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Mesoamerica

From Culture Area to Networks of Communities of Practice

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This book is an introduction to archaeological research on societies that flourished in Mexico and Central America before European colonization, whose descendants continue to occupy the region today. Archaeologists studying these societies describe them as part of a cultural area, Mesoamerica (Figure 1.1). Contemporary indigenous peoples who survived colonization have continuing traditions of practices recognizably connected to those of the period before colonization. Yet these people, past or present, never expressed an identification at this regional scale: instead, a mosaic of communities varying in size from small villages to large cities, governed in a variety of ways, with individual histories that intersected but unfolded in their own ways occupied this geographic territory. This book treats Mesoamerican archaeology as the exploration of the material traces of learned practices, reproduced over generations, through which people in this area engaged with each other, producing shared values and identities. This reinterpretation of Mesoamerica identifies it as a label for what, using anthropological concepts developed since the 1990s, we can call localized communities of practice and more widely distributed networks of practice.

To understand this approach, this chapter outlines how time is understood and measured in research on Mesoamerica; describes the practices that define Mesoamerican cultural traditions, giving special attention to mathematics, calendars, and writing that are the most distinctive aspects of these societies; and considers alternative ways of thinking about Mesoamerica as a linguistic area, as a geographic region, and as a network of communities of practice.



Figure 1.1 Map of Mesoamerica.

History, Chronology, and Time in Mesoamerican Archaeology

There is no single chronology that is employed by all archaeologists for all of Mesoamerica, but a broad division into Archaic, Formative (or Preclassic), Classic, Postclassic, and Colonial periods is generally recognized. Precise beginning and ending dates vary with the region and often with the specific author. The contributions to this volume are no exception. With slight differences, however, the contributors draw on a single chronological framework for these major periods (Table 1.1).

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 Mesoamerica is also the story of the gradual development of a cultural peak in the Classic period from its initial roots and of a decline after that peak. Each span of time had a particular character and a characteristic level of development. In the Archaic, people lived as mobile hunter-gatherers. The Formative (or Preclassic) 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 Classic cities collapsed, and in the Postclassic new urban societies emerged that were less impressive, smaller, more secular, or otherwise disadvantageously compared with their Classic predecessors.

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, like agriculture, pottery, settled villages, hereditary status, and cities. These can be developed at various dates by different peoples. As a result, despite using the same broad categories, researchers working in different sites assigned slightly different dates to each stage. 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.

Table 1.1 Summary chronological framework for Mesoamerica

Dates in years	Period
8000–1600 BCE	Archaic
1600–900 BCE	Early Formative
900–400 BCE	Middle Formative
400 BCE–250 CE	Late Formative
250–600 CE	Early Classic
600–1000 CE	Late Classic
1000–1521 CE	Postclassic
1521–1820 CE	Colonial

Despite a general move in archaeology away from 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 stage. In the Maya area, the defining feature of the Classic period, written texts and dates on monuments, originated in Late Preclassic times. Archaeologists today treat stage names as labels for arbitrary time segments. Yet the unwanted implication of progress and decline remains embedded in the names for those stages.

From Superposition to Relative Chronology

Scholars often take for granted questions involved in creating chronology: how archaeologists generate dates for *events*; how these are generalized to time *spans*; and how theoretical assumptions affect 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 archaeology textbook as the key to relative dating, uses 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. This is, unfortunately, somewhat too simple.

While part of the process of establishing relative chronologies does depend on superposition, superimposed deposits are usually more discontinuous and fragmentary than the layer-cake image presented in textbooks. In many parts of Mesoamerica, major architectural monuments were rebuilt multiple times. The sequence of stages of construction has been a key to establishing local chronology. 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 was the identification of distinctive types of artifacts, especially styles of ceramics, found in layers at different locations within sites and across regions. Artifacts, 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. Archaeologists are used to things being messier in real life, with pieces of pottery popular at different times becoming mixed together as human beings remodeled buildings and reoccupied previously abandoned terrain. Yet the problem with using artifacts to relate different sites goes further.

In each region where a significant amount of work has been accomplished, sequences have been established for the introduction, growth in popularity, and abandonment of pottery styles. These histories of popularity of pottery, in combination with superimposed architectural sequences, are 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: Ojochi, Bajío, Chicharras at San Lorenzo, and Cuanalan, Patlachique, Tzacualli, Miccaotli, Tlamimilolpa, Xolalpan, and Metepec at Teotihuacan, for example.

Once such sequences were established in one area, they can be used to help establish sequences in other regions, where items of known relative date (phase) arrived through exchange. Even when items of exactly the types used to create the original sequence are not found, similarities between different regions can be attributed to contact between them, and local sequences coordinated on that basis. The assignment to the period between around 1200 and 900 BCE of pottery with motifs similar to pots of the Gulf Coast Olmec, made in distinct local traditions, 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.

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.

The assumption of contemporaneity required to align chronological sequences is more problematic if the questions archaeologists want to explore deal with interaction at a human scale, of the lifetime or generation, where understanding the direction of interaction from one place to another requires finer-grained distinctions in chronology than phases of a century or more. When chronologies are aligned based on shared relative order of innovations, and the necessary assumption of rough equivalence in time of these things, 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?" Even within single sites, the correlation of events across different excavated contexts, which may be critical to understanding how the actions of human beings 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.

The issue is not simply that the blocks of time are too long. The construction of chronologies as blocks of time cuts ongoing sequences of life into segments. In saying things like, "Hereditary social inequality developed in Oaxaca during the Middle Formative (850–300 BCE)," archaeologists understand that sometime during this block of time, perhaps over a single generation, parents were able to transmit political authority to their children. The actual date of the institution of

inheritance of wealth, titles, and positions of power happened at a human scale, during the lifetime of people. They could have lived early or later in this block of time. Changes in social relationships that allowed 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 BCE, in another around 600 BCE, in another only at 300 BCE, and in yet another never at all.

Archaeologists understand that the use of time segments to organize their discussions is a claim that a particular event or events *of interest to them* happened sometime during the block of time, not that the event lasted for the whole period. What archaeologists excavate aren't these social and historical events. They excavate and analyze remains of a series of depositional events, human and natural actions that resulted in or transformed residues of past human activity.

These actions include those that create deposits and those that deform, reform, and remove them through flooding and erosion, trash disposal, and borrowing sediment for architectural fill. Depositional *events* are ongoing, as humans live in places they modify for their purposes, as floods and earthquakes and even volcanic eruptions happen. What archaeologists excavate are *discontinuous* depositional *units*, identifiable in contact with each other at surfaces that may represent substantial gaps in time during which other depositional events took place that left no material residues and may have removed earlier ones.

A system of units of time that divides history into blocks, phases, periods, or stages can lead us to underestimate the actual discontinuity of deposition of material residues of human occupation in specific places. Any description of how historical practices were introduced, spread, and changed has to cope with the gaps. Depositional chronology is useful here, but it introduces more complexity, as the intervals of time can't be abstract and predetermined chunks like phases.

Measuring Intervals of Time

The amount of time it takes to create the sediments included in a depositional unit can vary from a very rapid interval (the time it took to sweep food scraps off a floor) to a longer period (the building of a temple and its use before abandonment). The amount of time it took to erode or remove deposits, a gap signaled by contacts between depositional units, is equally variable. In depositional histories, archaeologists understand that the layers of the simple model of superposition were created at different speeds, by events of different durations. 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 that created that depositional unit took place. Both steps are required to interpret large-scale depositional events, like the construction of monuments, in terms of human decision-making and action. Knowing the relative order of things, and even the coordination of different relative orders in which things took place across space, is not enough: the sequence has to be complemented by *measurements* of real time elapsed.

A number of methods have been used to tie relative chronologies to measured (chronometric) dates. In many areas of Mesoamerica, indigenous historical texts with dates are available. Some of these were created or continued after Spanish colonization. Maya archaeologists often refer to specific years or even days recorded on monuments with inscriptions using an indigenous calendar for which a calibration with European calendars is possible as a result of references to Maya time keeping in texts written using the European alphabet (Aveni 1980: 204–210).

Of course, monuments with inscribed dates aren't necessarily created at the moments they commemorate. In Mesoamerica, as everywhere in the world, historical texts can and do record earlier events, especially when those texts are political (Chapter 13). Think about the prevalence in the United States today of monuments mentioning dates like July 4, 1776, not one of which was produced before 1790 and most much later in the nineteenth century. Most dates in Maya texts do appear to fall in time spans expected on other grounds, since archaeological phases cover 100 years or more. Within these phases, texts promise the possibility of interpreting sequences of action down to a day so that within a broad phase archaeologists can have a sense of the human scale of historical events. The political histories of the Postclassic Mixtec also allow definition of events and spans of history measured in absolute terms, in lifetimes and actions of individual people.

Determination of equivalents in European calendars for dates recorded using indigenous calendars provided support for beginning and ending dates for the intervals of time proposed as phases using archaeological methods of chronometric dating. The methods involved in chronometric dating 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 forms of carbon. By measuring the ratio between different isotopes of carbon in organic materials that are the remains of plants and animals, we can produce estimates of the time elapsed since the death of these plants or animals.

While the technique of radiocarbon dating is the most widely employed material analysis supporting Mesoamerican chronologies, other materials can be used. Obsidian hydration is a second example. 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 first created. Specific rates of hydration have to be established for obsidian from different sources used in sites with different environments, and fluctuations in climate over time have to be considered; however, the method has the potential to provide dates on a material that is abundant in most Mesoamerican sites.

All chronometric methods produce estimates of the probability that a specific event took place during an interval of time. In the case of obsidian hydration, that event is the exposure by a person of a fresh surface on an obsidian tool, presumably near the time of its use. In the case of radiocarbon dates, the event is the death of the organism from which the carbon sample came. 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.

Systematic concerns arise because what is being dated is the event that began the chemical process that provides the measured passage of time: decay of radioactive forms of carbon into other forms of carbon or absorption of water by the fresh obsidian surface. Samples can be recovered from deposits created long after the events that would be dated. When trash containing obsidian tools and scraps of plant material was swept up and used as part of construction fill for a building, the event of historical interest is the date of construction, but the radiocarbon and obsidian hydration dates will be of earlier events. To counter this, archaeologists produce dates for 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 an estimate of an interval of time, not as a singular year or day. Estimates are reported by the specialist labs that carry out analyses as intervals, with a specific degree of precision. For example, Beta-129129, analysis of a carbon sample from Puerto Escondido, a site in Honduras where I excavated, was reported as 3320 $\pm$ 40 BP (where BP means Before Present and the present is 1950 CE). The reported date brackets an interval of 80 radiocarbon years when the plant might have died.

When radiocarbon analysis was initially introduced, analyses of samples used to measure the beginnings and endings of phases and periods were translated by a simple process of subtraction, counting backward from 1950 CE. Later, researchers realized this simple procedure was based on an incorrect assumption: that the concentration of different forms of carbon in the atmosphere had not changed over time. Specialists in chronometric dating have produced highly detailed graphs showing fluctuations in concentrations and calculated the divergence between the simple radiocarbon age and the real calendrical age. Computer programs allow archaeologists to calibrate radiocarbon years and estimate real calendar years of the interval when the plant or animal producing a carbon sample most likely died.

The effects of calibration can be substantial. The aforementioned sample from Puerto Escondido corresponds to 1690–1510 cal. (calibrated) BCE. If we simply had subtracted the radiocarbon years from 1950 CE, the same sample could have been mistakenly treated as the date 1370 BCE, plus or minus 40 years, or an interval from 1410 to 1330 BCE. A plant that actually died sometime between 1690 and 1510 BCE might have been thought to have lived and died centuries later. All the historical events and all the people whose lives that single carbon sample dates could have been falsely thought to have taken place much more recently than they actually did.

Even when a shift in dates seems relatively minor, calibrating radiocarbon dates corrects potential misunderstanding of the *length* of an interval of time. Sample Beta-129125 from Puerto Escondido was dated 1530 $\pm$ 40 BP in radiocarbon years. If we just counted backward from CE 1950, this would mean the plant producing this carbon died between CE 380 and 460. The calibrated date range was

actually cal. 430–625 CE. Not only does calibrating change the date of the depositional event that yielded this carbon sample from Early Classic to Late Classic, but it also greatly increases the span of time within which the event most likely occurred, from 80 to 195 years.

The effects of calibrating samples do not vary in a single predictable way. Puerto Escondido sample Beta-129126, at 2730 $\pm$ 40 BP in radiocarbon years, would correspond to the span from 820 to 740 BCE if we just counted backward from 1950 CE. The calibrated date span of cal. 940–810 BCE shifts the interval earlier (instead of later as in the previous example) and changes the interval of highest probability to 130 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 over individual lives and connected generations, the kind of timing seen in indigenous calendar notations, critical to contemporary archaeological interpretation.

Mesoamerica as a Culture Area: From Traits to Practices

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 compilation of a trait list is now rejected as too crude a way to group societies or archaeological sites because it treats all similarities as being of equal importance and provides no way to explain how or why such connections came into being. Archaeologists still find the concept of Mesoamerica useful because it allows them to connect cultures which, through extensive interaction, developed a common set of values and practices that continued to develop over a long period of time, from at least 3500 years before European contact.

We can thus reimagine the Mesoamerican trait list as indicating shared *practices* in a number of distinct social domains. The most important of these domains are (1) the economy, (2) philosophical and scientific understanding of how the world works, and (3) social differentiation (Table 1.2). What we see today as a continuous Mesoamerican tradition is the result of generations of practices by people working within the bounds of what they understood to be both possible and desirable. In this sense, Mesoamerica had a beginning point, a period when the practices and beliefs we recognize as Mesoamerican emerged. Gordon R. Willey (1966: 78) long ago identified Mesoamerica's origins with the time period beginning around 2000 BCE when village life dependent on corn agriculture took form, in settlements where social stratification first becomes evident. Many of the practices identified as typical of Mesoamerican culture are expressions of social differences that first took emerged in early villages. This volume begins coverage of Mesoamerica at this moment of early village life and emergent social stratification (Chapters 2 and 3).

In any social world, intentional and unreflexive actions carried out by people, acting along with other humans and in concert with nonhumans (animals, things, and forces beyond the human, like rainfall), produce, reproduce, and transform

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

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>aguey</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 earplugs

structures. People reproduce and transform social structures through their choices among possible ways to act that they see open to them. In the process of exercising their perceived ability to act (or agency), reproducing and transforming structure, people create and add to individual and group histories, shaping the constraints and possibilities of agents in succeeding generations. People make their choices of action, and understand their implications, based on their philosophies of being (ontologies), their understandings of the nature of the origins of things (cosmologies), and their broader view of relations among all beings. In many ways, the most distinctive aspects of Mesoamerica belong to this philosophical domain.

Mesoamerican Philosophies of Being and Becoming

Mesoamerican peoples were agriculturalists, living in socially differentiated communities, understanding themselves to exist in specific kinds of relations to other humans and nonhuman entities and forces. A high number of Mesoamerican practices relate to ideas about how the universe was formed and persists and to the practices humans needed to carry out as a result of those understandings.

Social difference itself was intimately bound up with propositions about the nature of the universe and the relations people had to forces and beings beyond the human. While maize agriculture was not always the single basis of Mesoamerican economies,

maize became a defining part of Mesoamerican ideas about the nature of being, or ontology. In oral traditions the survival of maize spirits was attributed to the actions of nobles and the supernatural beings they claimed as their predecessors (Monaghan 1990; Taube 1985, 1989). Narratives about maize formed part of Mesoamerican beliefs and practices concerning the relationship between human beings, supernatural beings, and ancestors, part of the ontologies of Mesoamerican peoples.

Ontologies and cosmologies portrayed the universe as composed of multiple domains, with the world of contemporary human life adjacent to others inhabited by nonhuman entities and ancestors. Access to these otherworlds took place through rituals, using certain pathways, particularly features that pierced boundaries with an underworld (caves, wells) or that rose up into the upperworld (Gillespie 1993). Four world directions defined by the movements of the sun framed this shared geography. The limits of the east and west directions 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).

Cities, towns, and villages incorporated buildings that were stages for Mesoamerican rituals: ball courts, temples, and astronomical observatories. These were often juxtaposed with unmodified features of the surrounding countryside, such as the alignment of the Temple of the Moon at Teotihuacan with the mountain Cerro Gordo or the placement of the Pyramid of the Sun over a cave (see Chapter 4). Structures with distinct functions, such as ancestral shrines, could be placed in regular directional relationships to other buildings (see Chapter 7). Site planning embedded the built environment within a cosmological order. Ceremonies and rituals in these places enacted philosophies of being and reproduced them.

The Economy

Adjacent to structures that were dedicated sites of ceremonies and rituals, in villages, towns, and cities, other groups of buildings formed residential spaces, household compounds with associated exterior spaces, courtyards, or patios. Mesoamerican archaeologists in the 1970s and 1980s developed a new focus on life in such settings: household archaeology (Wilk and Ashmore 1988; see Chapters 5, 6, 12, and 14). Residential compounds were the workplaces of the population, not just their private dwellings. Here, people carried out the activities necessary for their subsistence and also engaged in more specialized craft production.

Agriculture was the basis of Mesoamerican society. Farming depended on human labor; there were no large domestic animals. People improved production through irrigation, the construction of terraces on slopes, and raised fields in swampy areas, all based on human labor. They cultivated a variety of plants that left behind burned seeds, pollen, and other detectable residues, including maize (corn), beans, squash, chili peppers, fruits, and tubers. In the dry highlands other seed-bearing plants, amaranth and chenopods, were important. In some parts of the humid lowlands root crops, particularly manioc (or yuca) were important.

The primary sources of animal protein suggested by animal bones recovered by archaeologists include land animals such as deer and peccary, hunted with blow-guns, snares, and nets. Birds, especially waterfowl such as ducks, and fish were important as well. Domesticated dogs and turkeys provided protein in certain places and times.

Foods and beverages prepared from specific plants were widely used in religious rituals and social ceremonies. Chia, a seed plant, was used by the Mexica (the proper name for the group often called Aztecs) to make images of supernatural beings displayed and consumed in ritual. Cacao drinks were made from the seeds from pods of a tree growing in wet lowlands. An alcoholic drink the Mexica called pulque was made from fermented hearts of maguey, a succulent plant cultivated in drier areas. Honey from native stingless bees was used by the lowland Maya to brew another alcoholic drink, balche, consumed in ritual. Cultivation of these plants and distinctive techniques of food processing, preparation, and serving constituted a distinctive Mesoamerican cuisine (Coe 1994). Through their preparation and consumption, residents in these places reproduced their historical connections to ancestors and nonhuman forces.

Household compounds were also the site of craft production. Production and circulation of goods has been reconstructed using techniques that create a chemical profile of the raw materials used, such as obsidian, iron ore, and jade or the mixtures of clay and other materials that characterize pottery workshops. As a result, scholars know that craft products such as pottery, stone tools, and woven textiles were redistributed within the local community and beyond through a combination of social ties and markets.

Participation in craft production was more than simply a source of economic wealth. Throughout the history of Mesoamerica, it was intimately related to the constitution of personhood. Practice of a craft helped define a person's place within their society (Hendon 2010). In the most highly stratified Mesoamerican societies, craft specializations were shared by residents of neighboring house compounds or whole communities, contributing to their identification as a group.

Social Identities and Differences

Residential compounds could be large enough to house multiple generations of related families or multiple families related as patrons and clients. The greatest intensity of production, and the most diversity, took place in or near larger and more lavish compounds that are interpreted as residences of rulers and other nobles. These were sites of the structural reproduction of Mesoamerican economies and forms of political structure through the organization of domestic labor (Hendon 1996, 1997). As such, they were also the focus of ceremonies marking changes in the status of members of the group over their life course, through which people's identities were created and reconstituted.

In the material remains that archaeologists study, one moment of the life course is especially visible, marked by monuments, tombs, and temples: the

transformation of living members of the group into ancestors following death. From the Formative period on, in many Mesoamerican societies the remains of the dead were placed near the buildings occupied by the living. Social commemoration of other points in the lives of inhabitants of house compounds is also indicated by residues archaeologists can detect and descriptions in texts from before and after colonization. Experiences of each person during life can be described based on the remains of their bodies (Chapter 14). Events anticipating and accompanying childbirth and marking moments in the maturation of children into adults often involved feasts. Feasting is evident archaeologically in the remains of vessels and residues of foods consumed and through the discarded tools used in such events, notably small-scale clay figurines, some transformed into musical instruments.

Archaeologists argue that caring for the bodies of deceased members of a group and keeping them near the living was a means for Mesoamerican people to create historical continuity between generations, allowing ancestors to remain engaged with their descendants (Gillespie 2001, 2002; Hendon 2000; McAnany 1995). Distinct practices of caring for the dead employed by separate groups would have contributed to differentiation within societies, like that noted between residents of individual household compounds at Teotihuacan (Chapter 5).

A select body of people who claimed legitimacy in exercising powers of governance emerged through exclusive practices in everyday life, including use of distinctive cuisine, dress, and architectural ornamentation. Together, these practices and the materials employed in them constituted a high culture (Joyce 2000c). This involved using more things made by skilled craft workers using rare and valuable materials like jade, rare feathers, fine textiles, and, in the Postclassic period, metal alloys as well as the consumption of distinctive foods that others were restricted from using in everyday life.

Throughout their history, Mesoamerican societies used some of these materials as items of wealth and standards of value, reflected in economic, social, and political practices that were included in the original trait list. Craft specialists worked obsidian, jade and other greenstones, and feathers into ritual regalia that could be adapted as signs of distinction between social segments or insignia of specific offices and became parts of high culture. Scribes, astronomers, and calendar specialists developed ways to record indigenous wisdom. Histories of political dynasties recorded using these technologies also formed part of high culture.

Images carved in stone and painted in manuscripts provide records of marriages, wars, visits involving the offering of tribute and gifts, and ritual performances. Many are accompanied by texts specifying the time, place, and people involved. They are preserved on durable stone monuments dating as early as the late Formative period that hint at the broader existence of records written on perishable materials like the paper and deerskin in use when Europeans invaded the region. In the sixteenth century, European colonizers collected some manuscripts while destroying many others. Literate Mesoamerican people continued to produce historical texts after colonization, rapidly developing mastery of European script and working to preserve ancestral knowledge (Chapter 10).

Mathematics, Calendars, and Writing

The development of calendars, mathematical notation, and writing served to represent the distinctive perspectives of Mesoamerican peoples, making these the most diagnostic features of these societies. Indigenous calendars in use in the early sixteenth century shared a basic structure. All were based on counting sets of individual days. The earliest recorded date preserved is on a late Middle Formative monument from San Jose Mogote in what today is Oaxaca. However, it is likely that, in addition to being used to measure time, Mesoamerican mathematics were originally developed for broader use, including in economic transactions (Freidel 1993). Understanding Mesoamerican historical consciousness thus begins with understanding math.

Mathematics

The universal sign for the number 1 in different Mesoamerican writing systems 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 (Chapter 13). In the Maya manuscripts created in Yucatan at the same time, in contrast, a separate sign stood for the number 5. Represented as a solid bar, the same sign can be recognized in inscriptions on earlier Classic Maya monuments. It also appears in monuments from Classic and Late Formative Oaxaca (Chapter 8). In some examples, the bar is drawn as a thumb, suggesting it stood originally for 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 developed the use of place notation, including a third mathematical symbol that could serve as a placeholder, like the zero of Arabic math. This third symbol allowed Mesoamerican mathematicians to record multiplace numbers. Because the base of the Mesoamerican number system was 20 (rather than the familiar base 10 of European decimal mathematics), each place in 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 Mexica empire used the expected units of measurement of 20, 400, and 8,000. In addition to this pure use of base 20 mathematics for counting economic goods, however, by the sixteenth century, Mesoamerican people had modified it to allow them to count long periods of time using three signs (one, five, and zero) and place notation.

Calendars

The inscription on San Jose Mogote Monument 3, the earliest preserved record of time counting in the region, is interpreted as the use of birth date as a name. The signs involved specific one day in a cycle of 260 days, a calendar that some Maya communities continue to use. 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. Many Postclassic Central Mexican people used their birth date in the 260-day calendar as a name. Among the Mexica, 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. The *tonalpohualli* allowed divination of individual life chances based on birth date (Monaghan 1998). The close association of this calendar 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).

Whatever its origin and use, this calendar is composed of a count of days. It 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 7 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 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).

While the 260-day cycle is the oldest for which we have direct evidence from inscriptions, it is highly likely that counting segments of the Mesoamerican solar year was equally ancient. The 365-day solar calendar was also based on complete units of 20 days, further subdivided into groups of 5 days. To approximate the solar year, 18 complete cycles of 20 days and one incomplete cycle of 5 days were required. This cycle of 18 “months” of 20 days, with a period of 5 extra transitional days, was the basic civil calendar of the Postclassic Maya states and Tenochtitlan. Community-wide ceremonies were scheduled in it, many with clear associations with an annual agricultural cycle.

By combining the 365-day calendar and the 260-day ritual cycle, Central Mexican peoples in the sixteenth century could record unique dates within periods of 52 years. 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 is employed in Postclassic codices from Central Mexico and Oaxaca (Chapter 10). Because the entire cycle repeated every 52 years, a date in this system was fixed only relative to other days in the same 52-year cycle. By adding a third cycle,

recording changes in the visibility of the planet Venus every 584 days, it was possible to create a continuous calendar of 104 years, with each date uniquely specified by its position in the 260-day, 365-day, and 584-day cycle. But the main way that individual cycles of 52 years were placed in order in Postclassic Mexican historical codices was actually through their relationship to the genealogical connections of major historical characters over successive generations. 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 always combined with records of the 260-day cycle, evidence for the early use of the fundamental Mesoamerican 52-year calendar. These Late Formative monuments also record a different continuing time count. Most familiar from its extensive use in Classic Maya monuments, scholars call this the Long Count calendar. The basic unit of the Long Count is a single day, summed up in groups of 20 days. Using the zero symbol and place notation, Long Count dates can record any number of days, creating an infinite and continuing count of time.

Normally, the numbers in a Long Count record 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.

The coincidence with the 20-day unit of the 365-day 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) that would be expected, the third place 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 a Long Count record approximates multiples of years. The fourth place records 20 cycles of 360 days, or a little less than 20 years; the fifth, 400 cycles of 360 days, or almost 6 years less than four centuries.

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. Historical accounts written by Maya scribes using the European alphabet record that Spanish campaigns to dominate them took place in Cycle 11, which allowed for the correlation of European and Maya calendars (Aveni 1980: 204–210).

Whether using the most highly precise linear calendar, or shorter cycles of 52 years, people throughout this region were able to record cultural traditions and historical events in a common historical framework. They expressed a historical consciousness that continues to the present day. This was facilitated by a tradition of literacy, expressed in multiple forms of script, another of the distinctive forms of practice reflected in the trait list definition of Mesoamerica.

Writing in the Mesoamerican Tradition

Writing was a fundamental part of multiple societies in Mesoamerica when Europeans first saw them. The use of writing had a long history, extending back at least to the end of the Middle Formative period. Specialized writing systems created and used by multiple Mesoamerican societies shared a number of fundamental features. Foremost was the strong relationship between writing and other forms of representing information graphically. Mathematical records, among the earliest examples of written texts known, used a uniform set of numeral signs. The 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. Numbers are expressed in base 20 in all the known scripts of the region.

This uniform graphical numeral system is combined with other systems of signs that stood for whole concepts, words, and sounds. The signs used vary from one language and writing tradition to another, which makes sense given the vastly different languages being recorded, 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. Some writing systems, such as those employed at Teotihuacan in the Postclassic Mixtec codices of Oaxaca and by the Mexica, use pictographic signs that are consistently clear images of objects (see Chapters 9, 10, and 13). Over the long history of other writing systems, like that of the Maya (extending from before 200 BCE to the mid-sixteenth century CE), 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. Yet it is possible in many cases to demonstrate how an image was transformed into a textual sign.

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 (Chapters 10 and 13). 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. 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.

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 (Chapter 10).

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, they 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 are separated by lines that lead readers down, across, and up the pages that fold out, one after another, into a single continuous sheet. Formative Period images have no conventional linear reading order and thus are not interpreted as texts. But they, and later nontext images, can still be read as conveying messages, as *iconography*, literally, "writing with images" (Chapter 3).

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 effect of recording information about the context of an event that would not be obvious from the picture. They insert a linear reading order that would not otherwise be part of the image: 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 incorporation of text signs in linear order recording information beyond calendrical position is seen in inscriptions on monuments from sites such as Tres Zapotes and La Mojarra in the Gulf Coast of Mexico that carry Cycle 7 Long Count dates (corresponding to the Late Formative period). Some noncalendrical abstract signs are arranged in lines on monuments from the same region made around the same time or slightly earlier.

Mesoamerican Historical Consciousness

Most preserved Mesoamerican texts 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 (Chapter 13). 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 texts that have been interpreted deals 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. This subject matter is consistent with their monumental scale and location in places of assembly within site centers. 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 include references to the same kinds of ceremonies and public actions mentioned on monuments. They can be understood as recording histories on objects that circulated as heirlooms, connecting nobles across generations (Joyce 2000b).

Manuscripts on bark paper and deerskin written in the Postclassic period have been preserved from both the Maya lowlands and Mexican highlands. The majority, such as the histories conserved in Mixtec codices (Chapter 10), include content similar to that of earlier public monuments. Some Postclassic books include material not represented in monuments, such as records of astronomical observations and what appear to be almanacs for use in carrying out rituals or divination. Images on Classic Maya pottery vessels depict what appear to be fan-fold books very much like the surviving Postclassic codices, but no Classic Maya manuscripts have survived in legible condition.

The range of topics covered by known written texts is skewed toward matters of public governance and ceremony. Allusions to the deeds of supernatural beings in the far distant past in Classic Maya monumental inscriptions suggest that written books might have contained narratives of origins, as did the texts created by lowland and highland Maya during the colonial period. It is also likely that lost perishable texts recorded economic information. These might have resembled tribute lists that were created in a hybrid style in Central Mexico after the Spanish Conquest to represent the economic relations of the Mexica empire.

It is indisputable that one way that Mesoamerican structures were reproduced over time, including after Spanish colonization, was through the reproduction in texts of immense amounts of historical knowledge. Mesoamerican societies were not only literate; they were self-consciously historical, invoking precedents from the past as grounds for present action. Mesoamerican historical traditions of the sixteenth century were varied, and each had distinctive features.

The histories recorded in Postclassic codices and colonial texts like the Books of Chilam Balam and the Popol Vuh contain records that can be related to archaeologically documented events (Chapters 10 and 11). 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 Mexica identified these innovators as the Toltecs, the people of a great city-state called Tollan.

Apparent references to prestigious Toltec predecessors of Postclassic city-states are part of historical traditions throughout Mesoamerica. 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).

Originally, Mexican archaeologists identified Teotihuacan as the historical model for Tula in Central Mexico, and a possible candidate for Tollan in historical accounts. 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 Chapters 4 and 5). It is possible that there were multiple models for the Toltecs of Postclassic historical tradition. In the Postclassic Maya lowlands, Chichen Itza may have had the same kind of reputation that 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 innovations in governance to legendary 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. 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 postconquest 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" to collect materials from earlier times, with Olmec objects employed by Classic and Postclassic Maya and at Tenochtitlan (Hamann 2002; Joyce 2000b). The histories archaeologists must reconstruct from fragments were known to and valued by Mesoamerican peoples, who conserved knowledge to the present day.

Mathematical and calendrical knowledge represented in indigenous writing crosses distinct language boundaries, persists from early in the history of

recognizably Mesoamerican societies, and is still in use today, despite five centuries of colonization. The persistence of these practices was not automatic; it came about through learning by new practitioners, supported by the value placed on this knowledge by other members of Mesoamerican societies. The practices that the calendar and mathematics enabled reproduced not only knowledge of how to record time and quantities of things but also understandings of the orderly progress of time, of the repetition of cycles, of change and continuity. These concepts became part of a way of viewing the world, reproducing that way of viewing the world as numbers and dates were produced. The same is true of other features that early anthropologists suggested defined a Mesoamerican cultural area, when they are viewed as historically reproduced practices.

Alternative Models for Mesoamerica

Mesoamerica is mainly a concept that anthropologists have found 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 the aforementioned cultural features. These shared features coexisted with and crosscut social, linguistic, ecological, and political boundaries. The only viable social mechanism to explain the development of Mesoamerica as a cultural tradition, crosscutting all sorts of boundaries, is a long history of intensive interaction among social groups in the region.

In this sense, the term *Mesoamerica* is analogous to terms like *Western civilization*. These 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; Pye and Clark 2000). Mesoamerican peoples had less intensive interaction with the societies to their north and south, making it possible for archaeologists and ethnographers to discern boundaries to an area of intense interaction that is Mesoamerica as a geographic region. Within this area, the intensity of interaction even produced shared features in unrelated languages spoken across the region.

Mesoamerica as a Linguistic Area

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 Mexica of central Mexico, is a branch of the Uto-Aztecan language family extending through northern Mexico into North America. Smaller numbers of people in Mesoamerica spoke apparently isolated languages: Huave, Tarascan, and Xincan. On the southern boundary of Mesoamerica, the Lenca language family is now recognized as the northernmost outlier of a South American language family (Figure 1.2).

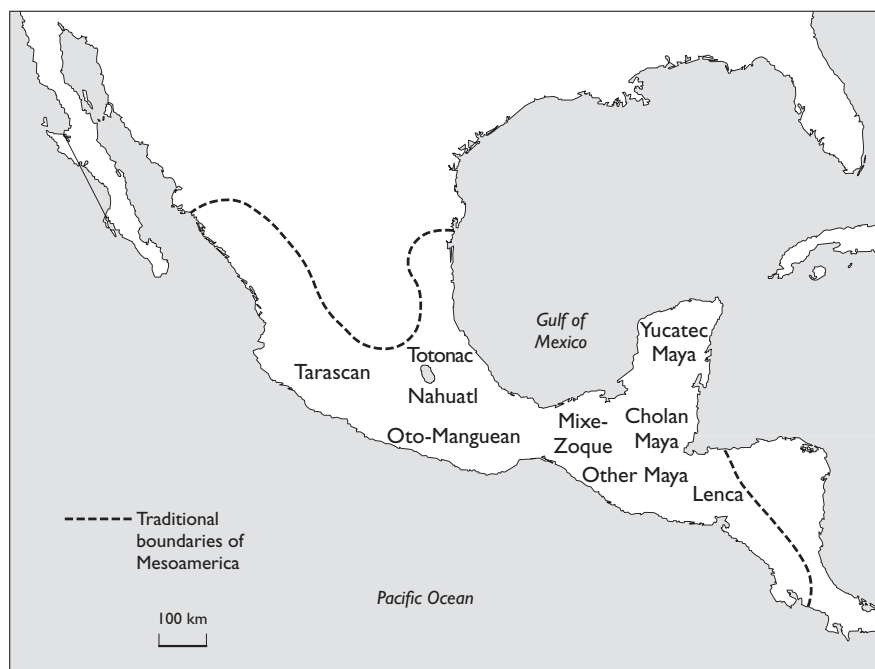


Figure 1.2 Distribution of languages within Mesoamerica at the time of the Spanish conquest.

Each of the language families named is historically independent, as distinct from each other as German is from Mandarin. Linguists note that despite a lack of common roots, a variety of shared features are found in languages whose speakers formed Mesoamerican societies. These features are found in Nahuatl but not in its close northern Mexican relatives, illustrating their origin not in the development of the broader language family but through interaction among speakers of the languages. Because they are found only in these languages, these features must have developed historically in the 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 define a Mesoamerican linguistic area: a zone in which, through intensive interaction, speakers of unrelated languages adopted common linguistic features (Campbell 1976; Campbell et al. 1986). Historical linguistic studies suggest that the Mesoamerican language area had taken its present form before 1000 BCE, when a series of loan words for important cultural concepts spread throughout Mesoamerica, apparently from a Mixe-Zoque source language, at the same time that Gulf Coast Olmec sites were engaged in intensive long-distance trade for jade, obsidian, and other valuables (Campbell and Kaufman 1976).

Mesoamerican languages share features of grammar, sounds (phonology), and meaning (semantics). Grammatical and semantic features directly reflect the shared practices of the Mesoamerican tradition. Number systems based on 20, and

numeral classifiers, special forms used in counting different categories of things, are widely shared traces of the use of common calendars and mathematics. 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.

Poetic aspects of speech are also found in unrelated Mesoamerican languages. Shared poetics hint at the ceremonious and ritual contexts within which cross-language communication would have been most likely, as guests were entertained during social, political, and religious events. Mesoamerican formal speech typically employs metaphors arranged in paired couplets. Many of the specific metaphors are shared by unrelated Mesoamerican languages. Words for locations are often derived from parts of the body, for example the word "stomach" meaning "inside." Common figures of speech like 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" can be related to conventions of visual representation. For example, on some Classic Maya temples, the doorway is marked as the mouth of an animal by architectural sculpture.

The way independent, unrelated languages grow to resemble each other is via a historical processes of mutual translation. The process through which colonial speakers of Yucatec and Spanish clerics together created a new form of the Mayan Yucatec language is a colonial example (Hanks 2010). This documented historical process provides a model for thinking about the situations in which a Mesoamerican linguistic area could have emerged. Given the diversity of different languages spoken within a relatively restricted area, it is likely 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 multiple unrelated languages. For Mesoamerican people from one region who traveled to or lived in other areas, like the foreigners living in distinct neighborhoods in Teotihuacan (Chapters 4 and 5), multilingualism would have been the norm.

Nor was multilingualism limited to large cities. From the earliest periods for which archaeological evidence is available, opportunities for interaction across linguistic boundaries would have been created as people sought materials only to be found in places within Mesoamerica's complex geography occupied by speakers of other languages. Gulf Coast Olmecs, understood to have spoken Mixe-Zoque languages, needed to communicate with speakers of Maya languages, and possibly of Lenca or Xinca, to obtain jade from Guatemala. Mesoamerica, as a product of histories of shared practices, including practices of language, was shaped as well by the distribution of resources in geographic space.

Mesoamerican Geography

From a geographic perspective, it is easy to define the Mesoamerican core (Figure 1.1). The Isthmus of Tehuantepec, where Mexico reaches its narrowest point, 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. The territory inhabited by speakers of Mixe-Zoquean languages crosses the Isthmus, extending from the Gulf coast of Mexico to the Pacific Coast of southern Mexico and Guatemala.

East and west of Tehuantepec, a contrast between lowlands and highlands structures Mesoamerican geography. The balance between these two kinds of settings is profoundly different in the Maya and Mexican zones. In western Mesoamerica, the Mexican highlands are extensive, forming 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 created by speakers of the Otomí and Nahuatl languages, and the Mixtec and Zapotec languages (Chapters 4, 5, 8, and 9). The lowlands of western Mesoamerica are narrow strips along the Gulf and Pacific coasts formed by a series of rivers originating in the highlands.

In eastern Mesoamerica, the lowlands are much more extensive. 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. These lowlands saw the development of Classic Maya city-states. The better-watered southern Maya lowlands, centered on the Guatemalan Department of Peten, had environmental conditions distinct from those of the drier northern Maya lowlands and different histories of occupation (Chapters 7 and 11).

It is more difficult to define precise edges for Mesoamerica as a geographic region. Historically, maps of Mesoamerica have demarcated the northern Mesoamerican frontier at the approximate location of an ecological boundary with more arid lands populated by mobile groups relying on gathering and hunting. This boundary marking would imply that northern 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 contacts between northern groups and the ancestors of the Mexica. The Mexica collectively described the mobile northern groups as Chichimecs. Mexica traditions describe the origin of the founders of Tenochtitlan as a place called Aztlan, also said to be located to the north. Archaeologists working in northern Mexico and the Southwest United States have repeatedly documented evidence of interaction between

residents of sites in these areas and places in Mesoamerica. A dramatic example is the substantial evidence of the use of cacao, a Mesoamerican food, in Chaco Canyon in New Mexico (Crown and Hurst 2009).

The difficulty of defining a boundary for Mesoamerican geography is even more acute on its southeastern periphery. 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 originally identified as the eastern geographic boundaries of Mesoamerica (Lothrop 1939). Later archaeological research showed 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). 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 (Joyce 2013). 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.

Rather than try to define a geographically bounded region, we might instead think of Mesoamerica as a network of places linking societies with different forms of governance, different social practices, different histories and values. Where the network of societies involved the most intensive participation in practices, we recognize the continuity of the Mesoamerican tradition. In other places, interactions along the network were less intensive, or more selective, resulting in the adoption of cacao drinking in some social circles in the Southwest United States, and promoting the building of ballcourts for the rubber ball game in eastern Honduras.

Imposing a concept of boundaries may actually impede our recognizing significant ways that lives of Mesoamerican people were entangled with those of people whose histories and practices were different. The same is true within the geographic space thought of as thoroughly Mesoamerican: what people's lives were like varied, in ways the concept of Mesoamerica may obscure.

Mesoamerica as a Lived Place

The juxtaposition of highland valleys, basins, and plateaus with lowland regions with markedly different environments and natural resources created the potential for significant movement of natural resources between starkly different environments (Sanders and Price 1968). Mesoamerica's highlands and lowlands contrast in the distribution of a wide array of natural resources.

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. Annual 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. Heavier 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 contrast, in western Yucatan, the Motagua river valley, and dry upland basins with less rainfall, dry tropical forests develop, still characterized by high species diversity. Dry plant communities include distinctive species, like 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 trees.

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. Other rock formations produced a variety of green stones worked into ritual implements and costume ornaments. Major serpentine resources are known in west Mexico and the upper Motagua valley in Guatemala, which is also the sole confirmed source of jade 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 volcanic rocks. But lowland peoples also obtained minerals from the highlands through exchange for more perishable lowland resources. Precious substances employed in important Mesoamerican practices, such as cacao, and bird feathers used for costume, were products of the lowland tropical forests. Deer, tapir, peccary, jaguar, monkey, and crocodile, animals 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 enabled practices through which diverse societies were integrated into a single Mesoamerican world, a network of communities of practice.

Mesoamerica as a Network of Communities of Practice

The anthropological concept of a community of practice (Lave and Wenger 1991; Roddick and Stahl 2016) recognizes that people identify with those with whom they share practices that promote values. Developed originally from observation of learning in contemporary small groups, such as tailors' workshops, the concept can be used to understand everything from the shared identity of graduates of a training course, to the commonality among members of a family who learn how to

act and how to evaluate action through growing up together. The learning and sharing of practices create identities, including identities based on differences within such communities of practice.

The concept of communities of practice has its roots in practice theory, as developed in anthropology after the 1960s (Ortner 1984, 2001). Practice theories posit that the focus of social analysis should be on the ways that people work within structures to which they are habituated while growing up in a particular society (Lave and Wenger 1991). Structures are not abstract entities outside people; they are embodied by human actors and come to be naturalized in unquestioned assumptions about the world. Actors can become aware of structures but never completely recognize the structures that influence their actions and are reshaped through them.

From this perspective, people engage in performances that are more or less routinized, with both expected and unexpected outcomes. Reformulation of structures, and their reproduction over time, including with changes, are products of these actions. When people choose their actions from among multiple options that they perceive as possible, we can say that they are exercising agency (Dobres and Robb 2000). A requirement of agency theory is that people understand themselves to have choices (although they need not be correct in this understanding or know all the options available to them). This knowledgeability places them in a position to consciously intend some outcome that may reinforce or change structures. But even when exercising agency, an actor is as likely to produce unintended consequences as those they intend. 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).

Concepts of agency and practice provide archaeologists with a set of tools with which to bridge the gap between the traces of individual and group action they can see archaeologically, and the questions they have, as social scientists, about how societies come to have an appearance of coherence over space and time – as something like Mesoamerica, for example. Viewed from the perspective of communities of practice, the people who used a writing system at a Maya city to record local history were not just learning to create documents; they were taking on roles in a structure that reproduced values. One advantage of this way of thinking is that it bases the identification of groups of people on their participation in activities, in practices, not in a preexisting essence. Another is that it allows for the same person to participate in multiple communities of practice. The Maya scribe might also simultaneously be thought of as part of a community of practice of cuisine, sharing taste for certain foods and their presentation with others who were not practitioners of writing history.

Practices may continue to be learned throughout a lifetime and can be shared with other people located at a distance. As a result, a concept of community of practice allows us to recognize fundamental Mesoamerican ways of doing things that circulated through the participation of small numbers of people in distant places in practices adopted in adulthood. When archaeologists talk about village leaders in highland Mexico, Guatemala, Belize, and Honduras using the same

symbols as the leaders of Olmec communities in the Gulf Coast of Mexico between 1100 and 500 BCE, this is the identification of a distributed community of practice, or a network of local communities of practice, that promoted the use of cacao, jade, and certain ideas about relationships of humans and forces beyond the human that became enduring parts of Mesoamerica.

The Mesoamerican Subject

What was produced by participation in networks of communities of practices was a self-consciousness as a subject and a historical consciousness as a subject connected to others. Mesoamerican archaeology, in its contemporary form, is about these Mesoamerican people and their lives.

Mesoamerican archaeologists have always been concerned with the social position of the people they studied. Initially, this was framed in terms of group identity, particularly ethnic or ethnolinguistic identity, to link ancient sites with contemporary 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, coinciding with their styles of material culture and language.

Researchers were aware of, and interested in, social differences within these societies. While all the residents of Tenochtitlan might be Mexica, or speakers of Nahuatl, only some were nobles, and only one was the *tlatoani* ("speaker," the title for the maximum political authority). Archaeologically, some people are more visible than others, and some people's actions were likely to have had more extensive effects than others. Some had been warriors and others craft workers; archaeologists could identify differences between people with different life courses in excavations. Burials, especially, forcefully suggested highly individualized statuses.

The identification of specific human actors in visual images was a tool of 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 recorded 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 and even in art lacking formal texts from the Gulf Coast of Mexico.

Proskouriakoff followed her initial insight by drawing attention to women in Classic Maya art and political history (Proskouriakoff 1961). Other scholars followed her lead in identifying noble Maya women, even reigning women, through iconography, the interpretation of texts, and burial analysis (Marcus 1976). Starting in the 1980s, a flood of publications extended recognition of the presence and actions of women, from Gulf Coast Olmec sites to Tenochtitlan, the Maya lowlands

to Oaxaca. Archaeologists expanded from seeking histories of women to broader exploration of Mesoamerican concepts and experiences of gender beyond a binary, and including masculinities (Joyce 2000a; Meskell and Joyce 2003). Scholars 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 and people of different ages within households (Hendon 1997, 2010).

The chapters in this volume follow in this trajectory. They use materials to build up understanding of the daily lives of diverse kinds of people, whose actions produced continuing ways of being that are reflected in language, in values placed on specific materials and technologies to work them, and in agriculture and cuisine and beliefs and religious practices. Rather than being concerned with distributions of things, Mesoamerican archaeology based in practice theory is a study of the kind of lives people could have lived in the communities and networks of practice that archaeology allows us to recognize. The subject of Mesoamerican archaeology becomes people and their ability to learn, formulate goals, carry out their projects, and live with their consequences.

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