Maya civilization

The Maya is a Mesoamerican civilization, noted for the only known fully developed written language of the pre-Columbian Americas, as well as its art, architecture, and mathematical and astronomical systems. Initially established during the Preclassic period (c. 2000 BC to 250 AD), many Maya cities reached their highest state development during the Classic period (c. 250 AD to 900 AD), and continued throughout the Postclassic period until the arrival of the Spanish. At its peak, it was one of the most densely populated and culturally dynamic societies in the world.

The Maya civilization shares many features with other Mesoamerican civilizations due to the high degree of interaction and cultural diffusion that characterized the region. Advances such as writing, epigraphy, and the calendar did not originate with the Maya; however, their civilization fully developed them. Maya influence can be detected from Honduras, Guatemala, El Salvador and to as far as central Mexico, more than 1000 km (625 miles) from the Maya area. Many outside influences are found in Maya art and architecture, which are thought to result from trade and cultural exchange rather than direct external conquest. The Maya peoples never disappeared, neither at the time of the Classic period decline nor with the arrival of the Spanish conquistadores and the subsequent Spanish colonization of the Americas. Today, the Maya and their descendants form sizable populations throughout the Maya area and maintain a distinctive set of traditions and beliefs that are the result of the merger of pre-Columbian and post-Conquest ideas and cultures. Many Mayan languages continue to be spoken as primary languages today; the Rabinal Achi, a play written in the Achi' language, was declared a Masterpiece of the Oral and Intangible Heritage of Humanity by UNESCO in 2005.

Geographical extent

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The geographic extent of the Maya civilization, known as the Maya area, extended throughout the southern Mexican states of Chiapas, Tabasco, and the Yucatán Peninsula states of Quintana Roo, Campeche and Yucatán. The Maya area also extended throughout the northern Central American region, including the present-day nations of Guatemala, Belize, El Salvador and western Honduras.

As the largest sub-region in Mesoamerica, it encompassed a vast and varied landscape, from the mountainous regions of the Sierra Madre to the semi-arid plains of northern Yucatán. Climate in the Maya region can vary tremendously, as the low-lying areas are particularly susceptible to the hurricanes and tropical storms that frequent the Caribbean.

The Maya area is generally divided into three loosely defined zones: the southern Maya highlands, the southern (or central) Maya lowlands, and the northern Maya lowlands. The southern Maya highlands include all of elevated terrain in Guatemala and the Chiapas highlands. The southern lowlands lie just north of the highlands, and incorporate the Mexican states of Campeche and Quintana Roo and northern Guatemala, Belize and El Salvador. The northern lowlands cover the remainder of the Yucatán Peninsula, including the Puuc hills.[2]

History

Preclassic

The Maya area was initially inhabited around the 10th century BC. Recent discoveries of Maya occupation at Cuello in Belize have been carbon dated to around 2600 BC.[3][4] This level of occupation included monumental structures. The Maya calendar, which is based around the so-called Mesoamerican Long Count calendar, commences on a date equivalent to 11 August, 3114 BC. However, according to "accepted history" the first clearly “Maya” settlements were established in approximately 1800 BC in Soconusco region of the Pacific Coast. This period, known as the Early Preclassic,[5] was characterized by sedentary communities and the introduction of pottery and fired clay figurines.[6]

Important sites in the southern Maya lowlands include Nakbe, El Mirador, Cival, and San Bartolo. In the Guatemalan Highlands Kaminal Juyú emerges around 800 BC. For many centuries it controlled the Jade and Obsidian sources for the Petén and Pacific Lowlands. The important early sites of Izapa, Takalik Abaj and Chocolá at around 600 BC were the main producers of Cacao. Mid-sized Maya communities also began to develop in the northern Maya lowlands during the Middle and Late Preclassic, though these lacked the size, scale, and influence of the large centers of the southern lowlands. Two important Preclassic northern sites include Komchen and Dzibilchaltun. The first written inscription in Maya hieroglyphics also dates to this period (c. 250 BC).[7]
There is disagreement about the boundaries which differentiate the physical and cultural extent of the early Maya and neighboring Preclassic Mesoamerican civilizations, such as the Olmec culture of the Tabasco lowlands and the Mixe-Zoque– and Zapotec–speaking peoples of Chiapas and southern Oaxaca, respectively. Many of the earliest significant inscriptions and buildings appeared in this overlapping zone, and evidence suggests that these cultures and the formative Maya influenced one another.[8] Takalik Abaj, in the Pacific slopes of Guatemala, is the only site where Olmec and then Maya features have been found.

**Classic**

The Classic period (c. 250–900 AD) witnessed the peak of large-scale construction and urbanism, the recording of monumental inscriptions, and a period of significant intellectual and artistic development, particularly in the southern lowland regions.[9] They developed an agriculturally intensive, city-centered empire consisting of numerous independent city-states. This includes the well-known cities of Tikal, Palenque, Copán and Calakmul, but also the lesser known Dos Pilas, Uaxactun, Altun Ha, and Bonampak, among others. The Early Classic settlement distribution in the northern Maya lowlands is not as clearly known as the southern zone, but does include a number of population centers, such as Oxkintok, Chunchucmil, and the early occupation of Uxmal.

The most notable monuments are the stepped pyramids they built in their religious centers and the accompanying palaces of their rulers. The palace at Cancuen is the largest in the Maya area, though the site, interestingly, lacks pyramids. Other important archaeological remains include the carved stone slabs usually called *stelae* (the Maya called them *tetun*, or "tree-stones"), which depict rulers along with hieroglyphic texts describing their genealogy, military victories, and other accomplishments.[10]

The Maya civilization participated in long distance trade with many of the other Mesoamerican cultures, including Teotihuacan, the Zapotec and other groups in central and gulf-coast Mexico, as well as with more distant, non-Mesoamerican groups, for example the Tainos in the Caribbean. Archeologists have also found gold from Panama in the Sacred Cenote of Chichen Itza.[11] Important trade goods included cacao, salt, sea shells, jade and obsidian.

**The Maya collapse**

*Main article: Maya collapse*
For reasons that are still debated, the Maya centers of the southern lowlands went into decline during the 8th and 9th centuries and were abandoned shortly thereafter. This decline was coupled with a cessation of monumental inscriptions and large-scale architectural construction. Although there is no universally accepted theory to explain this “collapse,” current theories fall into two categories: non-ecological and ecological.

Non-ecological theories of Maya decline are divided into several subcategories, such as overpopulation, foreign invasion, peasant revolt, and the collapse of key trade routes. Ecological hypotheses include environmental disaster, epidemic disease, and climate change. There is evidence that the Maya population exceeded carrying capacity of the environment including exhaustion of agricultural potential and overhunting of megafauna. Some scholars have recently theorized that an intense 200 year drought led to the collapse of Maya civilization. The drought theory originated from research performed by physical scientists studying lake beds, ancient pollen, and other data, not from the archaeological community.

**Postclassic period**

During the succeeding Postclassic period (from the 10th to the early 16th century), development in the northern centers persisted, characterized by an increasing diversity of external influences. The Maya cities of the northern lowlands in Yucatán continued to flourish for centuries more; some of the important sites in this era were Chichen Itza, Uxmal, Edzná, and Coba. After the decline of the ruling dynasties of Chichen and Uxmal, Mayapan ruled all of Yucatán until a revolt in 1450. (This city's name may be the source of the word "Maya", which had a more geographically restricted meaning in Yucatec and colonial Spanish and only grew to its current meaning in the 19th and 20th centuries). The area then degenerated into competing city-states until the Yucatán was conquered by the Spanish.

The Itza Maya, Ko'woj, and Yalain groups of Central Peten survived the "Classic Period Collapse" in small numbers and by 1250 reconstituted themselves to form competing city-states. The Itza maintained their capital at Tayasal (also known as Noh Petén), an archaeological site thought to underlay the modern city of Flores, Guatemala on Lake Petén Itzá. It ruled over an area extending across the Peten Lakes region, encompassing the community of Eckixil on Lake Quexil. The Ko'woj had their capital at Zacpeten. Postclassic Maya states also continued to survive in the southern highlands. One of the Maya nations in this area, the K'iche' Kingdom of Q'umarkaj, is responsible for the best-known Maya work of historiography and mythology, the Popol Vuh. Other highland kingdoms included the Mam based at Huehuetenango, the Kaqchikels based at Iximché, the Chajomá based at Mixco Viejo and the Chuj, based at San Mateo Ixtatán.

**Colonial period**

*Main article: Spanish conquest of Yucatán*

*See also: Spanish conquest of Mexico and Spanish colonization of the Americas*
Shortly after their first expeditions to the region, the Spanish initiated a number of attempts to subjugate the Maya and establish a colonial presence in the Maya territories of the Yucatán Peninsula and the Guatemalan highlands. This campaign, sometimes termed "The Spanish Conquest of Yucatán," would prove to be a lengthy and dangerous exercise for the *conquistadores* from the outset, and it would take some 170 years before the Spanish established substantive control over all Maya lands.

Unlike the Aztec and Inca Empires, there was no single Maya political center that, once overthrown, would hasten the end of collective resistance from the indigenous peoples. Instead, the conquistador forces needed to subdue the numerous independent Maya polities almost one by one, many of which kept up a fierce resistance. Most of the *conquistadores* were motivated by the prospects of the great wealth to be had from the seizure of precious metal resources such as gold or silver; however, the Maya lands themselves were poor in these resources. This would become another factor in forestalling Spanish designs of conquest, as they instead were initially attracted to the reports of great riches in central Mexico or Peru.

The Spanish Church and government officials destroyed Maya texts and with them the knowledge of Maya writing, but by chance three of the pre-Columbian books dated to the post classic period have been preserved.[17] The last Maya states, the Itza polity of Tayasal and the Ko'woj city of Zacpeten, were continuously occupied and remained independent of the Spanish until late in the 17th century. They were finally subdued by the Spanish in 1697.

**Political structures**

A typical Classic Maya polity was a small hierarchical state (*ajawil, ajawlet, or ajawlil*) headed by a hereditary ruler known as an *ajaw* (later *k’uhul ajaw*).[18] Such kingdoms were usually no more than a capital city with its neighborhood and several lesser towns, although there were greater kingdoms, which controlled larger territories and extended patronage over smaller polities. Each kingdom had a name that did not necessarily correspond to any locality within its territory. Its identity was that of a political unit associated with a particular ruling dynasty. For instance, the archaeological site of Naranjo was the capital of the kingdom of Saal. The land (*chan ch’e’n*) of the kingdom and its capital were called Wakab’nal or Maxam and were part of a larger geographical entity known as Huk Tsuk. Interestingly, despite constant warfare and eventual shifts in regional power, most kingdoms never disappeared from the political landscape until the collapse of the whole system in the 9th century AD. In this respect, Classic Maya kingdoms are highly similar to late Post Classic polities encountered by the Spaniards in Yucatán and Central Mexico: some polities could be subordinated to hegemonic rulers through conquests or dynastic unions and yet even then they persisted as distinct entities.

Mayanists have been increasingly accepting a "court paradigm" of Classic Maya societies which puts the emphasis on the centrality of the royal household and especially the person of the king. This approach focuses on Maya monumental spaces as the embodiment of the diverse activities of the royal household. It considers the role of places and spaces (including dwellings of royalty and nobles, throne rooms, temples, halls and plazas for public ceremonies) in establishing power and social hierarchy, and also in projecting aesthetic and moral values to define the wider social realm.
Spanish sources invariably describe even the largest Maya settlements as dispersed collections of dwellings grouped around the temples and palaces of the ruling dynasty and lesser nobles. None of the Classic Maya cities shows evidence of economic specialization and commerce of the scale of Mexican Tenochtitlan. Instead, Maya cities could be seen as enormous royal households, the locales of the administrative and ritual activities of the royal court. They were the places where privileged nobles could approach the holy ruler, where aesthetic values of the high culture were formulated and disseminated, where aesthetic items were consumed. They were the self-proclaimed centers and the sources of social, moral, and cosmic order. The fall of a royal court as in the well-documented cases of Piedras Negras or Copan would cause the inevitable "death" of the associated settlement.

Art

Main article: Maya art
Many consider Maya art of their *Classic Era* (c. 250 to 900 AD) to be the most sophisticated and beautiful of the ancient New World. The carvings and the reliefs made of stucco at Palenque and the statuary of Copán are especially fine, showing a grace and accurate observation of the human form that reminded early archaeologists of Classical civilizations of the Old World, hence the name bestowed on this era. We have only hints of the advanced painting of the classic Maya; mostly what have survived are funerary pottery and other Maya ceramics, and a building at Bonampak holds ancient murals that survived by chance. A beautiful turquoise blue color that has survived through the centuries due to its unique chemical characteristics is known as Maya Blue or Azul maya, and it is present in Bonampak, Tajín Cacaxtla, Jaina, and even in some Colonial Convents. The use of Maya Blue survived until the 16th century when the technique was lost. Some *Pre Classic* murals have been recently discovered at San Bartolo, and are by far the finest in style and iconography, regarded as the *Sistine Chapel* of the Maya. With the decipherment of the Maya script it was discovered that the Maya were one of the few civilizations where artists attached their name to their work.

**Architecture**

*Main article: Maya architecture*

Maya architecture spans many thousands of years; yet, often the most dramatic and easily recognizable as Maya are the stepped pyramids from the Terminal Pre-classic period and beyond. There are also cave sites that are important to the Maya. These cave sites include Jolja Cave, the cave site at Naj Tunich, the Candelaria Caves, and the Cave of the Witch. There are also cave-origin myths among the Maya. Some cave sites are still used by the modern Maya in the Chiapas highlands.

It has been suggested that temples and pyramids were remodeled and rebuilt every fifty-two years in synchrony with the Maya Long Count Calendar. It appears now that the rebuilding process was often instigated by a new ruler or for political matters, as opposed to matching the calendar cycle. However, the process of rebuilding on top of old structures is indeed a common one. Most notably, the North Acropolis at Tikal seems to be the sum total of 1,500 years of architectural modifications. In Tikal and Yaxhá, there are the *Twin Pyramid* complexes (seven in Tikal and one in Yaxhá, that commemorate the end of a *Baktún*). Through observation of the numerous consistent elements and stylistic distinctions, remnants of Maya architecture have become an important key to understanding the evolution of their ancient civilization.

**Urban design**
As Maya cities spread throughout the varied geography of Mesoamerica, site planning appears to have been minimal. Maya architecture tended to integrate a great degree of natural features, and their cities were built somewhat haphazardly as dictated by the topography of each independent location. For instance, some cities on the flat limestone plains of the northern Yucatán grew into great sprawling municipalities, while others built in the hills of Usumacinta utilized the natural loft of the topography to raise their towers and temples to impressive heights. However, some semblance of order, as required in any large city, still prevailed.

Classic Era Maya urban design could easily be described as the division of space by great monuments and causeways. Open public plazas were the gathering places for people and the focus of urban design, while interior space was entirely secondary. Only in the Late Post-Classic era did the great Maya cities develop into more fortress-like defensive structures that lacked, for the most part, the large and numerous plazas of the Classic.

At the onset of large-scale construction during the Classic Era, a predetermined axis was typically established in a cardinal direction. Depending on the location of natural resources such as fresh-water wells, or cenotes, the city grew by using sacbeob (causeways) to connect great plazas with the numerous platforms that created the sub-structure for nearly all Maya buildings. As more structures were added and existing structures re-built or remodeled, the great Maya cities seemed to take on an almost random identity that contrasted sharply with other great Mesoamerican cities such as Teotihuacan and its rigid grid-like construction.

At the heart of the Maya city were large plazas surrounded by the most important governmental and religious buildings, such as the royal acropolis, great pyramid temples and occasionally ball-courts. Though city layouts evolved as nature dictated, careful attention was placed on the directional orientation of temples and observatories so that they were constructed in accordance with Maya interpretation of the orbits of the heavenly bodies. Immediately outside of this ritual center were the structures of lesser nobles, smaller temples, and individual shrines; the less sacred and less important structures had a greater degree of privacy. Outside of the constantly evolving urban core were the less permanent and more modest homes of the common people.

**Building materials**

A surprising aspect of the great Maya structures is their lack of many advanced technologies seemingly necessary for such constructions. Lacking draft animals necessary for wheel-based modes of transportation, metal tools and even pulleys, Maya architecture required abundant manpower. Yet, beyond this enormous requirement, the remaining materials seem to have been readily available. All stone for Maya structures appears to have been taken from local quarries. They most often used limestone which remained pliable enough to be worked with stone tools while being quarried and only hardened once removed from its bed. In addition to the structural use of limestone, much of their mortar consisted of crushed, burnt and mixed limestone that mimicked the properties of cement and was used as widely for stucco finishing as it was for mortar. Later improvements in quarrying techniques reduced the necessity for this limestone-stucco as the stones began to fit quite perfectly, yet it
remained a crucial element in some post and lintel roofs. In the case of the common Maya houses, wooden poles, adobe and thatch were the primary materials; however, instances of what appear to be common houses of limestone have been discovered as well. Also notable throughout Maya architecture is the corbel arch (also known as a "false arch"), which allowed for more open-aired entrances. The corbelled arch improved upon pier/post and lintel doorways by directing the weight off of the lintel and onto the supporting posts.

**Notable constructions**

- **Ceremonial platforms** were commonly limestone platforms of typically less than four meters in height where public ceremonies and religious rites were performed. Constructed in the fashion of a typical foundation platform, these were often accented by carved figures, altars and perhaps tzompantli, a stake used to display the heads of victims or defeated Mesoamerican ballgame opponents.

- **Palaces** were large and often highly decorated, and usually sat close to the center of a city and housed the population's elite. Any exceedingly large royal palace, or one consisting of many chambers on different levels might be referred to as an acropolis. However, often these were one-story and consisted of many small chambers and typically at least one interior courtyard; these structures appear to take into account the needed functionality required of a residence, as well as the decoration required for their inhabitants stature.

- **E-Groups** are specific structural configurations present at a number of centers in the Maya area. These complexes are oriented and aligned according to specific astronomical events (primarily the sun’s solstices and equinoxes) and are thought to have been observatories. These structures are usually accompanied by iconographic reliefs that tie astronomical observation into general Maya mythology. The structural complex is named for Group E at Uaxactun, the first documented in Mesoamerica.
Pyramids and temples. Often the most important religious temples sat atop the towering Maya pyramids, presumably as the closest place to the heavens. While recent discoveries point toward the extensive use of pyramids as tombs, the temples themselves seem to rarely, if ever, contain burials. Residing atop the pyramids, some of over two-hundred feet, such as that at El Mirador, the temples were impressive and decorated structures themselves. Commonly topped with a roof comb, or superficial grandiose wall, these temples might have served as a type of propaganda. As they were often the only structure in a Maya city to exceed the height of the surrounding jungle, the roof combs atop the temples were often carved with representations of rulers that could be seen from vast distances.

Observatories. The Maya were keen astronomers and had mapped out the phases of celestial objects, especially the Moon and Venus. Many temples have doorways and other features aligning to celestial events. Round temples, often dedicated to Kukulcan, are perhaps those most often described as "observatories" by modern ruin tour-guides, but there is no evidence that they were so used exclusively, and temple pyramids of other shapes may well have been used for observation as well.

Ball courts. As an integral aspect of the Mesoamerican lifestyle, the courts for their ritual ball-game were constructed throughout the Maya realm and often on a grand scale. Enclosed on two sides by stepped ramps that led to ceremonial platforms or small temples, the ball court itself was of a capital "I" shape and could be found in all but the smallest of Maya cities.

Writing and literacy

Writing system

Main article: Maya script

The Maya writing system (often called hieroglyphs from a superficial resemblance to the Ancient Egyptian writing) was a combination of phonetic symbols and logograms. It is most often classified as a logographic or (more properly) a logosyllabic writing system, in which syllabic signs play a significant role. It is the only writing system of the Pre-Columbian New World which is known to completely represent the spoken language of its community. In total, the script has more than a thousand different glyphs, although a few are variations of the same sign or meaning, and many appear only rarely or are confined to particular localities. At any one time, no more than around 500 glyphs were in use, some 200 of which (including variations) had a phonetic or syllabic interpretation.

The earliest inscriptions in an identifiably-Maya script date back to 200–300 BC.¹¹⁹ However, this is preceded by several other writing systems which had developed in Mesoamerica, most notably that of the Zapotecs, and (following the 2006 publication of research on the recently-
discovered Cascajal Block), the Olmecs.\[20\] There is a pre-Maya writing known as "Epi-Olmec script" (post Olmec) which some researchers believe may represent a transitional script between Olmec and Maya writing, but the relationships between these remain unclear and the matter is unsettled. On January 5, 2006, National Geographic published the findings of Maya writings that could be as old as 400 BC, suggesting that the Maya writing system is nearly as old as the oldest Mesoamerican writing known at that time, Zapotec.\[21\] In the succeeding centuries the Maya developed their script into a form which was far more complete and complex than any other that has yet been found in the Americas.

Since its inception, the Maya script was in use up to the arrival of the Europeans, peaking during the Maya Classical Period (c. 200 to 900). Although many Maya centers went into decline (or were completely abandoned) during or after this period, the skill and knowledge of Maya writing persisted amongst segments of the population, and the early Spanish conquistadors knew of individuals who could still read and write the script. Unfortunately, the Spanish displayed little interest in it, and as a result of the dire impacts the conquest had on Maya societies, the knowledge was subsequently lost, probably within only a few generations.

At a rough estimate, in excess of 10,000 individual texts have so far been recovered, mostly inscribed on stone monuments, lintels, stelae and ceramic pottery. The Maya also produced texts painted on a form of paper manufactured from processed tree-bark, in particular from several species of strangler fig trees such as *Ficus cotinifolia* and *Ficus padifolia*.\[22\] This paper, common throughout Mesoamerica and generally now known by its Nahuatl-language name *amatl*, was typically bound as a single continuous sheet that was folded into pages of equal width, concertina-style, to produce a codex that could be written on both sides. Shortly after the conquest, all of the codices which could be found were ordered to be burnt and destroyed by zealous Spanish priests, notably Bishop Diego de Landa. Only three reasonably intact examples of Maya codices are known to have survived through to the present day. These are now known as the Madrid, Dresden, and Paris codices. A few pages survive from a fourth, the Grolier codex, whose authenticity is sometimes disputed, but mostly is held to be genuine. Further archaeology conducted at Maya sites often reveals other fragments, rectangular lumps of plaster and paint chips which formerly were codices; these tantalizing remains are, however, too severely damaged for any inscriptions to have survived, most of the organic material having decayed.

The decipherment and recovery of the now-lost knowledge of Maya writing has been a long and laborious process. Some elements were first deciphered in the late 19th and early 20th century, mostly the parts having to do with numbers, the Maya calendar, and astronomy. Major breakthroughs came starting in the 1950s to 1970s, and accelerated rapidly thereafter. By the end of the 20th century, scholars were able to read the majority of Maya texts to a large extent, and recent field work continues to further illuminate the content.

In reference to the few extant Maya writings, Michael D. Coe, a prominent linguist and epigrapher at Yale University, stated:

"[O]ur knowledge of ancient Maya thought must represent only a tiny fraction of the whole picture, for of the thousands of books in which the full extent of their learning and ritual was recorded, only four have survived to modern times (as though all that posterity knew of ourselves were to be based upon three prayer books and 'Pilgrim's Progress')." (Michael D. Coe, *The Maya*, London: Thames and Hudson, 4th ed., 1987, p. 161.)

Most surviving pre-Columbian Maya writing is from stelae and other stone inscriptions from Maya sites, many of which were already
abandoned before the Spanish arrived. The inscriptions on the stelae mainly record the dynasties and wars of the sites' rulers. Also of note are the inscriptions that reveal information about the lives of ancient Maya women. Much of the remainder of Maya hieroglyphics has been found on funeral pottery, most of which describes the afterlife.

**Writing tools**

Although the archaeological record does not provide examples, Maya art shows that writing was done with brushes made with animal hair and quills. Codex-style writing was usually done in black ink with red highlights, giving rise to the Aztec name for the Maya territory as the "land of red and black".

**Scribes and literacy**

Scribes held a prominent position in Maya courts. Maya art often depicts rulers with trappings indicating they were scribes or at least able to write, such as having pen bundles in their headdresses. Additionally, many rulers have been found in conjunction with writing tools such as shell or clay inkpots. Although the number of logograms and syllabic symbols required to fully write the language numbered in the hundreds, literacy was not necessarily widespread beyond the elite classes. Graffiti uncovered in various contexts, including on fired bricks, shows nonsensical attempts to imitate the writing system.

**Mathematics**

In common with the other Mesoamerican civilizations, the Maya used a base 20 (vigesimal) and base 5 numbering system (see Maya numerals). Also, the preclassic Maya and their neighbors independently developed the concept of zero by 36 BC. Inscriptions show them on occasion working with sums up to the hundreds of millions and dates so large it would take several lines just to represent it. They produced extremely accurate astronomical observations; their charts of the movements of the moon and planets are equal or superior to those of any other civilization working from naked eye observation.

In common with the other Mesoamerican civilizations, the Maya had measured the length of the solar year to a high degree of accuracy, far more accurately than that used in Europe as the basis of the Gregorian Calendar. They did not use this figure for the length of year in their calendars, however; the calendars they used were crude, being based on a year length of exactly 365 days, which means that the calendar falls out of step with the seasons by one day every four years. By comparison, the Julian calendar, used in Europe from Roman times until about the 16th Century, accumulated an error of only one day every 128 years. The modern Gregorian calendar is even more accurate, accumulating only a day's error in approximately 3257 years.
**Astronomy**

Uniquely, there is some evidence to suggest the Maya appear to be the only pre-telescopic civilization to demonstrate knowledge of the Orion Nebula as being fuzzy, i.e. not a stellar pin-point. The information which supports this theory comes from a folk tale that deals with the Orion constellation's area of the sky. Their traditional hearths include in their middle a smudge of glowing fire that corresponds with the Orion Nebula. This is a significant clue to support the idea that the Maya detected a diffuse area of the sky contrary to the pin points of stars before the telescope was invented.[23] Many preclassic sites are oriented with the Pleiades and Eta Draconis, as seen in La Blanca, Ujuxte, Monte Alto, and Takalik Abaj.

The Maya were very interested in zenial passages, the time when the sun passes directly overhead. The latitude of most of their cities being below the Tropic of Cancer, these zenial passages would occur twice a year equidistant from the solstice. To represent this position of the sun overhead, the Maya had a god named Diving God.

The Dresden Codex contains the highest concentration of astronomical phenomena observations and calculations of any of the surviving texts (it appears that the data in this codex is primarily or exclusively of an astronomical nature). Examination and analysis of this codex reveals that Venus was the most important astronomical object to the Maya, even more important to them than the sun.

**Religion**

*Main article: Maya religion*

Like the Aztec and Inca who came to power later, the Maya believed in a cyclical nature of time. The rituals and ceremonies were very closely associated with celestial and terrestrial cycles which they observed and inscribed as separate calendars. The Maya priest had the job of interpreting these cycles and giving a prophetic outlook on the future or past based on the number relations of all their calendars. They also had to determine if the "heavens" or celestial matters were appropriate for performing certain religious ceremonies.

The Maya practiced human sacrifice. In some Maya rituals people were killed by having their arms and legs held while a priest cut the person's chest open and tore out his heart as an offering. This is depicted on ancient objects such as pictorial texts, known as codices. It is believed that children were often offered as sacrificial victims because they were believed to be pure.

Much of the Maya religious tradition is still not understood by scholars, but it is known that the Maya, like most pre-modern societies, believed that the cosmos has three major planes, the underworld, the sky, and the Earth.
The Maya underworld is reached through caves and ball courts. It was thought to be dominated by the aged Maya gods of death and putrefaction. The Sun (Kinich Ahau) and Itzamna, an aged god, dominated the Maya idea of the sky. Another aged man, god L, was one of the major deities of the underworld.

The night sky was considered a window showing all supernatural doings. The Maya configured constellations of gods and places, saw the unfolding of narratives in their seasonal movements, and believed that the intersection of all possible worlds was in the night sky.

Maya gods were not separate entities like Greek gods. The gods had affinities and aspects that caused them to merge with one another in ways that seem unbounded. There is a massive array of supernatural characters in the Maya religious tradition, only some of which recur with regularity. Good and evil traits are not permanent characteristics of Maya gods, nor is only "good" admirable. What is inappropriate during one season might come to pass in another since much of the Maya religious tradition is based on cycles and not permanence.

The life-cycle of maize lies at the heart of Maya belief. This philosophy is demonstrated on the belief in the Maya maize god as a central religious figure. The Maya bodily ideal is also based on the form of this young deity, which is demonstrated in their artwork. The Maize God was also a model of courtly life for the Classical Maya.

It is sometimes believed that the multiple "gods" represented nothing more than a mathematical explanation of what they observed. Each god was literally just a number or an explanation of the effects observed by a combination of numbers from multiple calendars. Among the many types of Maya calendars which were maintained, the most important included a 260-day cycle, a 365-day cycle which approximated the solar year, a cycle which recorded lunation periods of the Moon, and a cycle which tracked the synodic period of Venus.

Philosophically, the Maya believed that knowing the past meant knowing the cyclical influences that create the present, and by knowing the influences of the present one can see the cyclical influences of the future.

Even in the 19th century, there was Maya influence in the local branch of Christianity followed in Chan Santa Cruz. Among the K'iche' in the western highlands of Guatemala these same nine months are replicated, until this very day, in the training of the *ajk'ij*, the keeper of the 260-day-calendar called *ch'olk'ij*.

### Agriculture

*Main article: Maya diet and subsistence*

*See also: Agriculture in Mesoamerica*

The ancient Maya had diverse and sophisticated methods of food production. It was formerly believed that shifting cultivation (swidden) agriculture provided most of their food but it is now thought that permanent raised fields, terracing, forest gardens, managed fallows, and wild harvesting were also crucial to supporting the large populations of the Classic period in some areas. Indeed, evidence of these different
agricultural systems persist today: raised fields connected by canals can be seen on aerial photographs, contemporary rainforest species composition has significantly higher abundance of species of economic value to ancient Maya, and pollen records in lake sediments suggest that corn, manioc, sunflower seeds, cotton, and other crops have been cultivated in association with the deforestation in Mesoamerica since at least 2500 BC.

Contemporary Maya peoples still practice many of these traditional forms of agriculture, although they are dynamic systems and change with changing population pressures, cultures, economic systems, climate change, and the availability of synthetic fertilizers and pesticides.

**Rediscovery of the Pre-Columbian Maya**
Spanish clergy and administrators dating to the 16th century were largely familiar with ancient Maya sites, writing and calendar systems. Published writings of 16th century Bishop Diego de Landa and writings of 18th century Spanish officials spurred serious investigations of Maya sites by the late 18th century.[24] In 1839 United States traveler and writer John Lloyd Stephens, familiar with earlier Spanish investigations, visited Copán, Palenque, and other sites with English architect and draftsman Frederick Catherwood. Their illustrated accounts of the ruins sparked strong popular interest in the region and the people, and they have once again regained their position as a vital link in Mesoamerican heritage.

However, in many locations, Maya ruins have been overgrown by the jungle, becoming dense enough to hide structures just a few meters away. To help find ruins, researchers have turned to satellite imagery. The best way to find them is to look at the visible and near-infrared spectra. Due to their limestone construction, the monuments affected the chemical makeup of the soil as they deteriorated. Some moisture-loving plants stayed away, while others were killed off or discolored. The effects of the limestone ruins are still apparent today to some satellite sensors.

Much of the contemporary rural population of the Yucatán Peninsula, Chiapas (both in Mexico), Guatemala and Belize is Maya by descent and primary language.

**Maya sites**

*See also: List of Maya sites*

There are hundreds of significant Maya sites, and thousands of smaller ones. The largest and most historically important include:

- Cancuén
- Chichen Itza
- Coba
- Comalcalco
- Copán
- Dos Pilas
- Kalakmul
- El Mirador
- Nakbé
- Naranjo
Ancient history

Prehistory
- Sumer
- Elam
- Akkad
- Babylonia
- Hittite Empire
- Syro-Hittite states
- Neo-Assyrian Empire
- Urartu

Ancient Near East
- Egypt
- Nubia
- Land of Punt
- Axum
- Nok
- Carthage

Ancient Africa
- Egypt
- Nubia
- Land of Punt
- Axum
- Nok
- Carthage

Classical Antiquity
- Archaic Greece
- Median Empire
- Classical Greece
- Achaemenid Empire
- Seleucid Empire
- Dacia
- Thrace
- Scythia
- Macedon
- Roman Republic
- Roman Empire
- Parthia
- Parthian Empire
- Sassanid Empire
- Late Antiquity

East Asia
- Hồng Bàng Dynasty
- Gojoseon
- Shang China
- Qin Dynasty
- Han Dynasty
- Jin Dynasty

See also

- Childhood in Maya society
- Hunac Ceel
- Maya calendar
- Maya death rituals
- Maya health and medicine
- Maya mythology
- Maya numerals
- Maya peoples
- Maya textiles
- Mayan languages
- Pre-Columbian Maya music
- Trade in Maya civilization
- List of Mesoamerican pyramids

Footnotes

3. http://www.nature.com/nature/journal/v260/n5552/abs/260579a0.html
5. See, for example, Drew (2004), p.6.
7. ^ HISTORY OF WRITING and RELIGION (http://www.cs.indiana.edu/~port/teach/relg/writing.history.html)
18. ^ Both terms appear in early Colonial texts (including Papeles de Paxbolón) where they are used as synonymous to Aztec and Spanish terms for supreme rulers and their domains – tlahtoani (Tlatoani) and tlahtocayotl, rey or magestad and reino, señor and señorío or dominio.
21. ^ "Earliest Maya Writing Found in Guatemala, Researchers Say (http://news.nationalgeographic.com/news/2006/01/0105_060105_maya_writing.html)". NationalGeographic.com. http://news.nationalgeographic.com/news/2006/01/0105_060105_maya_writing.html. Retrieved 2007-06-06. The following year saw the publication of research on a tablet containing some 62 glyphs that had been found near the Olmec center of San Lorenzo Tenochtitlán, which was dated by association to approximately 900 BC. This would make this putative Olmec script (see Cascajal Block) the oldest known for Mesoamerica; see Skidmore (2006, passim)

References


Further reading


Maya civilization - Wikipedia, the free encyclopedia

http://en.wikipedia.org/wiki/Maya_civilization


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### External links

- Foundation for the Advancement of Mesoamerican Studies, Inc (FAMSI) (http://www.famsi.org/)
- Mayan Math and astronomy (http://planetmath.org/encyclopedia/MayanMath2.html)
- Mayaweb (Dutch and English) (http://www.mayaweb.nl/)
- Guatemala, Cradle of The Maya Civilization (http://www.authenticmaya.com)
- Maya Society and some photos of Tools, Weapons & Artifacts (http://worldmuseumofman.org/mayan1.htm)
- Courtly Art of the Ancient Maya at the National Gallery of Art (http://www.nga.gov/exhibitions/2004/maya/lifeatcourt.shtm)
- Learn more about Maya hieroglyphs (http://www.nga.gov/exhibitions/2004/maya/glyphmaker.shtm) and Maya numbering from the National Gallery of Art (http://www.nga.gov/exhibitions/2004/maya/numbers.shtm)
- Maya articles (http://www.lost-civilizations.net/ancient-civilizations.html) by Genry Joil.
- Mesoweb (http://www.mesoweb.com/) by Joel Skidmore.
- Junglecasts (http://radio.echoditto.com/junglecast) - podcasts by Ed Barnhart, Nicco Mele, Dave Pentecost
- Ancient Civilizations - Maya (http://www.projectshum.org/Ancient/mayan.html) Research site for kids
- The Mayan Kingdom (http://mayans.particlebook.com/) A Photographic Web Book on the Mayan Civilization by Tony Trupp

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