally, many radiocarbon dates used to measure the beginnings and endings of phases and periods were translated by the archaeologists using them by a simple process of subtraction, essentially counting backward from A.D. 1950. Using that approach, this sample from Puerto Escondido would be presented as equivalent to the date 1370 B.C., plus or minus 40 years, or an interval from 1410 to 1330 B.C. All of the authors who have contributed to this volume use time frameworks that were originally based on this simple process of counting back in radiocarbon years from A.D. 1950.

Unfortunately, this simple conversion procedure is inaccurate, because it was based on the assumption that the concentration of different forms of carbon in the atmosphere has not changed over time. Specialists in chronometric dating have prepared highly detailed graphs showing the divergence between the simple radiocarbon age and the real calendrical age, based on adjustments for fluctuations in atmospheric carbon. For many dates, the effects of this adjustment can be substantial. The sample from Puerto Escondido discussed above actually corresponds to 1690–1510 cal. (calibrated) B.C. Even when the shift in dates seems relatively minor, not calibrating radiocarbon dates can misrepresent the *length* of an interval of time. Sample Beta-129125 from Puerto Escondido was dated 1530 +/- 40 BP, or A.D. 380–460 in radiocarbon years. The actual calibrated date range was cal A.D. 430–625. Not only does calibrating change the date from Early Classic to Late Classic, it greatly increases the span of time within which the event most likely occurred, from 80 to 195 years.

The effects of calibrating do not vary in any single predictable way. Puerto Escondido sample Beta-129126, at 2730 +/- 40 BP, would correspond to the span from 820 to 740 B.C. in radiocarbon years. The calibrated date of cal. B.C. 940–810 shifts the interval earlier (instead of later as in the previous example) and tightens up the interval of highest probability to 70 calendar years (from 80 radiocarbon years). These effects matter when archaeologists are interested in understanding the rate of change and timing of actions within a society. The consistent bias in Early

and Middle Formative radiocarbon determinations, where radiocarbon ages are more recent than calibrated ages, has a particularly marked effect on discussions of the earliest village societies in Mesoamerica (Chapter 2). Use of radiocarbon ages also can be expected to create disjunctions with other forms of measuring time in calendar years, including indigenous calendars like those used on Classic Maya monuments and in Postclassic Mixtec codices. As archaeological interests shift to microscale understanding of the actions of agents operating at the scale of human lifespans and generations, divergences like these will have to be resolved.

Indigenous calendars and mathematics

Indigenous calendars in use when the Spanish arrived in Mesoamerica in the early sixteenth century shared a basic structure. All were based on counting sets of individual days. The universal sign in different Mesoamerican writing systems for the number 1, or a single day, was a dot. In the written texts of the sixteenth-century Mexican highlands, larger numbers were represented by rows of dots, sometimes linked by lines. In the Postclassic Maya codices, in contrast, a second sign stood for the number 5. Represented as a solid bar, this sign can be recognized in Classic Maya monuments, as well as in monuments from the Mexican Gulf Coast and Pacific slope of Guatemala dating to the Late Formative period. It also appears in the monuments from Classic and Late Formative Oaxaca. In some examples, the bar is drawn as a thumb, suggesting it stood originally for counting five fingers.

Using these two symbols, numbers could be expressed through combinations of dots (standing for one digit) and bars (standing for five). One dot (1), two dots (2), three dots (3), four dots (4), one bar (5); bar and dot (6), bar and two dots (7), bar and three dots (8), bar and four dots (9); two bars (10), two bars and dot (11) two bars and two dots (12), and so on, went the mathematical notation used by Postclassic Maya, until, after three bars and four dots (19) it reached a full set of 20, the base of the Mesoamerican mathematical system.

Rather than expressing 20 as a set of four bars, the Maya independently developed the use of place notation, including a third mathematical symbol that could serve as a place holder, like the zero of European math. This third symbol allowed Mesoamerican mathematicians to record multi-place numbers. Because the base of the Mesoamerican number system was 20 (rather than the familiar base 10 of European decimal mathematics), each place in pure Mesoamerican math recorded multiples of 20: 20, 400 (20×20), 8,000 ($20 \times 20 \times 20$), and so on. Sixteenth-century manuscripts recording the tribute paid to the Aztec empire used units of measurement of 20, 400, and 8,000. It is likely that, in addition to being used to measure time, Mesoamerican mathematics had roots in economic transactions (Freidel 1993). But the earliest use of Mesoamerican numbers for which we have evidence is recording dates on monuments, beginning by the late Middle Formative, when a date in the 260-day ritual calendar was carved on San Jose Mogote Monument 3 (Chapter 8).

The 260-day ritual cycle was still in use when the first Europeans arrived in Mesoamerica, and in some Maya communities continues in use today. The cycle combines a sequence of 13 numbers with a series of 20 day names. Beginning on the same date, the shorter cycle of 13 numbers has to restart seven days before the longer cycle of 20 day names. Because the two series are offset from this point on, the second set of 20 day names begins again with the number 8, the third set with the number 2, the fourth with the number 9, and so on, with sets of 20 day names beginning with the numbers 3, 10, 4, 11, 5, 12, 6, 13, and 7. Once 13 sets of the 20 day names are counted, a cycle of 260 days (13×20) is complete, and the two counts return to their first positions simultaneously. Every one of the 260 days can be uniquely specified by its combination of number (from the series of 13) and day name (from the set of 20).

Among the Aztecs, this cycle was named *tonalpohualli* or “count of the days,” and was used by diviners to assess the prospects of all manner of proposed projects (see Chapter 11). Most central to every person’s life, the *tonalpohualli* allowed divination of individual life chances, based on birth date (Monaghan 1998). Many Postclassic Central Mexican people used their birth date in the 260-day calendar as a name. The close association of the 260-day calendar with individual birth dates is also evident in much earlier Mesoamerican societies. The inscription on San Jose Mogote Monument 3 has been interpreted as the use of birth date as a name. Later Classic and Postclassic Oaxacan monuments and codices used the 260-cycle positions as personal names as well. Even when the birth date was not used as a name, as on Classic Maya monuments, anniversaries of birth and death were calculated using the 260-day cycle. The close association of the cycle with human fate has led some scholars to propose an origin in human life cycles, as an approximation of nine lunar months, a rough estimate of the length of human pregnancy (Aveni 1980). Other scholars view this cycle as an abstract development, the mathematical product of multiplying two sacred numbers, 20 (a complete cycle) and 13 (a number associated with levels of heavens among sixteenth-century Maya and Aztecs).

While the 260-day cycle is the oldest for which we have direct evidence from inscriptions, it is highly likely that the Mesoamerican solar year was equally ancient. Both calendars likely long preceded the first preserved monumental records of their use. Measurements used to lay out the Early Formative ceremonial center of Paso de la Amada were spaced in multiples of 13, 20, 260, and 365 units, suggesting that already both the 260- and 365-day cycles were calculated (see Chapter 2). The 365-day solar year, in use from Central Mexico to the Maya area when the Spanish arrived, was also based on the fundamental complete unit of 20 days, further subdivided into groups of five days. To approximate the solar year, 18 complete cycles of 20 days and one incomplete cycle of five days were required. This cycle of 18 “months” of 20 days, with a period of five extra transitional days, was the basic civil calendar of the Aztec and Postclassic Maya states. Community-wide ceremonies were scheduled in it, many with clear associations with an annual agricultural cycle.

The combination of the 365-day calendar and the 260-day ritual cycle was the basis among Central Mexican peoples in the sixteenth century of records of periods of 52 years. The measurements recorded at Paso de la Amada suggest that the

52-year cycle was already important in the Early Formative (Chapter 2; see also Chapter 4). Because the beginning points of the two cycles did not coincide until 52 solar years had passed, every single day within a 52-year cycle could be uniquely distinguished by naming its position in the 365- and 260-day cycles. This system was employed in the Postclassic codices from Central Mexico and Oaxaca. Because the entire cycle repeated every 52 years, a date in this system was fixed only relative to other days in the 52-year cycle. By combining the 365- and 260-day cycles with a third cycle, recording changes in the visibility of the planet Venus every 584 days, it was possible to create a double cycle of 104 years, with each date uniquely specified. But the main way that individual cycles of 52 years could be placed in order in Postclassic Mexican historical codices was through their relationship to the genealogical connections of major historical characters over successive generations (Chapter 9). Dates with the same names, based on their position in the 365-day and 260-day cycles, could be distinguished because they were associated with the lives of different public actors.

The earliest records of dates in the 365-day solar year are carved stone monuments dating to the Late Formative period, found in an area extending from the Gulf Coast of Mexico to the Maya highlands of Guatemala. They are combined with records of the 260-day cycle. In addition to the evidence these early monuments provide for the use of the fundamental Mesoamerican 52-year cycle, they also employ a separate continuing time cycle. Most familiar from its extensive use in Classic Maya monuments, scholars call this system the Long Count. The basic unit of the Long Count is a single day. Using the zero symbol and place notation, Long Count dates can record any number of days. Normally, the numbers in the Long Count are arranged in a column, with the lowest place at the bottom and higher places above them. The lowest place records the numbers from 1 to 19 that can be written out using bar and dot alone.

The second place in Long Count dates records multiples of 20 days. This coincidence with the basic 20-day unit of the solar calendar perhaps motivated a slight departure from strict place notation and base 20 math in the third position of Long Count dates. Instead of recording multiples of 400 days (20×20), it records multiples of 360 days (20×18). With this innovation, the first three places in the Long Count correspond to units of a day, a cycle of 20 days (the length of a solar year “month” or 260-day cycle day name series), and an approximation of the solar year (360 days).

As a result of this innovation, each higher position in the Long Count records approximate multiples of years. The fourth place records 20 cycles of 360 days; the fifth, 400 cycles of 360 days. The majority of Long Count dates use only these five positions. In base 20 mathematics, the use of these five positions allowed Mesoamerican people to precisely date any event within a span of almost 8,000 years – far more time than their cultural tradition, or any continuous cultural tradition known anywhere in the world, lasted. In a few extraordinary instances, Classic Maya scribes recorded Long Count dates using positions above the fifth place, arriving at calculations of millions of years.

The use of the Long Count established a common historical frame for those Mesoamerican peoples who employed it. The oldest inscribed Long Count dates

discovered so far, from the Late Formative period, have the number 7 in their fifth position. Archaeologists conventionally refer to these as Cycle 7 dates. Early Classic Maya inscriptions feature dates in Cycle 8, those of the Late Classic Maya carry dates in Cycle 9, and the beginning of the Maya Terminal Classic period is conventionally equated with the first dated monuments recording Cycle 10. Once the logic of the Long Count was understood, Mesoamerican scholars realized that the fact that the Long Count calendar is a fixed, absolute dating method promised the possibility of establishing an absolute relation to European calendars. What was required was a date recorded both in the Long Count and in the western European calendar.

Unfortunately, the Maya of the Postclassic did not generally use the Long Count calendar. Instead, they employed a cycle of groups of 20 periods of 360 days (*katun* in Yucatec Maya) in indigenous texts like the Books of Chilam Balam (see Chapter 12). While these *katun* cycles shared the same positional logic as the Long Count, based on counting days, periods of 20 days, and periods of 360 days, they were not related explicitly to the beginning point that had anchored dates recorded in Cycles 7, 8, 9, and 10. The story of the development of the now widely accepted correlation of western European and Maya Long Count calendars is too complex to cover here (see Aveni 1980:204–210). Records of dates in Maya calendars mentioned in the post-conquest Maya documents, placing the ending of a 360-day period and a *katun* in the sixteenth century near A.D. 1540, provided one source of evidence for possible correlations. Another key came from the identification of records of astronomical events on Classic Maya stelae and in the Postclassic Maya Codex Dresden. Because the dates for these universally observable astronomical events were known in the European calendar, they provided points of potential correlation. In the Codex Dresden, some of these astronomical events were related to Long Count records.

Using this and other information, specialists were able to narrow in on a few likely correlations between the different calendars. The correlation used today places the first entry of the Spanish into Yucatan in Cycle 11. Based on this correlation, the base date of the Long Count was in 3113 B.C., long before the first settled villages known in Mesoamerica. The dates for Cycles 7, 8, 9, and 10 calculated with this beginning point are generally consistent with the measured dates independently derived from radiocarbon samples from sites with monuments inscribed with Long Count dates. With this correlation as a basis, events in indigenous Mesoamerican texts created during the Late Formative and Classic periods can be reconstructed in absolute time reckoning, opening the door for understanding how the actions of people, described in indigenous historical texts, are related to the larger-scale developments perceptible through archaeological research.

Writing in the Mesoamerican Tradition

Writing was a fundamental part of Mesoamerican culture in the sixteenth century. The use of writing had a long history, extending back at least to the end of the

Middle Formative period. While several specialized writing systems were created and used by different Mesoamerican societies, they shared a number of fundamental features. Foremost among these was the strong relationship between writing and other forms of representing information graphically. Mathematical records are among the earliest examples of written texts known from Mesoamerica, and a uniform set of numeral signs was used throughout the history of the different societies, regardless of other differences in the way they used writing. A dot is the numeral 1, everywhere; it does not change its value, and no Mesoamerican writing system requires use of a different symbol for the numeral 1.

This uniform graphical numeral system is combined with other systems of signs that stood for whole concepts, words, or sounds. These vary from one language and writing tradition to another, which makes sense given the vastly different languages being recorded in different Mesoamerican societies, each with different sounds and grammatical structures. All Mesoamerican systems of signs for text are to some degree pictographic: the signs are derived from drawings of things. Over the long history of individual writing systems, like that of the Maya (extending from at least 200 B.C. to the mid-sixteenth century A.D.), the graphic images that formed the basis for text signs might be highly conventionalized, making it difficult for a modern viewer not steeped in the original visual environment to initially see the representational relationship between a sign and the sound, word, or concept for which it stood. But it is possible in many cases to demonstrate how an image was transformed into a textual sign. Some writing systems, such as those employed at Teotihuacan (Chapter 4), in the Postclassic Mixtec codices of Oaxaca (Chapter 9) and by the Aztecs (Chapter 10) use pictographic signs that are consistently clear images of objects.

Defining a sharp boundary between writing and other forms of graphic visual representation in Mesoamerica is sometimes very arbitrary. In practice, there was a complex relationship between the graphic signs for numbers, words, and sounds, and other graphics that formed images juxtaposed to texts. Texts were placed beside, above, or below images, on monuments, portable objects like pottery vessels, and bark paper or deerskin books. Texts formed part of the overall design of pictures. Individual text signs could be placed within drawings, forming elements of a picture, for example, embedded in the drawing of a headdress or other part of costume. Texts could be laid out so that in order to read them, a viewer's gaze passed through an image. Parts of the picture could be drawn intruding into the text. Text signs themselves were closely related, both in their forms and their use, to non-textual graphic images. The drawing of an object, such as buildings sketched in Postclassic Maya codices, might have the same form as the sign representing the word for the object.

For example, the abstraction of some designs carved on Early Formative pottery (Chapter 3) can be seen either as extreme conventionalization of a common image, or as the kind of abstraction that was the basis for converting some images to service as text signs. Researchers identify groups of abstract, conventionalized, pictographic images as texts in later Mesoamerican societies specifically because they follow rules for arrangement of signs in a linear reading order. Scholars see the linear order of

signs in texts as intended to represent a sequence of words whose grammatical order helps to convey meaning. To ensure that a *sequence* of signs would be reproduced, graphic devices that coached viewers to review text signs in a particular order were necessary, so that actors, actions, and the objects of actions could be made clear, without the visual context that makes these relationships clear in a drawing showing an event.

In the Maya writing system, for example, texts were arranged in columns, double columns, or rows, within a regular grid structure joining signs in reading order. Once a reader learned the rules of order, he or she could follow the signs in any Maya text. On carved monuments, texts might be further set off by being raised in higher relief or incised in lower relief. In drawings, including those in the Postclassic Maya codices, texts might be separated from each other by lines outlining a text and related image. In Postclassic Mixtec codices columns of images and texts were separated by lines that led readers down, across, and up the pages which folded out, one after another, into a single continuous sheet.

Earlier Formative images have no apparent linear reading order, and so are not interpreted as texts. But they, and later non-text images, can still be “read” as conveying messages, as *iconography* (literally, writing with images). All Mesoamerican images are arrangements of conventionalized visual elements. The key difference is that images that can be interpreted iconographically have no set reading order, and provide relatively subtle guidance for a viewer’s eye. Sequence is less significant in understanding a Mesoamerican image than other relations among elements, like relative prominence in the visual field, signaled by greater size, frontality, placement at a higher elevation within a composition, and greater complexity of detail. The roots of Mesoamerican writing may be seen in the steps through which, in the Formative period, conventionalized graphic signs were added to clarify details not otherwise evident in an image, and abstracted signs were arranged in standard reading order rather than left open to multiple reading orders.

Conventionalization and abstraction of graphic signs was commonplace on the monumental sculpture, carved pottery, and incised jade works of the late Early Formative and early Middle Formative. The animals depicted on pottery vessels could be reduced to elements such as a motif representing a hand or paw, incised alone, recognized as a name-like reference to the crocodilian creature whose foot was represented in the same way (see Chapter 3). Unique elements represented in the headdresses of Gulf Coast Olmec monumental portrait heads can be identified in headdresses of human figures on other Gulf Coast monuments, suggesting these signs stood for a name-like personal or group identification (Grove 1981). While the relative positions of actors, actions, and objects of action can be represented with little ambiguity in non-textual visual images, the specific identity of an actor, a place, or a date is less obvious. The social context within which an image was produced and circulated might initially make these items clear, but as social scale grew, and images remained in view over longer periods of time, the possibility that a viewer would not know the identity of the actor, the time of the action, and where it took place, would grow.

The earliest recorded uses of text-like signs, such as unique headdress motifs on Gulf Coast Olmec monuments, appear to specify precisely this kind of fleeting information without expressing any grammatical intention requiring a specific reading order. The earliest unequivocal texts known, such as the 260-day cycle position recorded next to a human figure on San Jose Mogote Monument 3, have the same effect of recording information about the context of an event that would not be obvious from the picture, but add a linear reading order: the day-number-day sign sequence of the 260-day cycle position. It is in the recording of dates that early Mesoamerican people first impose linear reading order in visual representation, a requirement for the successful understanding of place notation numbers.

The most obvious early instances of the incorporation of text signs into linear order are the earliest inscriptions beginning with Long Count dates, Cycle 7 monuments from sites such as Tres Zapotes and La Mojarra in the Gulf Coast of Mexico. The juxtaposition of abstract signs in a linear order was extended to non-calendrical signs in other late Middle Formative to Late Formative visual media. La Venta Monument 13, a circular stone carved in low relief, shows a single striding human figure. At the left side of the image, a single footprint could be seen as either a naturalistic detail showing the direction from which the figure traveled, or a text sign. A row of three signs in a column ending with a bird head on the right side can be identified as identifications of the person, not unlike the headdress motifs of earlier Formative period sculptures from the Gulf Coast. The whole image suggests a text with linear reading order, from left to right, noting the movement of the named and depicted person.

With the exception of deerskin and bark paper codices of Late Postclassic date, all the written texts known from Mesoamerica are on durable materials that could survive centuries of exposure to the tropical climate. Carved stone monuments are the largest group of objects with written texts known, with some individual Classic Maya sites yielding over one hundred (see Chapter 6). Texts were also recorded on the painted walls of buildings and tombs, with examples surviving from the Maya lowlands, Oaxaca, and Teotihuacan. The content of those texts that have been interpreted deals, as might be expected from their monumental scale and placement in places of assembly within site centers, with political events such as warfare, records of succession in office, visits between rulers of different sites, and the birth, maturation, death, and burial of members of the ruling nobility. The inclusion in many of these public monuments of records of ceremonies, including sacrifices, visions, and dedications of buildings and monuments, has led scholars to see service as ritual specialists as a fundamental role of governing groups throughout Mesoamerica's history.

Texts have also been recorded carved or painted on pottery vessels and other portable objects, including metal, bone, jade, and other stone ornaments. The texts on many such objects can be understood as recording histories on objects that circulated as heirlooms, connecting nobles across generations (Joyce 2000b), including references to the same kinds of ceremonies and public actions mentioned on monuments. Images on painted Maya pottery vessels show what appear to be

fan-fold books very much like the surviving Postclassic codices, but none of these have survived in legible condition from earlier periods. As a result, the range of topics covered by known written texts is likely to be skewed toward matters of public governance and ceremony.

The Postclassic books that have been preserved include content similar to that of earlier public monuments, such as the histories conserved in Mixtec codices (Chapter 9). But other Postclassic books include material not represented in monuments, such as records of astronomical observations and what appear to be ritual almanacs for use in carrying out rituals or divination (Chapter 12). There is no way to know what was recorded in the now lost bark paper and deerskin books from the Classic period or earlier. Allusions in Classic Maya texts to the deeds of supernatural beings in the far distant past suggest that written books might have contained mythology, as did the post-conquest texts created by lowland and highland Maya (Chapter 12). It is also likely that lost perishable texts recorded economic information not unlike the tribute lists that were created in a hybrid style in Central Mexico after the Spanish Conquest to represent the economic relations of the Aztec empire (Chapter 10). What is indisputable is that one way that Mesoamerican structures were reproduced over time, including after the events of the Spanish Conquest, was through the reproduction in texts of immense amounts of historical tradition. Mesoamerican societies were not only literate; they were self-consciously historical, invoking precedents from the past as grounds for present action.

The kind of historical precedents typical of Mesoamerica, recorded in European writing after the Spanish Conquest, have conventionally been called cyclical, and contrasted with a purported linear sense of time supposedly typical of western European societies. At times, this emphasis on the cyclical nature of the Mesoamerican sense of history has led to a characterization of Mesoamerican people as fatalists, doomed to repeatedly experience the same kinds of events. The significance of divination in sixteenth-century Mesoamerican societies has been offered as evidence of this. But the same texts that tell us about Aztec birth-date divination also record that parents could delay the recognition of a child's birth to avoid a birth day with bad associations. Classic Maya rulers contrived spectacular coincidences between the dates of ceremonies, such as inauguration in office, and astronomical phenomena associated with mythical events. Far from being fatalists doomed to repeat time cycles that determined their lives, Mesoamerican peoples appear to have been able to strategically create equivalences between recorded events and present circumstances, giving meaning to the events of their lives and the histories of their societies. The histories they drew on had precedents for everything likely to happen, including the invasion of the region by foreign people speaking strange languages and lacking knowledge of the basic forms of civilized life. The cyclical evidence of their historical tradition assured them that no political regime lasted for ever.

Mesoamerican historical traditions of the sixteenth century were varied, and each had specific features. The histories of the most recent centuries recorded in Postclassic codices (Chapter 9) and post-conquest texts like the Books of Chilam Balam

and Popol Vuh, contain records that can be related to archaeologically documented events, such as the abandonment of Mayapan in Yucatan, the battles between Quiche and Cakchiquel Maya in highland Guatemala, and the War that Came Down from Heaven in Oaxaca. Many Mesoamerican historical texts contain descriptions of earlier idyllic societies, often credited with founding institutions such as the calendar, or with inventing crafts and social institutions. The Aztecs identified early innovators as the Toltecs, the people of a great city-state called Tollan.

Apparent references to prestigious Toltec predecessors to Postclassic city-states are part of historical traditions throughout Mesoamerica (Chapters 9, 10, 11, and 12). Archaeologists have long identified these traditions with an archaeological site north of the Basin of Mexico, Tula, Hidalgo, but there is relatively little evidence that this site had the kind of impact across Mesoamerica necessary to inscribe itself in the historical imagination as a kind of Rome (Gillespie 1989). An earlier Mexican archaeological tradition that identified Teotihuacan as the historical model for Tula in Central Mexico may be more correct. Teotihuacan was the first great city-state to have an effect on political affairs over an area reaching to the ends of eastern and western Mesoamerica (see Chapter 7). It is also possible that there were multiple real models for the Toltecs of Postclassic historical tradition. In the Postclassic Maya lowlands, Chichen Itza may have had the same kind of reputation as Teotihuacan had in Central Mexico, as a city much more powerful than any that followed in the late historic period.

Postclassic Mesoamerican historical traditions traced the innovations of governance to mythical cities whose most likely models flourished in the Classic period. The peoples of the Classic period who left recorded traditions of history linked their rulers to supernatural beings active in the first days of time, before the sun rose, when the world was dark like the background color of Maya painted pots interpreted as images of these mythical times. The same imagery is found in post-conquest histories, many of which describe times before the calendar was in use, before the sun rose for the first time. The most elaborate of these post-conquest traditions detail cycles of creation and destruction of the world and living beings before their current era. These traditions are not segregated from the histories of the first great city-states, or from the detailed records of the actions of particular noble and ruling families. They testify to a broadly shared sense of Mesoamerican history. In that broad Mesoamerican historical imagination, common history began when time could be counted with the calendar. The deeds of early heroes and gods prepared the way for human beings. Human beings created great cities which were destroyed, from which the later peoples dispersed. Individual royal and noble histories were validated by connection to these great city-states. Specific local events, institutions, and practices were linked to earlier times. Mesoamerican people practiced "indigenous archaeologies" (Hamann 2002) and created connections to the past through the use of material from earlier cultures, going all the way back to the Olmec (Joyce 2000b). In broad terms, the historical scenarios archaeologists reconstruct were also known to and valued by Mesoamerican peoples.

What Happened in Mesoamerican History?

Because it was an interconnected network of societies, there were historical developments common to all Mesoamerican peoples. Late Archaic hunting and gathering groups in different areas adopted new subsistence practices that required them to schedule cultivation of plants, particularly maize, in their annual round, and provided them with more predictable yields from cultivation. Exchange of materials, including obsidian and plant products, between mobile Archaic peoples had already created connections between the groups that established the first year-round settlements at the time of the late Archaic to Early Formative transition. Repetition of contacts reinforcing shared values, disseminating common practices, and leading to the linguistic and cultural identities across political, linguistic, and social boundaries implied by the term Mesoamerica took place along established routes of social and material exchange among these maize-cultivating, obsidian-working, early villages.

Distinctive material features of Mesoamerican culture developed in some Early Formative sites by 900 B.C. (Chapters 2 and 3; see also Joyce and Grove 1999). They include certain kinds of public architecture, notably monumental platforms and ballcourts; the employment of relief carving as a medium for public and semi-public political imagery; and the use of a restricted range of materials (especially jade or other greenstones) to produce costume ornaments and sumptuary goods. They were unprecedented innovations, a punctuated shift in practices. No later polity recognizable as Mesoamerican lacked its own variants of these features. These developments in the Early Formative circumscribed the choices open to later Mesoamerican peoples (Joyce 2000c; Joyce and Grove 1999).

Early Formative villages in which social differentiation is evident also have evidence for the beginnings of skilled craft production, including obsidian blades from prepared cores, textiles, iron ore ornaments, and pottery vessels (Chapters 2 and 3; see Clark and Blake 1994; Clark and Gosser 1995; Hendon 1999; Joyce 1999). Patronage of social ceremonies accompanied by feasts created occasions on which the products of patronized household craft production were displayed. This contributed to the creation of distinctions between different social groups living within these villages. Simultaneously, the construction of monumental architecture in some villages created different spaces within sites, forming more exclusive groups of people with special access to these non-domestic spaces (see Chapters 2, 3, and 4). Monumental art created at this time represents human actors as mediators crossing boundaries between the everyday world and supernatural world, represented as a cave-mouth of a supernatural being with animal features like those of the crocodile-like species found throughout the lowlands of Mesoamerica. The abstraction of signs standing as personal identifiers reinforced the identification of people in art as specific members of these early societies. Representation in this medium was not open to everyone, another form of exclusiveness. All or most women, children, and older adults were not represented in monumental art (Joyce 2000a).

In Middle Formative Mesoamerican societies, the number of places employing monumental architecture and art to inscribe social differences within individual communities grew. The execution of related imagery on jade objects conflated value (jade) with exclusivity (representation in art), marking a small group of individuals as privileged at multiple sites (Joyce 2000c). The same symbols, forms of objects, and raw material were used throughout Mesoamerica, so it is clear that the marking of exclusivity within these communities was the result of practices that extended throughout the area. The people buried in pyramids at Los Naranjos, Honduras, Chalcatzingo in the Mexican highlands, and La Venta in the Gulf Coast, wear the same kinds of ornaments, even though other characteristics of these sites are quite different (Joyce 1999). By the end of the Middle Formative, writing and calendrical notations were being added to some monumental sculptures, further specifying the historical identities of the persons who monopolized the privilege of being represented.

Mesoamerican societies with evidence of Early and Middle Formative development of social distinction appear to have been unable to integrate social distinction and larger social scale into stable new communities. Across Mesoamerica, the chronological boundary between the Middle and Late Formative is associated with shifts in site histories. Distinct developmental trajectories are found in each region. Some societies (such as those in the Valley of Oaxaca and Maya area: Chapters 6, 7, and 8) employed writing and historical monuments in public spaces. Others (notably Teotihuacan: Chapters 4 and 5) emphasized monumental architecture without display of dated texts.

Sites that flourished starting in the Late Formative grew to much greater sizes than their predecessors, and featured complex internal differentiation between rich and poor, politically powerful rulers and the commoners they ruled, along with specialization in crafts and other social roles. These city-states continued to develop throughout the Classic period. They were linked together by complex social, economic, and political ties. Teotihuacan, in particular, seems to have been a center whose status was acknowledged by nobles as far away as the Maya lowlands (Chapter 7). Exchange of material goods among Classic cities apparently accompanied social exchanges, including religious pilgrimages, marriages between nobles, and other ceremonies initiated by events in the lives of individual people. Exchanges between ruling nobles reinforced common structures of value with deep histories in Mesoamerica, while increasing the divide between rulers and those they ruled.

In every region studied to date, the transition from the Classic to the Postclassic period involved disruptions in some existing city-states. This includes evidence for burning and defensive works at Teotihuacan and sites in the Maya lowlands, and malnutrition, ill-health, and population decline at sites where there is evidence for environmental damage, such as Copan (Chapters 4, 7, and 12). But other city-states flourished at the same time, sometimes clearly at the expense of declining cities like Teotihuacan, whose neighbors Xochicalco and Tula grew in the early Postclassic.

Across Mesoamerica in the Early Postclassic, nobles of many newly founded or newly prominent city-states shared a complex of material practices that

distinguished them from the people they ruled in household culture and public ritual (Chapter 12). The cosmopolitan preferences for the same luxury goods on the part of Early Postclassic nobles fueled development of new craft centers for the production of metal ornaments and luxury pottery. The city-states dominated by Postclassic nobles emphasized militaristic imagery, and may have featured the first permanent standing armies in Mesoamerica. The histories of these city-states included complex political, social, and military negotiations (Chapter 9).

Early Postclassic cities gave rise to the first tribute states in Mesoamerica's history, culminating in Central Mexico in the growth of the Aztec tributary state (Chapters 10 and 11). At the end of the sixteenth century, Mesoamerica was organized in a series of highly urbanized city-states, with institutionalized government, inherited social distinction, and high degrees of social stratification. But it was also still an area bound by shared values, shared calendars and traditions of literacy, and shared historical consciousness traced back to the time when Olmec sites of the Gulf Coast of Mexico first took form. It is no accident that an Olmec jade mask was among the objects placed in pits under the foundation of the Aztec Great Temple. Mesoamerican states shared a sense of history reinforced by practices ranging from the everyday, taken-for-granted routines of daily life to the events timed by the common calendar, aimed at marking relationships between humans, supernatural beings, and the natural world.

What Happened in the History of Mesoamerican Archaeology?

The study of Mesoamerican archaeology has not been static. From beginnings in nineteenth-century antiquarianism, nationalism, and imperialism, archaeology has been institutionalized in both North America and Latin America, where the majority of contemporary researchers are based. Major theoretical developments in Americanist anthropology have affected the development of the field, as did the complex currents of the cultural heritage industry and tourism in the twentieth century. Space does not allow thorough discussion of any of these topics (see Chinchilla 1998; Hervik 1998; Oyuela Caycedo 1994). But some major intersections with the contributions to this volume should be singled out for comment.

Spanish colonial accounts of the complex societies of Mesoamerica fell into historical disuse in the late seventeenth and eighteenth centuries. By the beginning of the nineteenth century, it was news in Europe and North America that there were ruins of a great civilization, rivaling that of the Classical Mediterranean, concealed in the tropical forests of Central America. Speculation concerning the origins of the people who built these ruins included claims of connections to lost civilizations buried beneath the ocean, and to the ancient Egyptians.

But many scholars in the eighteenth century worked on the assumption that the ancestors of the native peoples in the region had been the builders of the great pyramids of Teotihuacan, Chichen Itza, and Copan. Antiquarians from the US, France, Germany, and Great Britain traveled throughout the region after independence was declared from Spain, collecting archaeological objects, historic documents, and

ethnographic materials, sometimes in conditions of dubious legality. From these roots modern scholarship of Mesoamerica grew, fostered in North America by newly founded anthropology museums in New York, Washington, and Chicago, and at Harvard and the University of Pennsylvania.

For the social elite of the newly independent republics of Mexico and Central America, the material remains of prehispanic cities were a legacy that provided a means to promulgate distinctive national identities rooted in the region. Familiar today from the works of Mexican writers such as Octavio Paz, and Guatemalan authors such as Miguel Angel Asturias, nineteenth-century nationalists developed the ideology of *mestizaje*, an origin through mixture of the strength of indigenous and Spanish cultures. (As has often been remarked, *mestizaje* leaves no place for the modern peoples of African descent present throughout the region as a result of the institution of slavery. Skin color becomes complexly mixed with markers of identity potentially more open to manipulation or even personal choice, such as language and dress.)

Two refrains that run through nineteenth- and twentieth-century ideologies of *mestizaje* are intimately related with archaeology. First, in *mestizaje* ideologies, the great prehispanic past was a fallen past, in one way or another. The Classic Maya had collapsed and disappeared, and the modern Maya-speaking people were at best their highly degraded descendants, the purest being the Lacandon people, represented as pre-agricultural. The Aztec, while the dominant polity in the sixteenth century, were cruel and corrupt, having built an empire on savage conquest and unbridled human sacrifice. Second, *mestizaje* ideologies represented the future of the region as one of inevitable cultural mixture, as if the distinct native peoples were disappearing and being assimilated. The rhetorical image for this was Doña Marina (or La Malinche), the native woman who translated for Cortes, and whose children were, it was claimed, the “first mestizos.”

From the perspective of *mestizaje*, archaeological sites and objects were a national patrimony, representing the cultural history of an emerging mixed population with all of its “hybrid vigor.” In each country, different archaeological sites became the symbol for a singular indigenous heritage. In Mexico, archaeology of Central Mexico was emphasized, with Aztec sources providing the basis for reconstructing prehispanic Mexican history. As a consequence, the names of Aztec deities were employed throughout the region, regardless of local languages and differences in religion and belief. In Guatemala, beginning already in the 1830s, selected highland archaeological sites were subjected to investigation: Utatlan, Mixco Viejo, and (transgressing national borders) Copan (Chinchilla 1998). Honduras emphasized its Maya heritage, represented uniquely by Copan.

For North American researchers, the significance of the Central American sites was somewhat different. They constituted an alternative to the Greco-Roman heritage of Europe, supporting the concept of the Americas as a “new world” independent of the religious and political traditions of European monarchies. Literacy was key in this discourse, since the relative status of researchers dedicated to the study of the past was linked directly to what was considered the degree of advancement of their subjects, which in turn was measured by the mastery of writing by

the people being studied (Hinsley 1985). With the largest body of texts, including complex mathematical and astronomical calculations, the Maya quickly became the favored subject of study, without respect to new boundaries between the Central American republics. Those Maya sites with limited use of writing, including all Postclassic sites, many Highland Maya sites, and sites in the southeastern Maya lowlands of Honduras, were not of interest, except for comparison.

By World War I, researchers from North and Central America with these (and other) agendas had succeeded in sketching the outlines of a basic cultural evolutionary sequence enshrined in the chronological periods or stages discussed above. The sixteenth-century Mesoamerican societies were understood as great empires, militaristic and secular successors to Classic city-states. These Classic city-states in turn had developed from simpler societies of farmers, perhaps sharing roots with the complex societies of South America. The framework of Preclassic, Classic, and Postclassic, while as yet not firmly associated with absolute dates, already was well developed.

World War I, and the closely coincident Mexican Revolution, brought a hiatus to archaeological research in the area. At about the same time, archaeological research in North America had been transformed by institutionalization in academic departments of universities. These institutions dominated the succeeding growth of Mesoamerican archaeology. They approached the field with quite different concerns than their museum-based antiquarian predecessors. North American archaeologists, trained in the few existing anthropology programs in the country, shared an interest in developing space-time distributions of cultural traits, the hallmark of cultural history. They emphasized cultural particularism and, while maintaining the cultural evolutionary framework they had received, treated it more as a set of time periods than as cultural stages. Mexican archaeologists developed similar archaeological projects under a more explicit cultural materialist theory of social evolution, often explicitly identified as Marxist. Regardless of theoretical orientation or institutional base, the archaeologists operating in this period emphasized the same primary cultural identifications, of Mexican archaeology with the Aztecs and their immediate predecessors in Central Mexico, and Central American archaeology with the history of the rise and fall of Classic Maya society.

For researchers working between the world wars, indigenous Mesoamerican people were a reservoir of conservative traits, physical, cultural, and linguistic, that were in danger of disappearing, and overlaid with layers of superficial Spanish culture that could be peeled back like layers of an onion. Archaeologists worked closely with, or even as, ethnographers, documenting cultural practices that were believed to be in the process of disappearing, as a way to explain and interpret pre-hispanic archaeological sites. No recognition was given to the possibility that living indigenous people might have particular interests in archaeological sites, different from those of other members of national populations. Even when independent Maya attempted to communicate their unique interests in specific archaeological sites, such as Tulum and Chichen Itza (Sullivan 1989), scholars did not apparently see this as a different kind of claim on the past.

World War II again interrupted the course of Mesoamerican archaeology. At the same time, Americanist anthropology was beginning to experience changes, leading to renewed concern with the processes of cultural change. Walter W. Taylor (1948) famously called Mesoamerican archaeology, particularly that of the Maya, to task for sterile cataloguing of things with no attempt to explain how they worked (functionalism) or how they were related to each other (structural functionalism). In the post-war era, archaeology throughout the Americas saw a renaissance in terms of degree of effort, new intellectual programs, and new methodological approaches. In the US, university education was newly available to men who had served in the army, and university departments of anthropology began to expand. By the early 1960s, new sources of funding existed for anthropological archaeology. Technologies such as carbon dating and the use of air photos were applied to Mesoamerican archaeology.

One development probably deserves more credit than any other for changing the emphasis of North American archaeological research in the region: the appointment of Gordon R. Willey as Bowditch Professor at Harvard University in the 1950s. With archaeological experience in North and South America, Willey was a graduate of Columbia University where he was a protégé of W. Duncan Strong. He approached Mesoamerica from the perspective of Julian Steward's cultural ecology, a theoretical model that argued that different levels of cultural complexity were linked in regular, but not deterministic, fashion to environmental conditions, including the human environment provided by past societies and contemporary groups. Willey developed and applied a regional approach to archaeology in order to obtain the kind of information that would be necessary to employ this approach. His settlement survey of the Belize river valley inspired methods still standard today.

Settlement survey took as its focus a region, not a site. All the sites in a region were considered to be part of a system of interlocked economic and social units. Differences in the size of sites would be indications in differences in economic power within a region, and probably of social prominence and political authority. Settlement patterns would provide the basis for selecting sites for excavation that would allow the archaeologist to explore the full range of social activity. The influence of Willey's approach was profound. William Sanders, his first Ph.D. student, applied the approach, and with his colleagues, refined it, in the landmark Basin of Mexico survey project (see Chapter 11).

In the Maya area, researchers following Willey's Belize Valley Project identified the smallest repeated unit of settlement with the fundamental economic unit of society, the household, and argued that understanding this basic unit would be a key to understanding society as a whole (Flannery 1976; Wilk and Ashmore 1988). Coinciding with the rise of processual archaeology in North America in the 1960s and 1970s, the development of household archaeology was concerned with formulating research problems so that they could be tested scientifically. A link was made between the house compound (a group of buildings, exterior space, and external features like storage pits) and the ethnographically identifiable household (a group of people sharing the labor of carrying on from day to day and perpetuating

themselves through bearing and raising children). This was a bridging argument that allowed archaeologists to formulate assumptions, for example about the division of labor by sex and age, and specify what characteristics in a site would lend support to, or disprove, their assumptions.

The combination of settlement survey and household archaeology became the fundamental approach of North American archaeologists working in the area. Settlement surveys often started with the definition of an area around a highly visible site, labeled a political or ceremonial center, and proceeded to explore the distribution of other sites presumably related economically, politically, and socially. Major sites central to regional settlement survey projects were the focus of extensive excavation in projects like those of the University of Pennsylvania at Tikal, the multi-institutional Basin of Mexico project at Teotihuacan, and the University of Michigan in the Valley of Oaxaca.

The assumptions made in settlement pattern surveys about the regional influence of larger sites reinforced other existing biases toward the excavation of major sites. Antiquarian interests in excavation as a means to acquire museum specimens for foreign institutions were replaced by nationalist interests in building museums within the countries in the region. The newly excavated sites became important points for national histories drawing on the prehispanic past. By the late 1970s, archaeological sites in the region were explicitly understood as cultural heritage, and archaeology was practiced as often because sites were caught up in development projects as because of an abstract academic interest in ancient societies or cultures. Archaeological sites and museums started to play a larger role in the economies of the region, as mass cultural tourism began to develop. Major projects at sites like Copan were launched in the late 1970s specifically to improve the visitor experience.

This was not the first time that archaeological research had responded to the imperatives of visitation. Archaeologists working at Chichen Itza starting in the 1920s, and at Copan in the 1930s and 1940s, were among those who explicitly worked to restore architectural monuments in the Maya area for later visitors. In Mexico, Leopoldo Batres engaged in extensive restoration at Teotihuacan even earlier (see Chapter 4). But, beginning in the 1970s, international financing was targeted to this purpose. The entry of Mesoamerican archaeological sites into the World Heritage Register of UNESCO paralleled the rise of development-funded projects. Mexico invested substantial funding in creating tourist zones, including those on the east coast of Yucatan that now serve as gateways for international tourism to Maya archaeological sites.

The focus of development archaeology was in some ways a return to the nineteenth-century emphasis on sites and objects as isolated antiquities. Archaeologists working with such development and tourism projects have adapted their research projects and questions to the kind of extensive clearing and consolidation required to prepare sites for visitation. Extensive excavations of noble residences at Copan, funded by such projects, have provided an unparalleled body of information about the particulars of life in a specific residential neighborhood (see Chapter 6). These results have influenced the research approaches of subsequent projects,

even when there is no direct requirement for tourism rehabilitation. Extensive clearing of residential groups has become a key method in many areas of Mesoamerica (see Chapter 5). New methods have been applied, including soil chemistry and residue analyses, to derive maximum information about past human behavior from such broad area excavations. This in turn has re-emphasized the diversity of activities carried out in what earlier were regarded as interchangeable basic units of society, and has been one spur to new interest in practice theory and human agency among some archaeologists.

Other currents of contemporary research have also raised issues of action and agency in Mesoamerican archaeology. Among the most significant have been advances in interpretation of writing and art, and the development of interest in archaeologies of subjectivity, beginning with approaches to gender. Both theoretical currents take a perspective pitched to individual human actors, the subjects, authors, and patrons of art and texts, and the positioned subjects of gender archaeology. Many of the people who have developed approaches to the archaeology of gender have drawn on art and texts (see Chapters 6 and 12, for example). But the two approaches also differ in important ways. An account of their similarities and differences positions Mesoamerican archaeology now, at the beginning of the twenty-first century.

The Mesoamerican Subject

From its beginnings, Mesoamerican archaeology has been intensely concerned with the social position of the people under study. Initially, this was framed in terms of group identity, particularly ethnic identity. The concern was to link ancient sites with living peoples, to allow researchers to use extensive observations of living people to fill in their static picture of the past. The assumption was that each group of people had a unique ethnic identity, coincident with their styles of material culture and language. The influence of ideas of nationalism current in the nineteenth century was obvious.

But at the same time researchers were aware of, and interested in, social differences within these complex societies. While all the residents of Tenochtitlan might be Aztec, only some were nobles, and only one was the *tlatoani* (“speaker,” the title for the maximum political authority). Archaeologically, some people were more perceptible than others, and some people’s actions were likely to have had more visible effects than others. Some had been warriors, others craft workers, and archaeologists could identify differences between people with different life courses in their excavations. Burials, especially, forcefully suggested highly individualized statuses.

The identification of specific human actors in visual images was a tool of these early forms of archaeological research into different human subjectivities. A. M. Tozzer’s study of the art of Chichen Itza identified different ethnic groups, occupational groups, and social status groups represented by figures carved throughout the site (Tozzer 1957). Once Tatiana Proskouriakoff (1960) established that Classic Maya art and inscriptions were histories of the lives of individual people, the door

was opened for the development of detailed interpretations of Maya Classic texts as genealogies of specific nobles and rulers. Similar efforts have been made in other literate traditions in Oaxaca (Chapters 8 and 9) and even in art lacking formal texts from the Gulf Coast of Mexico (Chapter 3).

The explanations of ancient social reality based on analyses of art and writing at times have the appearance of “great man” history, in which individual rulers cause wholesale societal change. This is most obviously due to the necessary reliance of researchers on a selective sample of material, writing in the form of public political monuments and royal courtly regalia. Most glaringly, these media tend to represent relatively few women, and almost no young or elderly people. More subtly, of course, they are records only of a segment of politically powerful wealthy social groups.

The modern archaeological interest in gender is generally traced to the early 1980s. But in Mesoamerica it would be more accurate to credit Proskouriakoff’s (1961) article on the identification of women in Classic Maya art. Other scholars followed her lead in identifying noble Maya women, even reigning women, through iconography, the interpretation of texts, and burial analysis (e.g. Coggins 1975; Marcus 1976). Starting in the 1980s, a flood of publications documented the presence and actions of women in various Mesoamerican traditions, from the Olmec to Aztec, the Maya lowlands to Oaxaca. At the same time, scholars actively engaged in household archaeology began to question the assumption that the interests of all members of a household were the same, and started to create models of the dynamics between men and women within households (for example, Hendon 1997). These researchers, while drawing on representations of individual women and men in art, were not limited to this form of evidence, and could reach down to the lowest social strata sampled archaeologically.

Both lines of research, the study of actors recorded in historical texts and images, and of actors with different subject positions, including gender, age, and social status, converge on the issue of the place of social agents in making their own world. Issues of agency and practice theory underlie many of the contributions to this volume. The roots of practice theory in archaeology lie in social anthropology since the 1960s (see Ortner 1984, 2001). Practice theories posit that the focus of social analysis should be on the ways that human agents work within structures to which they are habituated while growing up in a particular society. Structures are not abstract entities outside individual people; they are embodied by human actors, and come to be naturalized as givens about the world. Actors can become aware of structures, but never completely recognize the structures that influence their actions and are reshaped through them.

In these theories, actors engage in performances that are more or less routinized, with both expected and unexpected outcomes. Among the outcomes of action are the reformulation of structures, their reproduction over time, always with change. When actors choose their actions from among multiple options that they perceive as possible, we can say that they are exercising agency. Not all action is an exercise of agency. A requirement of agency theory is that agents understand themselves to have choices (although they need not be correct in this understanding, nor need

they know all the options available to them). This knowingness places them in a position to consciously intend some outcome which may reinforce or change structures. But even when exercising agency, an actor is as likely to produce unintended consequences as those he or she intends.

In contemporary archaeology, issues of defining the exercise of agency occupy center stage (Dobres and Robb 2000; for Mesoamerica, see Clark 1997, 2000; Gillespie 2001; Hendon 2000; A. Joyce 2000). Debate exists over whether agency is always a property of an individual, or can be exercised by a group (such as a household, a craft group, or a military society, to give a few Mesoamerican examples). But there is general consensus that agency and practice provide archaeologists with a set of tools with which to bridge the gap between the traces of individual action we can see archaeologically, and the questions we have, as social scientists, about how societies come to have an appearance of coherence over space and time – in Mesoamerica, for example.

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