

Places of Power

Spiritual and pilgrimage sites


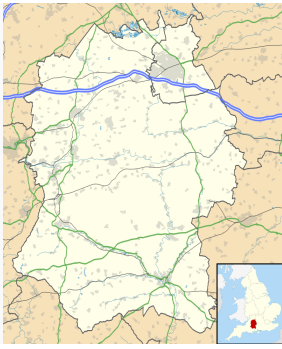
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United Kingdom

Stonehenge

Stonehenge, Avebury and Associated Sites*	
UNESCO World Heritage Site	
	
State Party	United Kingdom
Type	Cultural
Criteria	i, ii, iii
Reference	373 ^[1]
Region**	Europe and North America
Inscription history	
Inscription	1986 (10th Session)
	
<p>Map of Wiltshire showing the location of Stonehenge</p>	
<p>* Name as inscribed on World Heritage List. ^[2]</p> <p>** Region as classified by UNESCO. ^[3]</p>	

Stonehenge is a prehistoric monument located in the English county of Wiltshire, about 3.2 kilometres (2.0 mi) west of Amesbury and 13 kilometres (8.1 mi) north of Salisbury. One of the most famous sites in the world, Stonehenge is composed of earthworks surrounding a circular setting of large standing stones. It is at the centre of the most dense complex of Neolithic and Bronze Age monuments in England, including several hundred burial mounds.^[4]

Archaeologists had believed that the iconic stone monument was erected around 2500 BC, as described in the chronology below. One recent theory however, has suggested that the first stones were not erected until 2400-2200

BC,^[5] whilst another suggests that bluestones may have been erected at the site as early as 3000 BC (see phase 1 below). The surrounding circular earth bank and ditch, which constitute the earliest phase of the monument, have been dated to about 3100 BC. The site and its surroundings were added to the UNESCO's list of World Heritage Sites in 1986 in a co-listing with Avebury Henge monument. It is a national legally protected Scheduled Ancient Monument. Stonehenge is owned by the Crown and managed by English Heritage, while the surrounding land is owned by the National Trust.^{[6] [7]}

Archaeological evidence found by the Stonehenge Riverside Project in 2008 indicates that Stonehenge served as a burial ground from its earliest beginnings.^[8] The dating of cremated remains found on the site indicate burials from as early as 3000 BC, when the initial ditch and bank were first dug. Burials continued at Stonehenge for at least another 500 years.^[9]

Etymology

The Oxford English Dictionary cites Ælfric's 10th-century glossary, in which *henge-cliff* is given the meaning "precipice", a hanging or supported stone, thus the *stanenges* or *Stanheng* "not far from Salisbury" recorded by 11th-century writers are "supported stones". William Stukeley in 1740 notes, "Pendulous rocks are now called henges in Yorkshire...I doubt not, Stonehenge in Saxon signifies the hanging stones."^[10] Christopher Chippindale's *Stonehenge Complete* gives the derivation of the name *Stonehenge* as coming from the Old English words *stān* meaning "stone", and either *hencg* meaning "hinge" (because the stone lintels hinge on the upright stones) or *hen(c)en* meaning "hang" or "gallows" or "instrument of torture". Like Stonehenge's trilithons, medieval gallows consisted of two uprights with a lintel joining them, rather than the inverted L-shape more familiar today.

The "henge" portion has given its name to a class of monuments known as henges.^[10] Archaeologists define henges as earthworks consisting of a circular banked enclosure with an internal ditch.^[11] As often happens in archaeological terminology, this is a holdover from antiquarian usage, and Stonehenge is not truly a henge site as its bank is inside its ditch. Despite being contemporary with true Neolithic henges and stone circles, Stonehenge is in many ways atypical - for example, at over 24 feet (7.3 m) tall, its extant trilithons supporting lintels held in place with mortise and tenon joints, make it unique.^{[12] [13]}

Early history

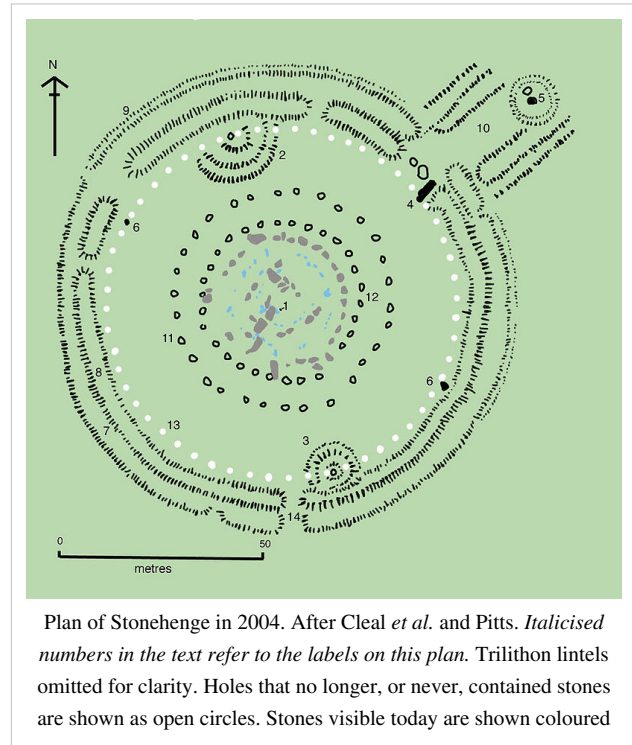
Mike Parker Pearson, leader of the Stonehenge Riverside Project, noted that Stonehenge was associated with burial from the earliest period of its existence:

Stonehenge was a place of burial from its beginning to its zenith in the mid third millennium B.C. The cremation burial dating to Stonehenge's sarsen stones phase is likely just one of many from this later period of the monument's use and demonstrates that it was still very much a domain of the dead.^[9]

— Mike Parker Pearson

Stonehenge evolved in several construction phases spanning at least 1500 years. There is evidence of large-scale construction on and around the monument that perhaps extends the landscape's time frame to 6500 years.

Scholars believe that Stonehenge once stood as a magnificent complete monument. However, this may never be proven, as around half of the stones that should be present are missing and many of the assumed stone sockets have never been found. Dating and understanding the various phases of activity is complicated by disturbance of the natural chalk by periglacial effects and animal burrowing, poor quality early excavation records, and a lack of accurate, scientifically verified dates. The modern phasing most generally agreed to by archaeologists is detailed below. Features mentioned in the text are numbered and shown on the plan, right.



Plan of Stonehenge in 2004. After Cleal *et al.* and Pitts. *Italicised numbers in the text refer to the labels on this plan.* Trilithon lintels omitted for clarity. Holes that no longer, or never, contained stones are shown as open circles. Stones visible today are shown coloured

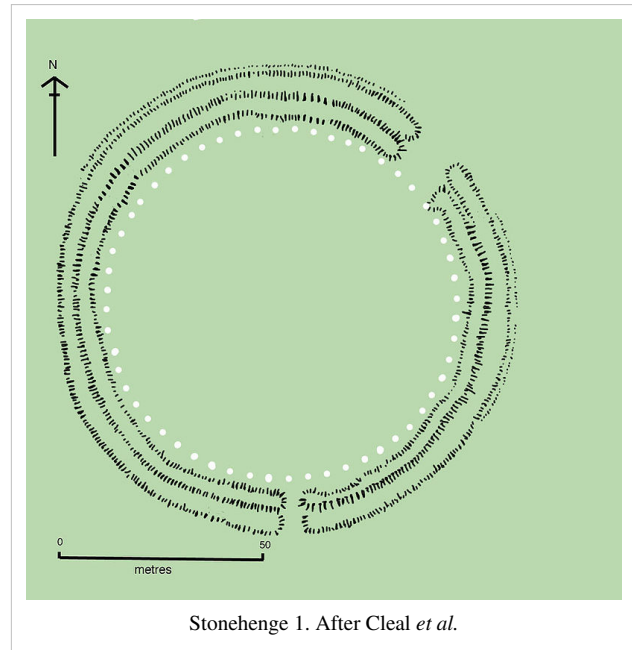
Before the monument (8000 BC forward)

Archaeologists have found four, or possibly five, large Mesolithic postholes (one may have been a natural tree throw), which date to around 8000 BC, beneath the nearby modern tourist car-park. These held pine posts around 0.75 metres (2 ft 6 in) in diameter which were erected and eventually rotted *in situ*. Three of the posts (and possibly four) were in an east-west alignment which may have had ritual significance; no parallels are known from Britain at the time but similar sites have been found in Scandinavia. Salisbury Plain was then still wooded but four thousand years later, during the earlier Neolithic, people built a causewayed enclosure at Robin Hood's Ball and long barrow tombs in the surrounding landscape. In approximately 3500 BC, a large cursus monument was built 700 metres (2300 ft) north of the site as the first farmers began to clear the trees and develop the area.

Stonehenge 1 (ca. 3100 BC)

The first monument consisted of a circular bank and ditch enclosure made of Late Cretaceous (Santonian Age) Seaford Chalk, (7 and 8), measuring about 110 metres (360 ft) in diameter, with a large entrance to the north east and a smaller one to the south (14). It stood in open grassland on a slightly sloping spot. The builders placed the bones of deer and oxen in the bottom of the ditch, as well as some worked flint tools. The bones were considerably older than the antler picks used to dig the ditch, and the people who buried them had looked after them for some time prior to burial. The ditch was continuous but had been dug in sections, like the ditches of the earlier causewayed enclosures in the area. The chalk dug from the ditch was piled up to form the bank. This first stage is dated to around 3100 BC, after which the ditch began to silt up naturally. Within the outer edge of the enclosed area is a circle of

56 pits, each about a metre (3'3") in diameter(13), known as the Aubrey holes after John Aubrey, the 17th-century antiquarian who was thought to have first identified them. The pits may have contained standing timbers creating a timber circle, although there is no excavated evidence of them. A recent excavation has suggested that the Aubrey Holes may have originally been used to erect a bluestone circle.^[14] If this were the case, it would advance the earliest known stone structure at the monument by some 500 years. A small outer bank beyond the ditch could also date to this period.



Stonehenge 2 (ca. 3000 BC)

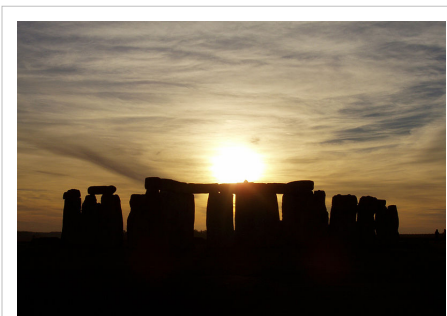
Evidence of the second phase is no longer visible. The number of postholes dating to the early 3rd millennium BC suggest that some form of timber structure was built within the enclosure during this period. Further standing timbers were placed at the northeast entrance, and a parallel alignment of posts ran inwards from the southern entrance. The postholes are smaller than the Aubrey Holes, being only around 0.4 metres (16 in) in diameter, and are much less regularly spaced. The bank was purposely reduced in height and the ditch continued to silt up. At least twenty-five of the Aubrey Holes are known to have contained later, intrusive, cremation burials dating to the two centuries after the monument's inception. It seems that whatever the holes' initial function, it changed to become a funerary one during Phase 2. Thirty further cremations were placed in the enclosure's ditch and at other points within the monument, mostly in the eastern half. Stonehenge is therefore interpreted as functioning as an enclosed cremation cemetery at this time, the earliest known cremation cemetery in the British Isles. Fragments of unburnt human bone have also been found in the ditch-fill. Dating evidence is provided by the late Neolithic grooved ware pottery that has been found in connection with the features from this phase.

Stonehenge 3 I (ca. 2600 BC)

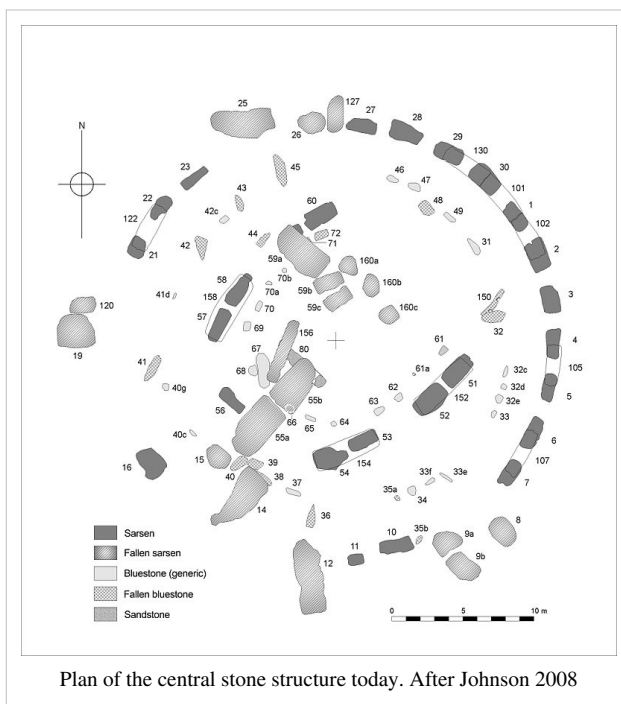
Archaeological excavation has indicated that around 2600 BC, the builders abandoned timber in favour of stone, and dug two concentric arrays of holes (the Q and R Holes) in the centre of the site. These stone sockets are only partly known (hence on present evidence are sometimes described as forming 'crescents'); however, they could be the remains of a double ring. Again, there is little firm dating evidence for this phase. The holes held up to 80 standing stones (shown blue on the plan), only 43 of which can be traced today. The bluestones (some of which are made of dolerite, an igneous rock), were thought for much of the 20th century to have been transported by humans from the Preseli Hills, 250 kilometres (160 mi) away in modern-day Pembrokeshire in Wales. Another theory that has recently gained support, is that they were brought much nearer to the site as glacial erratics by the Irish Sea Glacier.^[15] Other standing stones may well have been small sarsens, used later as lintels. The stones, which weighed about four tons, consisted mostly of spotted Ordovician dolerite but included examples of rhyolite, tuff and volcanic and calcareous ash; in total around 20 different rock types are represented. Each monolith measures around 2 metres (6.6 ft) in height, between 1 m and 1.5 m (3.3-4.9 ft) wide and around 0.8 metres (2.6 ft) thick. What was to become known as the Altar Stone (*1*), is almost certainly derived from either Carmarthenshire or the Brecon Beacons and may have stood as a single large monolith.



Stonehenge from the heelstone in 2007 with the 'Slaughter Stone' in the foreground



Stonehenge at sunset in 2004



The north-eastern entrance was widened at this time, with the result that it precisely matched the direction of the midsummer sunrise and midwinter sunset of the period. This phase of the monument was abandoned unfinished, however; the small standing stones were apparently removed and the Q and R holes purposefully backfilled. Even so, the monument appears to have eclipsed the site at Avebury in importance towards the end of this phase.

The Heelstone (*5*), a Tertiary sandstone, may also have been erected outside the north-eastern entrance during this period. It cannot be accurately dated and may have been installed at any time during phase 3. At first it was accompanied by a second stone, which is no longer visible. Two, or possibly three, large portal stones were set up just inside the north-eastern entrance, of which only one, the fallen Slaughter Stone (*4*), 4.9 metres (16 ft) long, now remains. Other features, loosely dated to phase 3, include the four Station Stones (*6*), two of which stood atop mounds (*2* and *3*). The mounds are known as "barrows" although they do not contain burials. Stonehenge Avenue, (*10*), a parallel pair of ditches and banks

phase 3, include the four Station Stones (*6*), two of which stood atop mounds (*2* and *3*). The mounds are known as "barrows" although they do not contain burials. Stonehenge Avenue, (*10*), a parallel pair of ditches and banks

leading 3 kilometres (1.9 mi) to the River Avon, was also added. Two ditches similar to Heelstone Ditch circling the Heelstone (which was by then reduced to a single monolith) were later dug around the Station Stones.

Stonehenge 3 II (2600 BC to 2400 BC)

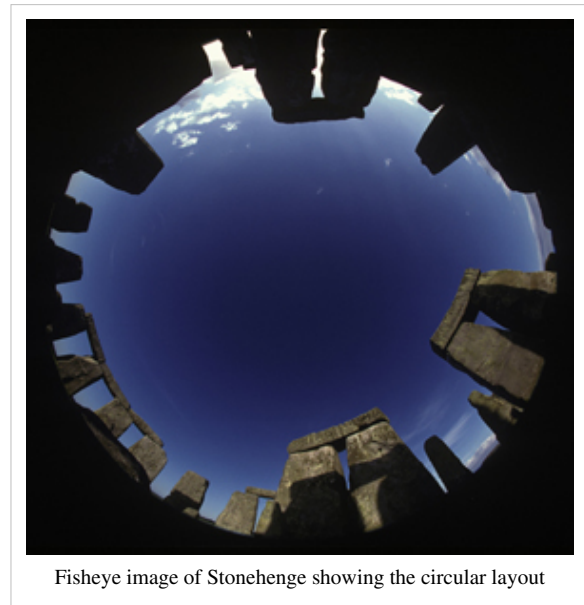
During the next major phase of activity, 30 enormous Oligocene-Miocene sarsen stones (*shown grey on the plan*) were brought to the site. They may have come from a quarry, around 40 kilometres (25 mi) north of Stonehenge on the Marlborough Downs, or they may have been collected from a "litter" of sarsens on the chalk downs, closer to hand. The stones were dressed and fashioned with mortise and tenon joints before 30 were erected as a 33 metres (108 ft) diameter circle of standing stones, with a ring of 30 lintel stones resting on top. The lintels were fitted to one another using another woodworking method, the tongue and groove joint. Each standing stone was around 4.1 metres (13 ft) high, 2.1 metres (6 ft 11 in) wide and weighed around 25 tons. Each had clearly been worked with the final visual effect in mind; the orthostats widen slightly

towards the top in order that their perspective remains constant when viewed from the ground, while the lintel stones curve slightly to continue the circular appearance of the earlier monument. The inward-facing surfaces of the stones are smoother and more finely worked than the outer surfaces. The average thickness of the stones is 1.1 metres (3 ft 7 in) and the average distance between them is 1 metre (3 ft 3 in). A total of 75 stones would have been needed to complete the circle (60 stones) and the trilithon horseshoe (15 stones). Unless some of the sarsens have since been removed from the site, the ring appears to have been left incomplete. The lintel stones are each around 3.2 metres (10 ft), 1 metre (3 ft 3 in) wide and 0.8 metres (2 ft 7 in) thick. The tops of the lintels are 4.9 metres (16 ft) above the ground.

Within this circle stood five trilithons of dressed sarsen stone arranged in a horseshoe shape 13.7 metres (45 ft) across with its open end facing north east. These huge stones, ten uprights and five lintels, weigh up to 50 tons each. They were linked using complex jointing. They are arranged symmetrically. The smallest pair of trilithons were around 6 metres (20 ft) tall, the next pair a little higher and the largest, single trilithon in the south west corner would have been 7.3 metres (24 ft) tall. Only one upright from the Great Trilithon still stands, of which 6.7 metres (22 ft) is visible and a further 2.4 metres (7 ft 10 in) is below ground.

The images of a 'dagger' and 14 'axeheads' have been carved on one of the sarsens, known as stone 53 and further carvings of axeheads have been seen on the outer faces of stones 3, 4, and 5. The carvings are difficult to date, but are morphologically similar to late Bronze Age weapons; recent laser scanning work on the carvings supports this interpretation. The pair of trilithons in the north east are smallest, measuring around 6 metres (20 ft) in height; the largest, which is in the south west of the horseshoe, is almost 7.5 metres (25 ft) tall.

This ambitious phase has been radiocarbon dated to between 2600 and 2400 BC,^[16] slightly earlier than the Stonehenge Archer, discovered in



Fisheye image of Stonehenge showing the circular layout



Graffiti on the sarsen stones. Below are ancient carvings of a dagger and an axe

the outer ditch of the monument in 1978, and the two sets of burials, known as the Amesbury Archer and the Boscombe Bowmen, discovered 4.8 kilometres (3.0 mi) to the west. At about the same time, a large timber circle and a second avenue were constructed 3.2 kilometres (2.0 mi) away at Durrington Walls overlooking the River Avon. The timber circle was orientated towards the rising sun on the midwinter solstice, opposing the solar alignments at Stonehenge, whilst the avenue was aligned with the setting sun on the summer solstice and led from the river to the timber circle. Evidence of huge fires on the banks of the Avon between the two avenues also suggests that both circles were linked, and they were perhaps used as a procession route on the longest and shortest days of the year. Parker Pearson speculates that the wooden circle at Durrington Walls was the centre of a 'land of the living', whilst the stone circle represented a 'land of the dead', with the Avon serving as a journey between the two.^[17]

Stonehenge 3 III

Later in the Bronze Age, although the exact details of activities during this period are still unclear, the bluestones appear to have been re-erected. They were placed within the outer sarsen circle and may have been trimmed in some way. Like the sarsens, a few have timber-working style cuts in them suggesting that, during this phase, they may have been linked with lintels and were part of a larger structure.

Stonehenge 3 IV (2280 BC to 1930 BC)

This phase saw further rearrangement of the bluestones. They were arranged in a circle between the two rings of sarsens and in an oval at the centre of the inner ring. Some archaeologists argue that some of these bluestones were from a second group brought from Wales. All the stones formed well-spaced uprights without any of the linking lintels inferred in Stonehenge 3 III. The Altar Stone may have been moved within the oval at this time and re-erected vertically. Although this would seem the most impressive phase of work, Stonehenge 3 IV was rather shabbily built compared to its immediate predecessors, as the newly re-installed bluestones were not well-founded and began to fall over. However, only minor changes were made after this phase.

Stonehenge 3 V (1930 BC to 1600 BC)

Soon afterwards, the north eastern section of the Phase 3 IV bluestone circle was removed, creating a horseshoe-shaped setting (the Bluestone Horseshoe) which mirrored the shape of the central sarsen Trilithons. This phase is contemporary with the Seahenge site in Norfolk.

After the monument (1600 BC on)

The last known construction at Stonehenge was about 1600 BC (see 'Y and Z Holes' below), and the last usage of it was probably during the Iron Age. Roman coins and medieval artefacts have all been found in or around the monument but it is unknown if the monument was in continuous use throughout prehistory and beyond, or exactly how it would have been used. Notable is the late 7th-6th century BC large arcing Scroll Trench which deepens E-NE towards Heelstone, and the massive Iron Age hillfort Vespasian's Camp built alongside the Avenue near the Avon. A decapitated 7th century Saxon man was excavated from Stonehenge in 1923.^[18] The site was known to scholars during the Middle Ages and since then it has been studied and adopted by numerous different groups.

Function and construction

Stonehenge was produced by a culture that left no written records. Many aspects of Stonehenge remain subject to debate. This multiplicity of theories, some of them very colourful, are often called the "mystery of Stonehenge".

There is little or no direct evidence for the construction techniques used by the Stonehenge builders. Over the years, various authors have suggested that supernatural or anachronistic methods were used, usually asserting that the stones were impossible to move otherwise. However, conventional techniques using Neolithic technology have been demonstrably effective at moving and placing stones of a similar size.^[19] Proposed functions for the site include usage as an astronomical observatory, or as a religious site.

More recently two major new theories have been proposed. Professor Mike Parker Pearson, head of the Stonehenge Riverside Project, has suggested that Stonehenge was part of a ritual landscape and was joined to Durrington Walls by their corresponding avenues and the River Avon. He suggests that the area around Durrington Walls Henge was a place of the living, whilst Stonehenge was a domain of the dead. A journey along the Avon to reach Stonehenge was part of a ritual passage from life to death, to celebrate past ancestors and the recently deceased.^[17] On the other hand, Geoffery Wainwright, president of the Society of Antiquaries of London, and Timothy Darvill of Bournemouth University have suggested that Stonehenge was a place of healing – the primeval equivalent of Lourdes.^[20] They argue that this accounts for the high number of burials in the area and for the evidence of trauma deformity in some of the graves. However they do concede that the site was probably multifunctional and used for ancestor worship as well.^[21] Isotope analysis indicates that some of the buried individuals were from other regions. A teenage boy buried approximately 1550 BC was raised near the Mediterranean Sea; a metal worker from 2300 BC dubbed the "Amesbury Archer" grew up near the alpine foothills of Germany; and the "Boscombe Bowmen" likely arrived from Wales or Brittany, France.^[22]

Whatever religious, mystical or spiritual elements were central to Stonehenge, its design includes a celestial observatory function, which might have allowed prediction of eclipse, solstice, equinox and other celestial events important to a contemporary religion ^[23]

Modern history

Folklore

"Heel Stone," "Friar's Heel" or "Sun-Stone"

The *Heel Stone* lies just outside the main entrance to the henge, next to the present A344 road. It is a rough stone, 16 feet (4.9 m) above ground, leaning inwards towards the stone circle. It has been known by many names in the past, including "Friar's Heel" and "Sun-stone". Today it is uniformly referred to as the Heel Stone or Heelstone. When one stands within Stonehenge, facing north-east through the entrance towards the heel stone, one sees the sun rise above the stone at summer solstice.

A folk tale, which cannot be dated earlier than the seventeenth century, relates the origin of the Friar's Heel reference.

The Devil bought the stones from a woman in Ireland, wrapped them up, and brought them to Salisbury plain. One of the stones fell into the Avon, the rest were carried to the plain. The Devil then cried out, "No-one will ever find out how these stones came here!" A friar replied, "That's what you think!," whereupon the Devil threw one of the stones at him and struck him on the heel. The stone stuck in the ground and is still there.



The Heelstone

Some claim "Friar's Heel" is a corruption of "Freyja's He-ol" from the Nordic goddess Freyja and the Welsh word for *track*. The Heel Stone lies beside the end portion of Stonehenge Avenue.

A more simple explanation for the name might be that the stone *heels*, or leans.

The name is not unique; there was a monolith with the same name recorded in the 19th century by antiquarian Charles Warne at Long Bredy in Dorset.^[24]

Arthurian legend

In the 12th century, Geoffrey of Monmouth included a fanciful story in his work *Historia Regum Britanniae* that attributed the monument's construction to Merlin.^[25] Geoffrey's story spread widely, appearing in more and less elaborate form in adaptations of his work such as Wace's Norman French *Roman de Brut*, Layamon's Middle English *Brut*, and the Welsh *Brut y Brenhinedd*. According to Geoffrey, Merlin directed its removal from Ireland, where it had been constructed on Mount Killaraus by Giants, who brought the stones from Africa. After it had been rebuilt near Amesbury, Geoffrey further narrates how first Ambrosius Aurelianus, then Uther Pendragon, and finally Constantine III, were buried inside the ring of stones. In many places in his *Historia Regum Britanniae* Geoffrey mixes British legend and his own imagination; it is intriguing that he connects Ambrosius Aurelianus with this prehistoric monument as there is place-name evidence to connect Ambrosius with nearby Amesbury.

According to Geoffrey of Monmouth, the rocks of Stonehenge were healing rocks, called the Giant's dance, which giants brought from Africa to Ireland for their healing properties. Aurelius Ambrosias (5th century), wishing to erect a memorial to the 3,000 nobles, who had died in battle with the Saxons and were buried at Salisbury, chose Stonehenge (at Merlin's advice) to be their monument. So the King sent Merlin, Uther Pendragon (Arthur's father), and 15,000 knights to Ireland to retrieve the rocks. They slew 7,000 Irish but, as the knights tried to move the rocks with ropes and force, they failed. Then Merlin, using "gear" and skill, easily dismantled the stones and sent them over to Britain, where Stonehenge was dedicated. Shortly after, Aurelius died and was buried within the Stonehenge monument, or "The Giants' Ring of Stonehenge".

In another legend of Saxons and Britons, in 472 the invading king Hengist invited Brythonic warriors to a feast, but treacherously ordered his men to draw their weapons from concealment and fall upon the guests, killing 420 of them. Hengist erected the stone monument—Stonehenge—on the site to show his remorse for the deed.^[26]



A giant helps Merlin build Stonehenge. From a manuscript of the *Roman de Brut* by Wace in the British Library (Egerton 3028). This is the oldest known depiction of Stonehenge.

16th century to present



The sun rising over Stonehenge on the summer solstice on 21 June 2005

Stonehenge has changed ownership several times since King Henry VIII acquired Amesbury Abbey and its surrounding lands. In 1540 Henry gave the estate to the Earl of Hertford. It subsequently passed to Lord Carleton and then the Marquis of Queensbury. The Antrobus family of Cheshire bought the estate in 1824. During World War I an aerodrome had been built on the downs just to the west of the circle and, in the dry valley at Stonehenge Bottom, a main road junction had been built, along with several cottages and a cafe. The Antrobus family sold the site after their last heir was killed serving in France during the First World War. The auction by Knight Frank & Rutley estate agents in Salisbury was held on 21 September 1915 and included "Lot 15.

Stonehenge with about 30 acres, 2 rods, 37 perches of adjoining downland." [c. 12.4365 ha]^[27] Cecil Chubb bought the site for £6,600 and gave it to the nation three years later. Although it has been speculated that he purchased it at the suggestion of — or even as a present for — his wife, in fact he bought it on a whim as he believed a local man should be the new owner.^[27]

In the late 1920s a nation-wide appeal was launched to save Stonehenge from the encroachment of the modern buildings that had begun to appear around it.^[28] By 1928 the land around the monument had been purchased with the appeal donations, and given to the National Trust in order to preserve it. The buildings were removed (although the roads were not), and the land returned to agriculture. More recently the land has been part of a grassland reversion scheme, returning the surrounding fields to native chalk grassland.

Neopaganism

Throughout the twentieth century, Stonehenge began to be revived as a place of religious significance, this time by adherents of Neopagan and New Age beliefs, particularly the Neo-druids: the historian Ronald Hutton would later remark that "it was a great, and potentially uncomfortable, irony that modern Druids had arrived at Stonehenge just as archaeologists were evicting the ancient Druids from it."^[29] The first such Neo-druidic group to make use of the megalithic monument was the Ancient Order of Druids, who performed a mass initiation ceremony there in August 1905, in which they admitted 259 new members into their organisation. This assembly was largely ridiculed in the press, who mocked the fact that the Neo-druids were dressed up in costumes comprising of white robes and fake beards.^[30]



The 1905 mass initiation ritual held by the Ancient Order of Druids at Stonehenge.

Between 1972 and 1984, Stonehenge was the site of a free festival. After the Battle of the Beanfield in 1985 this use of the site was stopped for several years, and currently ritual use of Stonehenge is carefully controlled.^[31]

Setting and access

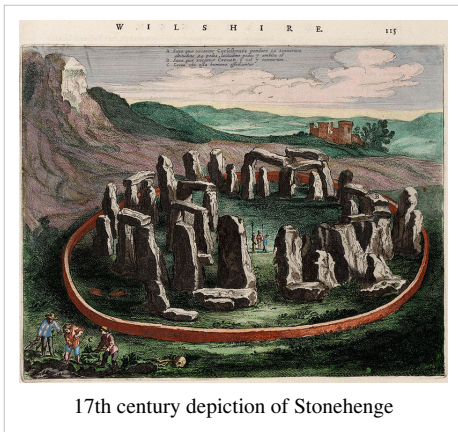
As motorised traffic increased, the setting of the monument began to be affected by the proximity of the two roads on either side — the A344 to Shrewton on the north side, and the A303 to Winterbourne Stoke to the south. Plans to upgrade the A303 and close the A344 to restore the vista from the stones have been considered since the monument became a World Heritage Site. However, the controversy surrounding expensive re-routing of the roads have led to the scheme being cancelled on multiple occasions. On 6 December 2007 it was announced that extensive plans to

build a tunnel under the landscape and create a permanent visitors' centre had been cancelled.^[32] On 13 May 2009 the government gave approval for a £25 million scheme to create a smaller visitors' centre and close the A344, although this was dependent on funding and local authority planning consent.^[33] On 20 January 2010 Wiltshire Council granted planning permission for a centre 2.5 km (1.6 miles) to the west and English Heritage confirmed that funds to build it would be available, supported by a £10m grant from the Heritage Lottery Fund.^[34] Approval is still needed for the closure of the A344 and two nearby byways, which are popular with off-road enthusiasts and whose objections may further jeopardise the scheme.^[35]

When Stonehenge was first opened to the public it was possible to walk amongst and even climb on the stones, but the stones were roped off in 1977 as a result of serious erosion.^[36] Visitors are no longer permitted to touch the stones, but are able to walk around the monument from a short distance away. English Heritage does, however, permit access during the summer and winter solstice, and the spring and autumn equinox. Additionally, visitors can make special bookings to access the stones throughout the year.^[37]

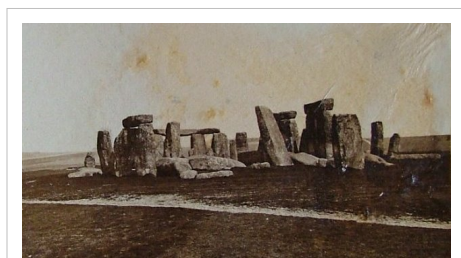
The current access situation and the proximity of the two roads has drawn widespread criticism, highlighted by a 2006 National Geographic survey. In the survey of conditions at 94 leading World Heritage Sites, 400 conservation and tourism experts ranked Stonehenge 75th in the list of destinations, declaring it to be "in moderate trouble".^[38]

Archaeological research and restoration



Throughout recorded history Stonehenge and its surrounding monuments have attracted attention from antiquarians and archaeologists. John Aubrey was one of the first to examine the site with a scientific eye in 1666, and recorded in his plan of the monument the pits that now bear his name. William Stukeley continued Aubrey's work in the early 18th century, but took an interest in the surrounding monuments as well, identifying (somewhat incorrectly) the Cursus and the Avenue. He also began the excavation of many of the barrows in the area, and it was his interpretation of the landscape that associated it with the Druids^[39] Stukeley was so fascinated with Druids that he originally named Disc Barrows as Druids' Barrows. The most accurate early plan of Stonehenge was that made by Bath architect John Wood in 1740.^[40] His original annotated survey has recently been computer redrawn and published.^[41] Importantly Wood's plan was made before the collapse of the southwest trilithon, which fell in 1797 and was restored in 1958.

William Cunnington was the next to tackle the area in the early 19th century. He excavated some 24 barrows before digging in and around the stones and discovered charred wood, animal bones, pottery and urns. He also identified the hole in which the Slaughter Stone once stood. At the same time Richard Colt Hoare began his activities, excavating some 379 barrows on Salisbury Plain before working with Cunnington and William Coxe on some 200 in the area around the Stones. To alert future diggers to their work they were careful to leave initialled metal tokens in each barrow they opened.



An early photograph of Stonehenge taken July 1877

In 1877 Charles Darwin dabbled in archaeology at the stones, experimenting with the rate at which remains sink into the earth for his book *The Formation of Vegetable Mould Through the Action of Worms*.

William Gowland oversaw the first major restoration of the monument in 1901 which involved the straightening and concrete setting of sarsen stone number 56 which was in danger of falling. In straightening the stone he moved it about half a metre from its original position.^[41] Gowland also took the opportunity to further excavate the monument

in what was the most scientific dig to date, revealing more about the erection of the stones than the previous 100 years of work had done. During the 1920 restoration William Hawley, who had excavated nearby Old Sarum, excavated the base of six stones and the outer ditch. He also located a bottle of port in the slaughter stone socket left by Cunnington, helped to rediscover Aubrey's pits inside the bank and located the concentric circular holes outside the Sarsen Circle called the Y and Z Holes.^[42]

Richard Atkinson, Stuart Piggott and John F. S. Stone re-excavated much of Hawley's work in the 40s and 50s, and discovered the carved axes and daggers on the Sarsen Stones. Atkinson's work was instrumental in understanding the three major phases of the monument's construction.

In 1958 the stones were restored again, when three of the standing sarsens were re-erected and set in concrete bases. The last restoration was carried out in 1963 after stone 23 of the Sarsen Circle fell over. It was again re-erected, and the opportunity was taken to concrete three more stones. Later archaeologists, including Christopher Chippindale of the Museum of Archaeology and Anthropology, University of Cambridge and Brian Edwards of the University of the West of England campaigned to give the public more knowledge of the various restorations and in 2004 English Heritage included pictures of the works in progress in its new book *Stonehenge: A History in Photographs*.^{[43] [44] [45]}



The monument from a similar angle in 2008 showing the extent of reconstruction

In 1966 and 1967, in advance of a new car park being built at the site, the area of land immediately northwest of the stones was excavated by Faith and Lance Vatcher. They discovered the Mesolithic postholes dating from between 7000 and 8000 BC, as well as a 10m length of a palisade ditch – a V cut ditch into which timber posts had been inserted that remained there until they rotted away. Subsequent aerial archaeology suggests that this ditch runs from the west to the north of Stonehenge, near the avenue.^[46]

Excavations were once again carried out in 1978 by Atkinson and John Evans during which they discovered the remains of the Stonehenge Archer in the outer ditch,^[47] and in 1979 rescue archaeology was needed alongside the Heel Stone after a cable-laying ditch was mistakenly dug on the roadside, revealing a new stone hole next to the Heel Stone.

In the early 1980s Julian Richards led the Stonehenge Environs Project, a detailed study of the surrounding landscape. The project was able to successfully date such features as the Lesser Cursus, Coneybury henge and several other smaller features.

More recent excavations include a series of digs held between 2003 and 2008, led by Mike Parker Pearson, known as the Stonehenge Riverside Project. This project mainly investigated other monuments in the landscape and their relationship with the stones — notably Durrington Walls, where another 'Avenue' leading to the River Avon was discovered. In April 2008 Professor Tim Darvill of the University of Bournemouth and Professor Geoff Wainwright of the Society of Antiquaries, began another dig inside the Stone circle to retrieve dateable fragments of the original bluestone pillars. They were able to date the erection of some bluestones to 2300BC,^[5] although this may not reflect the earliest erection of stones at Stonehenge. They also discovered organic material from 7000 BC, which, along with the Mesolithic postholes, adds support for the site having been in use at least 4000 years before Stonehenge was started. In August and September 2008, as part of the Riverside Project Julian Richards and Mike Pitts excavated Aubrey Hole 7, removing the cremated remains from several Aubrey Holes that had been excavated by Hawley in the 1920s, and re-interred in 1935.^[48] A licence for the removal of human remains at Stonehenge had been granted by the Ministry of Justice (United Kingdom) in May 2008, in accordance with the *Statement on burial law and archaeology* issued in May 2008. One of the conditions of the licence was that the remains should be reinterred within two years and that in the intervening period they should be kept safely, privately and decently.^{[49] [50]}

A new landscape investigation was conducted in April 2009. A shallow mound, rising to about 40 cm (16 inches) was identified between stones 54 (inner circle) and 10 (outer circle), clearly separated from the natural slope. It has not been dated but speculation that it represents careless backfilling following earlier excavations seems disproved by its representation in 18th and 19th century illustrations. Indeed, there is some evidence that, as an uncommon geological feature, it could have been deliberately incorporated into the monument at the outset.^[51] A circular, shallow bank, little more than 10 cm (4 inches) high, was found between the Y and Z hole circles, with a further bank lying inside the "Z" circle. These are interpreted as the spread of spoil from the original Y and Z holes, or more speculatively as hedge banks from vegetation deliberately planted to screen the activities within.^[51]

In July 2010 the Stonehenge New Landscapes Project discovered what appears to be a new henge less than 1 kilometre away from the main site.^[52]

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External links

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- A stunning 360° top to bottom Flash tour (<http://www.bbc.co.uk/history/programmes/stonehenge/flash/panorama.swf>)

Geographical coordinates: 51°10'43.84"N 1°49'34.28"W

Avebury

Stonehenge, Avebury and Associated Sites*	
UNESCO World Heritage Site	
	
State Party	 United Kingdom of Great Britain and Northern Ireland
Type	Cultural
Criteria	i, ii, iii
Reference	373 ^[1]
Region**	Europe and North America
Inscription history	
Inscription	1986 (10th Session)
	
<p>Map of Wiltshire showing the location of Avebury</p>	
<p>* Name as inscribed on World Heritage List. ^[2]</p> <p>** Region as classified by UNESCO. ^[3]</p>	

Avebury is the site of an ancient monument consisting of a large henge, several stone circles, stone avenues and barrows, surrounding the village of Avebury in the English county of Wiltshire. It is one of the finest and largest Neolithic monuments in Europe, about 5,000 years old. Although older than the megalithic stages of Stonehenge 32 kilometres (20 mi) to the south, the two monuments are broadly contemporary overall. Avebury is roughly midway between the towns of Marlborough and Calne, just off the main A4 road on the northbound A4361 towards Wroughton. Avebury is a Scheduled Ancient Monument,^[1] a World Heritage Site,^[2] and a National Trust property.^[3]

Location and environment

At grid reference SU10266996,^[4] Avebury is respectively about 6 and 7 mi (10 and 11 km) from the modern towns of Marlborough and Calne. Avebury lies in an area of chalkland in the Upper Kennet Valley, at the western end of the Berkshire Downs, which forms the catchment for the River Kennet and supports local springs and seasonal watercourses. The monument stands slightly above the local landscape, sitting on a low chalk ridge 160 m (520 ft) above sea level; to the east are the Marlborough Downs, an area of lowland hills. The site lies at the centre of a collection of Neolithic and early Bronze Age monuments and was inscribed as a World Heritage Site in a co-listing with the monuments at Stonehenge, 17 mi (27 km) to the south, in 1986. It is now listed as part of the *Stonehenge, Avebury and Associated Sites World Heritage Site*.^[5] The monuments are preserved as part of a Neolithic and Bronze Age landscape for the information they provide regarding prehistoric people's relationship with the landscape.^[6]

Radiocarbon dating and analysis of pollen in buried soils have shown that the environment of lowland Britain changed around 4,250–4,000 BC. The change to a grassland environment from damp, heavy soils and expanses of dense forest was mostly brought about by farmers, probably through the use of slash and burn techniques. Environmental factors may also have made a contribution. Pollen is poorly preserved in the chalky soils found around Avebury, so the best evidence for the state of local environment at any time in the past comes from the study of the deposition of snail shells. Different species of snail live in specific habitats, so the presence of a certain species indicates what the area was like at a particular point in time.^[7] The available evidence suggests that in the early Neolithic, Avebury and the surrounding hills were covered in dense oak woodland, and as the Neolithic progressed, the woodland around Avebury and the nearby monuments receded and was replaced by grassland.^[8]

Before the henge



West Kennet Avenue

The history of the site before the construction of the henge is uncertain, because little datable evidence has emerged from modern archaeological excavations.^[9] Evidence of activity in the region before the 4th millennium BC is limited, suggesting that there was little occupation. Stray finds of flints at Avebury, dated between 7,000 and 4,000 BC, indicate that the site was visited in the late Mesolithic period by

hunter-gatherers. A collection of flints found 300 m (980 ft) to the west of Avebury has been identified as a flint-working site occupied over several weeks.^[10] Despite minimal activity at early times, Avebury's later rise to importance follows a trend that is also seen at Stonehenge in Wiltshire and Hambledon Hill in Dorset.^[11] Another possible parallel with Stonehenge is the presence of a posthole, similar in shape to one at Stonehenge, near Avebury's southern entrance. Although this has not been dated, archaeologists Mark Gillings and Joshua Pollard believe that the position of the posthole, which is incongruous with the rest of the henge, indicates it probably dates to a pre-henge phase.^[12]

In the 4th millennium BC, around the start of the Neolithic period in Britain, British society underwent radical changes. These coincided with the introduction to the island of domesticated species of animals and plants, as well as a changing material culture that included pottery. These developments allowed hunter-gatherers to settle down and produce their own food. As agriculture spread, people cleared land. At the same time, they also erected the first monuments to be seen in the local landscape, an activity interpreted as evidence of a change in the way people viewed their place in the world.^[12]

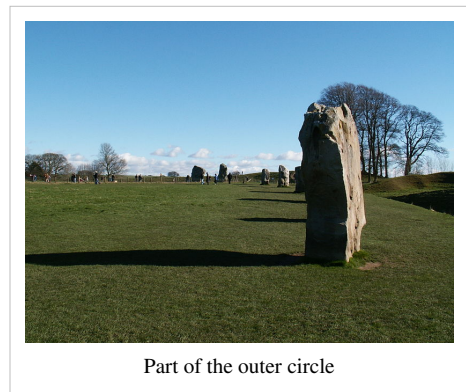
Based on anthropological studies of recent and contemporary societies, Gillings and Pollard suggest that forests, clearings, and stones were important in Neolithic culture, not only as resources but as symbols; the site of Avebury occupied a convergence of these three elements.^[13] Neolithic activity at Avebury is evidenced by flint, animal bones, and pottery such as Peterborough ware dating from the early 4th and 3rd millennia BC. Five distinct areas of Neolithic activity have been identified within 500 m (1600 ft) of Avebury; they include a scatter of flints along the line of the West Kennet Avenue – an avenue that connects Avebury with the Neolithic site of The Sanctuary. Pollard suggests that areas of activity in the Neolithic became important markers in the landscape.^[14]

Construction

The construction of large monuments such as those at Avebury indicates that a stable agrarian economy had developed in Britain by around 4,000–3,500 BC. The people who built them had to be secure enough to spend time on such non-essential activities. Avebury was one of a group of monumental sites that were established in this region during the Neolithic. Its monuments comprise the henge and associated long barrows, stone circles, avenues, and a causewayed enclosure. These monument types are not exclusive to the Avebury area. For example, Stonehenge features the same kinds of monuments, and in Dorset there is a henge on the edge of Dorchester and a causewayed enclosure at nearby Maiden Castle.^[15] According to Caroline Malone, who worked for English Heritage as an inspector of monuments and was the curator of Avebury's Alexander Keiller Museum, it is possible that the monuments associated with Neolithic sites such as Avebury and Stonehenge constituted ritual or ceremonial centres.^[15]

Monument

Most of the surviving structure is composed of earthworks, known as the dykes, consisting of a massive ditch and external bank henge. Although the henge is not perfectly circular, it has a diameter of about 420 metres (460 yd).^[16] The only known comparable sites of similar date are only a quarter of the size of Avebury. The ditch alone was 21 metres (69 ft) wide and 11 metres (36 ft) deep, with a sample from its primary fill carbon dated to 3300 - 2630 BC (4300+/-90).^[17] The excavation of the bank has demonstrated that it has been enlarged, presumably using material dug from the ditch, so it could be assumed that the construction of the ditch could have started at the earlier date, although speculation puts it nearer the later date.



Within the henge is a great outer circle. This is one of Europe's largest stone circles,^[18] with a diameter of 331.6 metres (1088 ft), Britain's largest stone circle.^[19] It was either contemporary with, or built around four or five centuries after the earthworks. There were originally 98 sarsen standing stones, some weighing in excess of 40 tons. The stones varied in height from 3.6 to 4.2 m, as exemplified at the north and south entrances. The fill from two of the stoneholes has been carbon dated to between 2900 and 2600 BC (3870+/-90, 4130+/-90)^[20]

Nearer the middle of the monument are two additional, separate stone circles. The northern inner ring is 98 metres (322 ft) in diameter, but only two of its four standing stones remain upright. A cove of three stones stood in the middle, its entrance facing northeast.

The southern inner ring was 108 metres (354 ft) in diameter before its destruction in the eighteenth century. The remaining sections of its arc now lie beneath the village buildings. A single large monolith, 5.5 metres (18 ft) high, stood in the centre along with an alignment of smaller stones.

The West Kennet Avenue, an avenue of paired stones, leads from the southeastern entrance of the henge; and traces of a second, the Beckhampton Avenue, lead out from the western entrance.

Archaeologist Aubrey Burl has conjectured a sequence of construction beginning with the erection of the North and South Circles around 2800 BC, followed by the Outer Circle and henge around two hundred years later, with the two avenues added around 2400 BC.

Findings of archaeological geophysics suggests that a timber circle of two concentric rings stood in the northeast sector of the outer circle. This has not yet been confirmed by excavation. A ploughed barrow is visible from the air in the northwestern quadrant.

The henge had four opposing entrances, two on a north by northwest and south by southeast line, and two on an east by northeast and west by southwest line.



The stone avenue

Alexander Keiller Museum

The **Alexander Keiller Museum** features the prehistoric artifacts collected by archaeologist and businessman Alexander Keiller, which include many artifacts found at Avebury. The museum is located in the 17th-century stables gallery, and is operated by English Heritage and the National Trust. The nearby 17th century threshing barn houses a permanent exhibit gallery about Avebury and its history. Admission includes both galleries.

Founded by Keiller in 1938, the collections feature artifacts mostly of Neolithic and Early Bronze Age date, with other items from the Anglo-Saxon and later periods. The museum also features the skeleton of a child that was found in a ditch at Windmill Hill, Avebury. Nicknamed "Charlie", the Council of British Druid Orders requested that the skeleton be re-buried in 2006^[21], but in April 2010 the decision was made to keep the skeleton on public view.

The collections are owned by the Department for Culture, Media and Sport and are on loan to English Heritage.^[22]

Ancient references

The name of the village of Avebury and the earthwork have been synonymous only since the 20th century. The earliest written mention of the earthwork is from the 13th century, when it is referred to as "Waledich". In 1696, it was referred to as Wallditch. Both names are of Anglo-Saxon origin, and probably mean "ditch of the wealas"; *wealas* was a term used by Anglo-Saxon colonists to describe an enclave of native Britons.^[23]

Destruction of the stones

Many of the original stones were broken up or removed from the early 14th century onwards at the behest of the Christian Church to remove association with pagan rituals, to make room for agriculture, or to provide local building materials. Both John Aubrey and later, William Stukeley visited the site and described the destruction. When Aubrey first arrived in 1643, all the stones of the Avenue were either still *in situ* or lying where they had fallen. Shortly afterward the systematic destruction of the stones began in earnest; some were broken up by being hammered and others by being heated in large fires and broken along a line marked with water. Stukeley spent much of the 1720s recording what remained of Avebury and the surrounding monuments, and left a drawing depicting the fire and water method.^[24] He was greatly angered by the destruction of the monument, writing:

And this stupendous fabric, which for some thousands of years, had brav'd the continual assaults of weather, and by the nature of it, when left to itself, like the pyramids of Egypt, would have lasted as long as the globe, hath fallen a sacrifice to the wretched ignorance and avarice of a little village unluckily plac'd within it.^[25]

Only 27 stones of the Outer Circle survive, many of them re-erected by Alexander Keiller in the 1930s. Concrete pylons now mark the former locations of the missing stones. It is likely that more stones are buried on the site.

Excavations

Excavation at Avebury has been limited. In 1894 Sir Henry Meux put a trench through the bank, which gave the first indication that the earthwork was built in two phases. The site was surveyed and excavated intermittently between 1908 and 1922 by a team of workmen under the direction of Harold St George Gray. He was able to demonstrate that the Avebury builders had dug down 11 metres (36 ft) into the natural chalk using red deer antlers as their primary digging tool, producing a henge ditch with a 9-metre (30 ft) high bank around its perimeter. Gray recorded the base of the ditch as being 4 metres (13 ft) wide and flat, but later archaeologists have questioned his use of untrained labour to excavate the ditch and suggested that its form may have been different. Gray found few artefacts in the ditch-fill but he did recover scattered human bones, amongst which jawbones were particularly well represented. At a depth of about 2 metres (7 ft), Gray found the complete skeleton of a 1.5-metre (5 ft) tall woman.



Stukeley's drawing of the stones being broken up by fire



Part of the outer ditch



The Barber Stone

During the 1930s archaeologist Alexander Keiller re-erected many of the stones. Under one, now known as the Barber Stone, the skeleton of a man was discovered. Coins dating from the 1320s were found with the skeleton, and the evidence suggests that the man was fatally injured when the stone fell on him whilst he was digging the hole in which it was to be buried in a medieval "rite of destruction". As well as the coins Keiller found a pair of scissors and a lancet, the tools of a barber-surgeon at that time, hence the name given to the stone.^{[26] [27]}

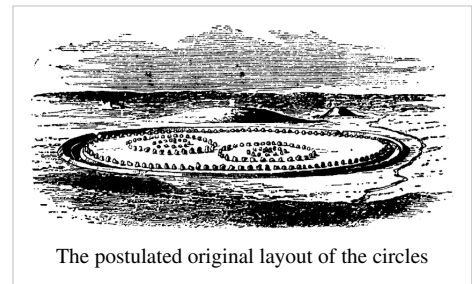
When a new village school was built in 1969 there was a further opportunity to examine the site, and in 1982 an excavation to produce carbon dating material and environmental data was undertaken.

In April 2003, during preparations to straighten some of the stones, one was found to be buried at least 2.1 metres (7 ft) below ground. It was estimated to weigh over 100 tons, making it one of the largest ever found in the UK.^[28] Later that year, a geophysics survey of the southeast and northeast quadrants of the circle by the National Trust,

revealed at least 15 of the megaliths lying buried. The National Trust were able to identify their sizes, the direction in which they are lying, and where they fitted in the circle.^{[29] [30]}

Theories

A great deal of interest surrounds the morphology of the stones, which are usually described as being in one of two categories; tall and slender, or short and squat. This has led to numerous theories relating to the importance of gender in Neolithic Britain with the taller stones considered "male" and the shorter ones "female". The stones were not dressed in any way and may have been chosen for their pleasing natural forms. Many claim to have identified carvings on the stones' surfaces, some carvings being more persuasive than others.



The postulated original layout of the circles

The human bones found by Gray point to some form of funerary purpose and have parallels in the disarticulated human bones often found at earlier causewayed enclosure sites. Ancestor worship on a huge scale could have been one of the purposes of the monument and would not necessarily have been mutually exclusive with any male/female ritual role.

The henge, although clearly forming an imposing boundary to the circle, has no defensive purpose as the ditch is on the inside. Being a henge and stone circle site, astronomical alignments are a common theory to explain the positioning of the stones at Avebury.

The relationships between the causewayed enclosure, Avebury stone circles, and West Kennet Long Barrow to the south, has caused some to describe the area as a "ritual complex" – a site with many monuments of interlocking religious function.

Interpretations

Avebury is seen as a spiritual centre by many who profess beliefs such as Paganism, Wicca, and Druidry; for some it is regarded more highly than Stonehenge. The pagan festivals all attract visitors, and the summer solstice especially draws increasingly large crowds. Avebury is said to stand on the St Michael ley line, an alignment that is said to run across England from Cornwall to East Anglia.

The question of access to the site at certain times of the year has been controversial and The National Trust, who steward and protect the site, have been in dialogue with a number of groups.^[31] ^[32] Neo-Druids call the site *Caer Abiri*.^[33]

The Red Lion public house in Avebury is rumoured to be one of the most haunted pubs in England^[34]

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External links

- Avebury Concise History from Wiltshire County Council (<http://www.wiltshire.gov.uk/community/getconcise.php?id=11>)
- Avebury information at the National Trust (<http://www.nationaltrust.org.uk/main/w-vh/w-visits/w-findaplace/w-avebury/>)
- *Day Out: Avebury and Marlborough* (http://www.bbc.co.uk/wiltshire/content/articles/2008/08/08/day_out_avebury_marlborough_1982_film_feature.shtml) - A 30 minute BBC TV programme made in 1983 of a day spent exploring Avebury and Marlborough
- National Trust information for Avebury & Alexander Keiller Museum (<http://www.nationaltrust.org.uk/main/w-avebury/>)
- Alexander Keiller Museum (<http://www.english-heritage.org.uk/daysout/properties/avebury-alexander-keiller-museum/>) - English Heritage information






Avebury Panorama (*April, 2003*)

Geographical coordinates: 51°25′43″N 1°51′15″W

Newgrange

Archaeological Ensemble of the Bend of the Boyne*	
UNESCO World Heritage Site	
	
State Party	Ireland
Type	Cultural
Criteria	i, iii, iv
Reference	659 ^[1]
Region**	List of World Heritage Sites in Europe
Inscription history	
Inscription	1993 (17th Session)
<small>* Name as inscribed on World Heritage List. ^[2]</small>	
<small>** Region as classified by UNESCO. ^[3]</small>	

Newgrange (Irish: *Sí an Bhrú*) is a prehistoric monument located in County Meath, on the eastern side of Ireland, about one kilometre north of the River Boyne.^[2] An example of a megalithic passage tomb mound, Newgrange was built between circa 3100 and 2900 BC, during the Neolithic period, in order to house the remains of the dead. It has also been speculated that it had some form of religious significance, particularly in regards to an afterlife, because it is aligned with the rising sun on the winter solstice, which floods the tomb with light.^[3] It is in fact just one monument within the Neolithic Brú na Bóinne complex, alongside the similar passage tomb mounds of Knowth and Dowth, and as such is a part of the Brú na Bóinne UNESCO World Heritage Site. Newgrange also shares many similarities with other Neolithic constructions around Western Europe, such as Maeshowe tomb in Orkney, Scotland^[4] and the Bryn Celli Ddu site in Wales.

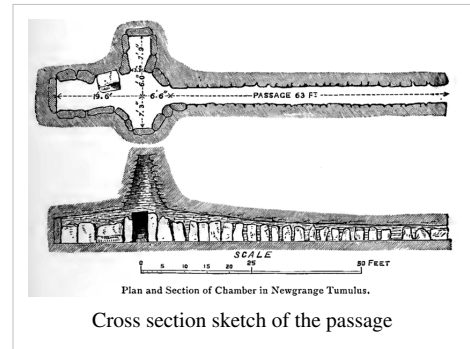
After its initial use as a tomb, the entrance to Newgrange was sealed and it remained closed for several millennia, subsequently gaining several associations in local folklore and mythology. It first began to be studied as a prehistoric monument by antiquarians in the seventeenth century CE, and over subsequent centuries various archaeological

excavations took place at the site before it was largely restored to its original Neolithic appearance by conservators in the 1970s. Today, Newgrange is a popular tourist site, and according to the archaeologist Colin Renfrew, is "unhesitatingly regarded by the prehistorian as the great national monument of Ireland" and is also widely recognised as one of the most important megalithic structures in Europe.^[5]

Physical description

The mound and passage tomb

The Newgrange monument primarily comprises a large mound, built of alternating layers of earth and stones, with grass growing on top and a reconstructed facade of flattish white quartz stones studded at intervals with large rounded cobbles covering part of the circumference. The mound is 76 m (250 ft) across and 12 m (40 ft) high, and covers 0.4 hectares (one acre) of ground. Within the mound is a chambered tomb passage, which can be accessed by an entrance on the south-eastern side of the monument. The passage stretches for 18.95 metres (60 ft), or about a third of the way through into the centre of the structure. At the end of the passage are three small chambers off a larger central chamber, with a high corbelled vault roof; this cruciform design is common in Irish passage tombs. Each of the smaller chambers has a large flat "basin stone", which was where the bones of the dead were originally deposited. The walls of this passage are made up of large stone slabs, twenty-two of which are on the west side and twenty-one on the east, which average out at 1.5 metres in height,^[6] several are decorated with carvings (as well as graffiti from the period after the rediscovery). The ceiling shows no evidence of smoke.



Situated around the perimeter of the mound are located a circle of standing stones, which most archaeologists regard as having been later, during the Bronze Age, centuries after the original monument had been abandoned as a tomb.

Art

Newgrange contains various examples of abstract Neolithic rock art carved onto it which provide decoration.^[7] These carvings fit into ten categories, five of which are curvilinear (circles, spirals, arcs, serpentiforms and dot-in-circles) and the other five of which are rectilinear (chevrons, lozenges, radials, parallel lines and offsets). They are also marked by wide differences in style, the skill-level that would have been needed to produce them, and on how deeply carved they are.^[8] One of the most notable examples of art at Newgrange is the triskele-like features found on the entrance stone, which has been described as "one of the most famous stones in the entire repertory of megalithic art."^[9] Archaeologists believe that most of the carvings were produced prior to the stones being erected in place, although the entrance stone was instead carved in situ before the kerbstones were placed alongside it.^[10]



Entrance stone with megalithic art.

Various archaeologists have speculated as to the meaning of the decoration, with some, such as George Coffey (who studied Newgrange's art in the 1890s), believing them to be purely decorative, whilst others, like M.J. O'Kelly (who led the 1962–1975 excavation at the site), believing them to have some sort of symbolic purpose, because some of the carvings had been in places that would not have been visible, such as at the bottom of the orthostatic slabs, below ground level.^[11]

History

Newgrange is one of around 150 Neolithic Irish passage tombs that survive to us today, so it seems clear that it was constructed by a culture that built many similar structures, albeit most of which were smaller and simpler. Archaeological evidence shows that some of the simpler passage-graves, such as the ones situated near to the main Neolithic mound at Knowth and also that atop the nearby Slieve na Calliagh, were older than Newgrange and so it has been proposed that the Irish tomb builders gradually developed the skills to create larger and more complex tombs over the generations.^[12] The Neolithic people who built the monument were native agriculturalists, growing crops and raising animals such as cattle in the area, where their settlements were located; they had not yet developed metal, so all their tools would have been made out of stone, wood, antler or bone.

Construction and burials

The complex of Newgrange was originally built between c. 3100 and 2900 BC,^[13] meaning that it is approximately 5,000 years old. According to Carbon-14 dates,^[14] it is more than five hundred years older than the Great Pyramid of Giza in Egypt, and predates Stonehenge by about a thousand years, as well as predating the Mycenaean culture of ancient Greece.^[15] The building materials used to construct Newgrange were locally sourced; with the exception of four slabs which are a brown carboniferous sandstone, the rest of the 547 slabs that had been used in the construction of the monument were greywacke, a form of slate that could be found to the north of Newgrange. None of the structural slabs were quarried, for they show signs of having been naturally weathered, but they must have been collected and then transported somehow largely uphill to the Newgrange site.^[16] Meanwhile, the stones used for the cairn, which together would have weighed around 200,000 tonnes, were likely taken from the river terraces between Newgrange and the Boyne, and there is indeed a large pond in this area which it has been speculated was the site quarried out by Newgrange's builders to use for material for the cairn.^[16] Professor Frank Mitchell suggested that the monument could have been built within a space of five years, basing his estimation upon the likely number of local inhabitants during the Neolithic and the amount of time they would have devoted to building it rather than farming. This estimate was however criticised by M.J. O'Kelly and his archaeological team, who believed that it would have taken thirty years to build at the very least.^[17]



Newgrange

Excavations have revealed deposits of both burnt and unburnt human bone in the passage, indicating human corpses were indeed placed within it, some of whom had been cremated. From examining the unburnt bone, it was shown to come from at least two separate individuals, but much of their skeletons were missing, and what was left had been scattered about the passage.^[18] Various grave goods were deposited alongside the bodies inside the passage. Excavations that took place in the late 1960s and early 1970s revealed seven 'marbles', four pendants, two beads, a used flint flake, a bone chisel and fragments of bone

pins and points.^[19] Many more artefacts had been found in the passage in previous centuries by visiting antiquarians and tourists, although most of these had been removed and gone missing or been placed in private collections. Nonetheless, sometimes these were recorded, and it is believed that the grave goods that came from Newgrange were typical of Neolithic Irish passage grave assemblages.^[20] The remains of non-human animals have also been found in the tomb, primarily those of mountain hares, rabbits and dogs, but also bats, sheep or goat, cattle, song thrush, and more rarely, mollusc and frog. Most of these animals would only have entered and died in the chamber many centuries or even millennia after it was constructed, for instance rabbits were only introduced to Ireland in the 13th century CE.^[21]

During much of the Neolithic period, Newgrange continued as a focus of some ceremonial activity. New monuments added to the site included a timber circle to the south-east of the main mound and a smaller timber circle to the west. The eastern timber circle consisted of five concentric rows of pits. The outer row contained wooden posts. The next row of pits had clay linings and was used to burn animal remains. The three inner rows of pits were dug to accept the animal remains. Within the circle were post and stake holes associated with Beaker pottery and flint flakes. The western timber circle consisted of two concentric rows of parallel postholes and pits defining a circle 20 m in diameter. A concentric mound of clay was constructed around the southern and western sides of the mound and covered a structure consisting of two parallel lines of post and ditches that had been partly burnt. A free-standing circle of large stones was constructed encircling the mound. Near the entrance, 17 hearths were used to set fires. These structures at Newgrange are generally contemporary with a number of Henges known from the Boyne Valley, at Newgrange Site A, Newgrange Site O, Dowth Henge and Monknewtown Henge.

The site evidently continued to have some ritual significance into the Iron Age; among various later objects deposited around the mound are two pendants made from gold Roman coins of 320–337 AD (now in the National Museum of Ireland).

Purpose

Whilst Newgrange has most commonly been viewed as a tomb, there have been various debates as to what its original purpose actually was. Many archaeologists have believed that the monument had religious significance of some sort of another, either as a place of worship for a "cult of the dead" or for an astronomically-based faith. The archaeologist Michael J. O'Kelly, who led the 1962–1975 excavations at the site, believed that the monument had to be seen in relation to the nearby Knowth and Dowth, and that the building of Newgrange "cannot be regarded as

other than the expression of some kind of powerful force or motivation, brought to the extremes of aggrandizement in these three monuments, the cathedrals of the megalithic religion."^[22] O'Kelly believed that Newgrange, alongside the hundreds of other passage tombs built in Ireland during the Neolithic, showed evidence for a religion which venerated the dead as one of its core principles. He believed that this "cult of the dead" was just one particular form of European Neolithic religion, and that other megalithic monuments displayed evidence for different religious beliefs which were solar, rather than death-orientated.^[23]

However studies in other fields of expertise offer alternative interpretations of the possible functions, which principally centre on the astronomy, engineering, geometry and mythology associated with the Boyne monuments. It is speculated that the sun formed an important part of the religious beliefs of the neolithic ("New" Stone Age) people who built it. This view is strengthened by the discovery of alignments in Knowth, Dowth and the Lough Crew Cairns leading to the interpretation of these monuments as calendrical or astronomical devices. Formerly the Newgrange mound was encircled by an outer ring of immense



Newgrange, upon its hill.

standing stones, of which there are twelve of a possible thirty-seven remaining. However, evidence from Carbon Dating suggests that the stone circle which encircled Newgrange may not be contemporary with the monument itself but was placed there some 1,000 years later in the Bronze Age. This view is disputed and relates to a Carbon date from a standing stone setting which intersects with a later timber post circle, the theory being that the stone in question could have been moved and re-set in its original position at a later date. This does however show a continuity of use of Newgrange of over a thousand years, with partial remains found from only five individuals the tomb theory is called into question.

Once a year, at the winter solstice, the rising sun shines directly along the long passage into the chamber for about 17 minutes and illuminates the chamber floor.^[3] This alignment is too precise to be widely considered to be formed by chance. Professor M. J. O'Kelly was the first person in modern times to observe this event on December 21, 1967.^[24] The sun enters the passage through a specially contrived opening, known as a roofbox, directly above the main entrance. Although solar alignments are not uncommon among passage graves, Newgrange is one of few to contain the additional roofbox feature (Cairn G at Carrowkeel Megalithic Cemetery is another, and it has been suggested that one can be found at Bryn Celli Ddu.^[25]). The alignment is such that although the roofbox is above the passage entrance, the light hits the floor of the inner chamber. Today the first light enters about four minutes after sunrise, but calculations based on the precession of the Earth show that 5,000 years ago first light would have entered exactly at sunrise.^[13] The solar alignment at Newgrange is very precise compared to similar phenomena at other passage graves such as Dowth or Maes Howe in the Orkney islands, off the coast of Scotland. Current-day visitors to Newgrange are treated to a re-enactment of this event through the use of electric lights situated within the tomb. The finale of a Newgrange tour results in every tour member standing inside the tomb where the tour guide then turns off the lights, and lights the light bulb simulating the sun as it would appear on the winter solstice. Anyone visiting the historic site can experience an approximation of the phenomenon any time of year, and is often the highlight of the tour. A lottery is held annually for "tickets" to be allowed into the tomb to view the actual event. The popularity of this event was the reason a lottery was introduced, and also why the lights were installed.

Disrepair and beaker settlement

During the Late Neolithic, it appears that Newgrange was no longer being used by the local population, who did not leave any artefacts in the passage tomb or bury any of their dead there. As the archaeologist Michael O'Kelly stated, "by 2000 [BC] Newgrange was in decay and squatters were living around its collapsing edge."^[26] These "squatters" were adherents of the Beaker culture which had been imported from continental Europe, and made Beaker-style pottery locally.^[26]

Discovery, excavation, and restoration

Mythology and folklore in the Medieval and Early Modern period

During the medieval period, Newgrange and the wider Brú na Bóinne Neolithic complex, gained various attributes in local folklore, which was often connected to figures from wider Irish mythology. The monuments of the Brú were thought of by some as being the abode of the supernatural Tuatha De Danann, whilst others considered them to be the burial mounds of the ancient kings of Tara. Amongst those who believed the folkloric tales relating the Brú to the Tuatha De Danann, it was commonly thought that they were the abode of the most powerful of the Tuatha, particularly The Dagda, his wife Boann and his son, Oengus. According to the 11th century *Book of Lecan*, the Dagda had built the Brú for himself and his three sons, whilst the 12th century *Book of Leinster* describes how Oengus tricked his father into giving him the Brú for all eternity. Another text, *The Pursuit of Diarmaid and Grainne* also implies that Oengus owned the Brú, when he declared how he took his friend Diarmaid to it.^[27]

Meanwhile, in 1142 it had become part of outlying farmland owned by the Cistercian Abbey of Mellifont. These farms were referred to as 'granges'. By 1378 it was simply called 'the new grange'. Because of the Williamite confiscations Charles Campbell became the landowner as a grantee of estates forfeited in 1688.

Antiquarianism in the 17th and 18th centuries

In 1699, a local landowner, Charles Campbell, ordered some of his farm labourers to dig up a part of Newgrange, which then had the appearance of a large mound of earth, so that he could collect stone from within it. The labourers soon discovered the entrance to the tomb within the mound, and a Welsh antiquarian named Edward Lhwyd, who was staying in the area, was alerted and took an interest in the monument. He wrote an account of the mound and its tomb, describing what he saw as its "barbarous sculpture" and noting that animal bones, beads and



^[26] ENTRANCE TO THE GREAT CAIRN OF NEW GRANGE, ON THE BOYNE, NEAR DROGHEDA. K. Welch

The entrance to Newgrange in 1905, when the mound had become largely overgrown.

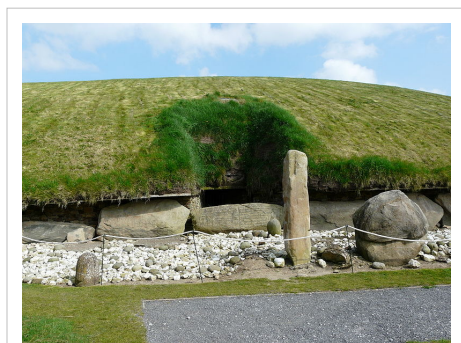
pieces of glass had been found inside of it (modern archaeologists have speculated that these latter two were in fact the polished pottery beads that have subsequently been found at the site and which were a common feature of Neolithic tombs).^[28] Soon another antiquarian visitor also came to the site, named Sir Thomas Molyneux, who was a professor at the University of Dublin. He talked to Charles Campbell, who informed him that he had found the

remains of two human corpses in the tomb, one (which was male), in one of the cisterns, and another further along the passageway, something that Lhwyd had not noted.^[29] Subsequently, Newgrange was visited by a number of antiquarians, who often performed their own measurements of the site and made their own observations, which were often published in various antiquarian journals; these included such figures as Sir William Wilde, Sir Thomas Pownall, Thomas Wright, John O'Donovan, George Petrie and James Fergusson.^[30]

These antiquarians often concocted their own theories about the origins of Newgrange, many of which have since been proved incorrect. Sir Thomas Pownall for instance stated that the mound had originally been much taller but that a lot of the stone on top of it had subsequently been removed, a theory which has subsequently been disproven by archaeological research.^[31] The majority of these antiquarians also refused to believe that it was ancient peoples native to Ireland who built the monument, with many believing that it had been built in the early Mediaeval period by invading Vikings, whilst others speculated that it had been actually built by the Ancient Egyptians, ancient Indians or the Phoenicians.^[32]

Conservation and archaeological investigation in the 19th and 20th centuries

In 1882, under the Ancient Monuments Protection Act, Newgrange, alongside the nearby monuments of Knowth and Dowth, was taken under the control of the state (United Kingdom of Great Britain and Ireland, as it was then known), and they were placed under the responsibility of the Board of Public Works. In 1890, under the leadership of Thomas Newenham Deane, the Board began a project of conservation of the monument, which had been damaged through general deterioration over the previous three millennia as well as the increasing vandalism caused by visitors, some of whom had inscribed their names on the stones.^[33] In subsequent decades, a number of archaeologists performed excavations at the site, discovering more about its function and how it had been constructed, however even at the time it was still widely believed by archaeologists to be Bronze Age in origin rather than the older Neolithic.^[34] In the 1950s, electric lighting was installed in the passageway to allow visitors to see more clearly,^[35] whilst an exhaustive archaeological excavation was undertaken from 1962 through to 1975, the excavation report of which was written by Michael J. O'Kelly and published in 1982 by Thames and Hudson as *Newgrange: Archaeology, Art and Legend*.^[36]



View of the second passage entrance to Knowth. Knowth followed an interpretation where the quartz and cobbles spread out over a plaza in front of the entrance to the mound rather than covering the mound itself.

Following this excavation, further restoration took place at the site. As a part of the restoration process the white quartzite stones and cobbles were fixed into a near-vertical steel-reinforced concrete wall surrounding the entrance of the mound. This restoration is controversial among the archaeological community. Critics of the wall point out that the technology did not exist when the mound was created to fix a retaining wall at this angle. Another theory is that the white quartzite stones formed a plaza on the ground at the entrance. This theory won out at nearby Knowth, where the restorers have laid the quartzite stones out as an "apron" in front of the entrance to the great mound.

Access to Newgrange

Access to Newgrange is by guided tour only. Tours begin at the Brú na Bóinne Visitor Centre in Donore, Co. Meath, from which visitors are bussed to the site in groups. To experience the phenomenon on the morning of the Winter Solstice from inside Newgrange, one must enter a lottery at the interpretive center. Roughly 100 people are chosen each year, fifty people receive tickets and are permitted to bring a guest per ticket. They are split into groups of five and taken in on the five days around the Solstice in which light does (weather permitting) enter the chamber. In 2008, 34,107 people entered the lottery. The yearly winter solstice on the morning of December 21, is often broadcast live on RTÉ television and the solstices of 2007 and 2008 could also be watched worldwide over the

Internet via webcast.

References

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- [2] O'Kelly, Michael J. 1982. *Newgrange: Archaeology, Art and Legend*. London: Thames and Hudson. Page 13.
- [3] "The Winter Solstice illumination of Newgrange" (<http://www.mythicalireland.com/ancientsites/newgrange/illumination.html>). . Retrieved 2007-10-12.
- [4] Laing 1974, p. 42
- [5] Renfrew, Colin, in O'Kelly, Michael J. 1982. *Newgrange: Archaeology, Art and Legend*. London: Thames and Hudson. Page 7.
- [6] O'Kelly (1982:21)
- [7] Joseph Nechvatal, *Immersive Ideals / Critical Distances*. LAP Lambert Academic Publishing. 2009, p. 163
- [8] O'Kelly (1982:146–147).
- [9] Ó Ríordáin, Seán P.; Glyn, Edmund Daniel (1964). *New Grange and the Bend of the Boyne*. F.A. Praeger. pp. 26. (<http://books.google.com/books?id=4bs9AAAAIAAJ&q=newgrange+entrance+slab+famous+megalithic+art&dq=newgrange+entrance+slab+famous+megalithic+art&num=100&ei=FCU0SKHXIpCkzgTjwpjLDw&pgis=1>)
- [10] O'Kelly (1982:149).
- [11] O'Kelly (1982:148).
- [12] O'Kelly (1982:128)
- [13] "PlanetQuest: The History of Astronomy - Newgrange" (<http://www.planetquest.org/learn/newgrange.html>). .
- [14] E. Grogan, "Prehistoric and Early Historic Cultural Change at Brugh na Bóinne", *Proceedings of the Royal Irish Academy* 91C, 1991, pp. 126–132
- [15] O'Kelly (1982:48)
- [16] O'Kelly (1982:117)
- [17] O'Kelly (1982:117–118)
- [18] O'Kelly (1982:105–106)
- [19] O'Kelly (1982:105)
- [20] O'Kelly (1982:107)
- [21] O'Kelly (1982:215–216)
- [22] O'Kelly (1982:122)
- [23] O'Kelly (1982:122)
- [24] "Brú na Bóinne (Newgrange, Knowth and Dowth)" (<http://www.meath.ie/Tourism/Heritage/Newgrange/>). . Retrieved 2007-10-12.
- [25] Pitts (2006) Sensational new discoveries at Bryn Celli Ddu. *British Archaeology* No. 89 (July/August): 6.
- [26] O'Kelly (1982:145).
- [27] O'Kelly (1982:43–46)
- [28] O'Kelly (1982:24)
- [29] O'Kelly (1982:27)
- [30] O'Kelly (1982:33–34)
- [31] O'Kelly (1982:33)
- [32] O'Kelly (1982:35)
- [33] O'Kelly (1982:38–39)
- [34] O'Kelly (1982:42)
- [35] O'Kelly (1982:41)
- [36] O'Kelly (1982:09)

External links

- [Newgrange.com \(http://www.newgrange.com/\)](http://www.newgrange.com/)
- [Information on Newgrange by Meath Tourism \(http://www.meath.ie/Tourism/Heritage/Newgrange/\)](http://www.meath.ie/Tourism/Heritage/Newgrange/)
- [360 degree view in Newgrange Central Chamber \(http://www.lookaroundireland.com/newgrange/virtualtours/inside-newgrange.html\)](http://www.lookaroundireland.com/newgrange/virtualtours/inside-newgrange.html)
- [Newgrange info website \(http://www.knowth.com/newgrange.htm\)](http://www.knowth.com/newgrange.htm)
- [Irish passage tombs and other Neolithic monuments \(http://www.irishmegaliths.org.uk/meath.htm\)](http://www.irishmegaliths.org.uk/meath.htm)
- [101 Facts About Newgrange \(http://www.mythicalireland.com/ancientsites/newgrange-facts/index.php\)](http://www.mythicalireland.com/ancientsites/newgrange-facts/index.php)
- [Boyne Valley Portal Website - Information on Newgrange \(http://www.theboynevalley.com/newgrange.php\)](http://www.theboynevalley.com/newgrange.php)
- [Research on Newgrange's possible alignments \(http://www.iol.ie/~geniet/eng/newgrang.htm\)](http://www.iol.ie/~geniet/eng/newgrang.htm)

- Newgrange.eu (<http://www.newgrange.eu/>)
- Archaeogeodesy, a Key to Prehistory (<http://www.jqjacobs.net/astro/aegeo.html>)
- Windows Media recording of the 2007 Winter Solstice event (<http://www.heritageireland.ie/en/Solstice2007/>)
- Short Video by National Geographic about Newgrange (http://video.nationalgeographic.com/video/player/places/culture-places/historical/ireland_newgrange.html).
- Art and astronomy at Newgrange (<http://www.carrowkeel.com/sites/boyne/newgrange1.html>)
- MegalithicIreland.com (<http://www.megalithicireland.com/Newgrange.htm>)

Geographical coordinates: 53°41′39.73″N 6°28′30.11″W

Callanish Stones

The **Callanish Stones** (or "Callanish I"), *Clachan Chalanais* or *Tursachan Chalanais* in Gaelic, are situated near the village of **Callanish** (Gaelic: Calanais) on the west coast of the isle of Lewis, in the Outer Hebrides (Western Isles), Scotland.

Construction and description

Construction of the site took place between 2900 and 2600 BC, though there were possibly earlier buildings before 3000 BC. A tomb was later built into the site. Debris from the destruction of the tomb suggests the site was out of use between 2000 BC and 1700 BC.^[1] The 13 primary stones form a circle about 13 m in diameter, with a long approach avenue of stones to the north, and shorter stone rows to the east, south, and west (possibly incomplete avenues). The overall layout of the monument recalls a distorted Celtic cross. The individual stones vary from around 1 m to 5 m in height, with an average of 4 m, and are of the local Lewisian gneiss.

Interpretation

The first written reference to the stones was by Lewis native John Morisone, who in c. 1680 wrote that "great stones standing up in ranks [...] were sett up in place for devotione".

The tallest of the stones marks the entrance to a burial cairn where human remains have been discovered. An excavation campaign in 1980 and 1981 showed that the burial chamber was a late addition to the site, and that it had been modified a number of times. Pottery finds suggested a date of 2200 BC for the erection of the circle. It has been speculated, among other theories, that the stones form a calendar system based on the position of the moon. Professor Alexander Thom suggested that the alignment of the stone avenue (when looking southward) pointed to the setting of midsummer full moon behind a distant mountain called Clisham.



The stone circle at the centre of the Standing Stones of Callanish ("Callanish I")



A distant view of the circle, stone rows and part of the northern avenue

Critics of these theories argue that several alignments are likely to exist purely by chance in any such structure. In addition many factors such as the weathering and displacement of the stones over the millennia mean we can never be certain of any original, possibly intentional, alignments.

The stones in folklore and popular culture

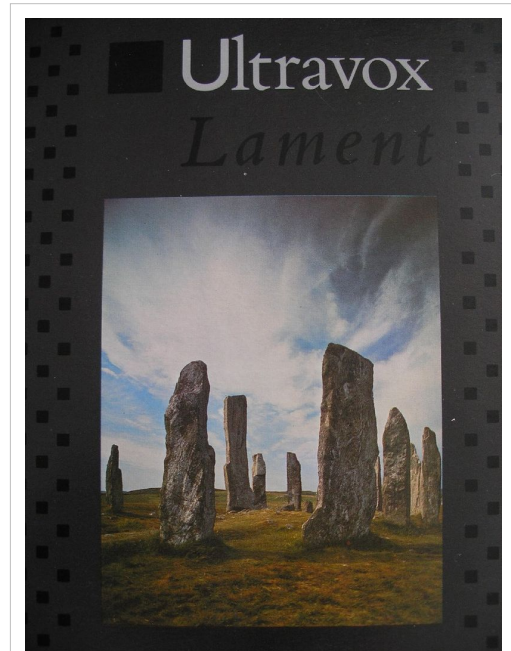
Local tradition says that giants who lived on the island refused to be converted to Christianity by Saint Kieran and were turned into stone as a punishment. Another local belief says that at sunrise on midsummer morning, the "shining one" walked along the stone avenue, "his arrival heralded by the cuckoo's call." This legend could be a folk memory recalling the astronomical significance of the stones.

In 1984, the new romantic band Ultravox used an image of the stones on the cover of their album *Lament*. They also used the scenery to record the video of *One Small Day*, first single taken from that album. In 1988 Jon Mark released a CD, *The Standing Stones of Callanish*, intended to evoke Britain's celtic legacy.^[2]

Other nearby sites

Archaeologists usually refer to the main monument as "Callanish I", because there are several other megalithic sites in the vicinity:

- "Cnoc Ceann a' Ghàraidh" (Callanish II) – stone circle
- "Cnoc Filibhir Bheag" (Callanish III) – stone circle
- "Ceann Hulavig" (Callanish IV) – stone circle
- "Àirigh nam Bidearan" (Callanish V) – stone alignment
- "Cùl a' Chleit" (Callanish VI) – stone circle
- "Cnoc Dubh" (Callanish VII) – ancient settlement or "shieling" (stone dwelling used while tending cattle on summer pastures)
- "Tursachan" (Callanish VIII) – unique semicircular monument at the edge of a sheer cliff on the nearby island of Great Bernera
- "Àird A' Chaolais" (Callanish VIIIa) - standing stone
- "Àirigh Nam Bidearan" (Callanish IX)- stones
- "Na Dromannan" ("Druim Nan Eun") (Callanish X)
- "Beinn Bheag" (Callanish XI) - standing stone; stones; cairns
- "Stonefield" (Callanish XII) - standing stone
- "Sgeir Nan Each" (Callanish XIII) - stone setting
- "Cnoc Sgeir Na h-Uidhe" (Callanish XIV W) - stone setting
- "Cnoc Sgeir Na h-Uidhe" (Callanish XIV e) - stones
- "Àirigh Mhaoldonuich" (Callanish XV) - standing stone
- "Cliacabhadh" (Callanish XVI) - standing stone; stones
- "Druim Na h-Aon Choich" (Callanish XVII) - standing stone (possible)
- "Loch Crogach" (Callanish XVIII) - standing stone (possible)
- "Buaile Chruaidh" (Callanish XIX) - standing stone (possible)
- There are many other sites nearby; not all are now visible. There was, for instance, a timber circle 0.5 km south at Loch Roag.



The Callanish Stones in the early 1980s, as portrayed on the cover of *Lament*, by Ultravox

Notes

[1] Armit 1998:61

[2] Watson, Mike. "Essential releases: Jon Mark" (<http://www.ambientmusicguide.com/pages/M/mark.php>). *AmbientMusicGuide*. Mike Watson. . Retrieved 4 January 2010.

References

Armit, I. (1998). *Scotland's Hidden History*. Tempus. ISBN 07524-1400-3.

External links

- Breasclete Association local area's website (<http://www.breasclete.com>)
- Many photos of Calanais I; links to photos of other Calanais sites (<http://www.ancient-scotland.co.uk/site.php?a=38>)
- Megalithic Portal: photos, locations and descriptions of Callanish I – XIX and other nearby sites (<http://www.megalithic.co.uk/article.php?sid=29>)
- RCAHMS Canmore entry on Callanish (<http://canmore.rcahms.gov.uk/en/site/4156/details/lewis+callanish/>)

Geographical coordinates: 58°11'49"N 6°44'42"W

Egypt

Great Pyramid of Giza

Geographical coordinates: 29°58′45.03″N 31°08′03.69″E

The **Great Pyramid of Giza** (also called the **Pyramid of Khufu** and the **Pyramid of Cheops**) is the oldest and largest of the three pyramids in the Giza Necropolis bordering what is now El Giza, Egypt. It is the oldest of the Seven Wonders of the Ancient World, and the only one to remain largely intact. Egyptologists believe that the pyramid was built as a tomb for fourth dynasty Egyptian Pharaoh Khufu^[1] (Cheops in Greek) and constructed over a 14 to 20-year period concluding around 2560 BC. Initially at 146.5 metres (480.6 ft), the Great Pyramid was the tallest man-made structure in the world for over 3,800 years, the longest



The Great Pyramid of Giza, in 2010. Built c. 2560 BC, it is the oldest and largest of the three pyramids in the Giza Necropolis

period of time ever held for such a record. Originally, the Great Pyramid was covered by casing stones that formed a smooth outer surface; what is seen today is the underlying core structure. Some of the casing stones that once covered the structure can still be seen around the base. There have been varying scientific and alternative theories about the Great Pyramid's construction techniques. Most accepted construction hypotheses are based on the idea that it was built by moving huge stones from a quarry and dragging and lifting them into place.

There are three known chambers inside the Great Pyramid. The lowest chamber is cut into the bedrock upon which the pyramid was built and was unfinished. The so-called^[2] Queen's Chamber and King's Chamber are higher up within the pyramid structure. The Great Pyramid of Giza is the only pyramid in Egypt known to contain both ascending and descending passages. The main part of the Giza complex is a setting of buildings that included two mortuary temples in honor of Khufu (one close to the pyramid and one near the Nile), three smaller pyramids for Khufu's wives, an even smaller "satellite" pyramid, a raised causeway connecting the two temples, and small mastaba tombs surrounding the pyramid for nobles.

History and description

It is believed the pyramid was built as a tomb for fourth dynasty Egyptian pharaoh Khufu^[1] and constructed over a 14-^[3] to 20-year period. Khufu's vizier, Hemon, or Hemunu, is believed by some to be the architect of the Great Pyramid.^[4] It is thought that, at construction, the Great Pyramid was originally 280 Egyptian cubits tall, 146.5 metres (480.6 ft) but with erosion and absence of its pyramidion, its present height is 138.8 metres (455.4 ft). Each base side was 440 royal cubits, 230.4 metres (755.9 ft) long. A royal cubit measures 0.524 metres.^[5] The mass of the pyramid is estimated at 5.9 million tonnes. The volume, including an internal hillock, is roughly 2,500,000 cubic metres.^[6] Based on these estimates, building this in 20 years would involve installing approximately 800 tonnes of stone every day. Similarly, since it consists of an estimated 2.3 million blocks, completing the building in 20 years would involve moving an average of more than 12 of the blocks into place each hour, day and night. The

first precision measurements of the pyramid were done by Egyptologist Sir Flinders Petrie in 1880–82 and published as *The Pyramids and Temples of Gizeh*.^[7] Almost all reports are based on his measurements. Many of the casing stones and inner chamber blocks of the Great Pyramid were fit together with extremely high precision. Based on measurements taken on the north eastern casing stones, the mean opening of the joints is only 0.5 millimetres wide (1/50th of an inch).^[8]

The pyramid remained the tallest man-made structure in the world for over 3,800 years,^[9] unsurpassed until the 160-metre-tall spire of Lincoln Cathedral was completed c. 1300. The accuracy of the pyramid's workmanship is such that the four sides of the base have an average error of only 58 millimetres in length.^[10] The base is horizontal and flat to within 21 mm.^[11] The sides of the square base are closely aligned to the four cardinal compass points (within 4 minutes of arc)^[12] based on true north, not magnetic north,^[13] and the finished base was squared to a mean corner error of only 12 seconds of arc.^[14] The completed design dimensions, as suggested by Petrie's survey and subsequent studies, are estimated to have originally been 280 cubits high by 440 cubits long at each of the four sides of its base. The ratio of the perimeter to height of 1760/280 cubits equates to 2π to an accuracy of better than 0.05% (corresponding to the well-known approximation of π as 22/7). Some Egyptologists consider this to have been the result of deliberate design proportion. Verner wrote, "We can conclude that although the ancient Egyptians could not precisely define the value of π , in practice they used it".^[15] Petrie, author of *Pyramids and Temples of Gizeh* concluded: "but these relations of areas and of circular ratio are so systematic that we should grant that they were in the builders design".^[16] Others have argued that the Ancient Egyptians had no concept of pi and would not have thought to encode it in their monuments. The creation of the pyramid may instead be based on simple ratios of the sides of right angled triangles (the seked).^[17]



Great Pyramid of Giza from a 19th century stereopticon card photo

Materials

The Great Pyramid consists of an estimated 2.3 million limestone blocks with most believed to have been transported from nearby quarries. The Tura limestone used for the casing was quarried across the river. The largest granite stones in the pyramid, found in the "King's" chamber, weigh 25 to 80 tonnes and were transported from Aswan, more than 500 miles away. Traditionally, ancient Egyptians cut stone blocks by hammering wooden wedges into the stone which were then soaked with water. As the water was absorbed, the wedges expanded, causing the rock to crack. Once they were cut, they were carried by boat either up or down the Nile River to the pyramid.^[18] It is estimated that 5.5 million tons of limestone, 8,000 tons of granite (imported from Aswan), and 500,000 tons of mortar were used in the construction of the Great Pyramid.^[19]

Casing stones

At completion, the Great Pyramid was surfaced by white "casing stones" – slant-faced, but flat-topped, blocks of highly polished white limestone. These were carefully cut to what is approximately a face slope with a seked of $5\frac{1}{2}$ palms to give the required dimensions. Visibly, all that remains is the underlying stepped core structure seen today. In AD 1300, a massive earthquake loosened many of the outer casing stones, which were then carted away by Bahri Sultan An-Nasir Nasir-ad-Din al-Hasan in 1356 to build mosques and fortresses in nearby Cairo. The stones can still be seen as parts of these structures.



casing stone

Later explorers reported massive piles of rubble at the base of the pyramids left over from the continuing collapse of the casing stones, which were subsequently cleared away during continuing excavations of the site. Nevertheless, a few of the casing stones from the lowest course can be seen to this day in situ around the base of the Great Pyramid, and display the same workmanship and precision as has been reported for centuries. Petrie also found a different orientation in the core and in the casing measuring 193 centimetres \pm 25 centimetres. He suggested a redetermination of north was made after the construction of the core, but a mistake was made, and the casing was built with a different orientation.^[20] Petrie related the precision of the casing stones as to being "equal to opticians' work of the present day, but on a scale of acres" and "to place such stones in exact contact would be careful work; but to do so with cement in the joints seems almost impossible".^[21] It has been suggested it was the mortar (Petrie's "cement") that made this seemingly impossible task possible, providing a level bed which enabled the masons to set the stones exactly.^{[22] [23]}

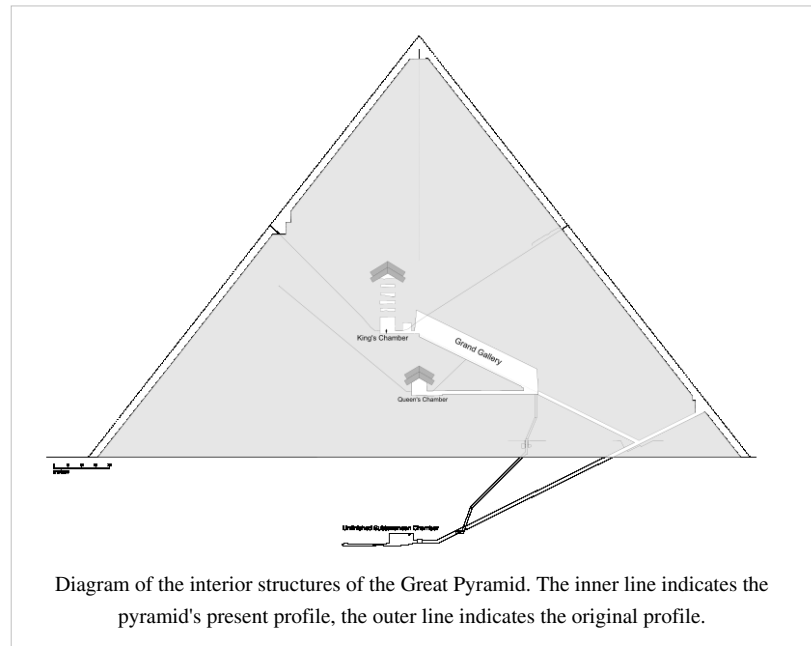
Construction theories

Many alternative, often contradictory, theories have been proposed regarding the pyramid's construction techniques.^[24] Not all agree even that the blocks were quarried. Davidovits claims that they were cast in situ using a "limestone concrete", a theory which is rejected by other Egyptologists. The rest accept that it was built by moving huge stones from a quarry, being unable to agree only on whether they were dragged, lifted or even rolled into place. The Greeks believed that slave labour was used, but modern Egyptologists accept that it was built by many tens of thousands of skilled workers. Verner posited that the labour was organized into a hierarchy, consisting of two *gangs* of 100,000 men, divided into five *zaa* or *phyle* of 20,000 men each, which may have been further divided according to the skills of the workers.^[25]

One mystery of the pyramid's construction is its planning. John Romer suggests that they used the same method that had been used for earlier and later constructions, laying out parts of the plan on the ground at a 1 to 1 scale. He writes that "such a working diagram would also serve to generate the architecture of the pyramid with precision unmatched by any other means."^[26]

Interior

The original entrance to the Great Pyramid is 17 metres (56 ft) vertically above ground level and 7.29 metres (23.9 ft) east of the center line of the pyramid. From this original entrance there is a Descending Passage .96 metres (3.1 ft) high and 1.04 metres (3.4 ft) wide which goes down at an angle of $26^{\circ} 31' 23''$ through the masonry of the pyramid and then into the bedrock beneath it. After 105.23 metres (345.2 ft) the passage becomes level and continues for an additional 8.84 metres (29.0 ft) to the lower Chamber, which appears not to have been finished. There is a continuation of the horizontal passage



in the south wall of the lower chamber; there is also a pit dug in the floor of the chamber. Some Egyptologists suggest this Lower Chamber was intended to be the original burial chamber, but that King Khufu later changed his mind and wanted it to be higher up in the pyramid.^[27]

At 28.2 metres (93 ft) from the entrance is a square hole in the roof of the Descending Passage. Originally concealed with a slab of stone, this is the beginning of the Ascending Passage. The Ascending Passage is 39.3 metres (129 ft) long, as wide and high as the Descending Passage and slopes up at almost precisely the same angle. The lower end of the Ascending Passage is closed by three huge blocks of granite, each about 1.5 metres (4.9 ft) long. At the start of the Grand Gallery on the right-hand side there is a hole cut in the wall (and now blocked by chicken wire). This is the start of a vertical shaft which follows an irregular path through the masonry of the pyramid to join the Descending Passage. Also at the start of the Grand Gallery there is a Horizontal Passage leading to the "Queen's Chamber". The passage is 1.1m (3'8") high for most of its length, but near the chamber there is a step in the floor, after which the passage is 1.73 metres (5.7 ft) high.

The Queen's Chamber is exactly half-way between the north and south faces of the pyramid and measures 5.75 metres (18.9 ft) north to south, 5.23 metres (17.2 ft) east to west and has a pointed roof with an apex 6.23 metres (20.4 ft) above the floor. At the eastern end of the chamber there is a niche 4.67 metres (15.3 ft) high. The original depth of the niche was 1.04 metres (3.4 ft), but has since been deepened by treasure hunters .

In the north and south walls of the Queen's Chamber there are shafts, which unlike those in the King's Chamber that immediately slope upwards, are horizontal for around 2m (6') before sloping upwards. The horizontal distance was cut in 1872 by a British engineer, Wayman Dixon, who believed on the analogy of the King's Chamber that such shafts must exist. He was proved right, but because the shafts are not connected to the outer faces of the pyramid or the Queen's Chamber, their purpose is unknown. At the end of one of his shafts, Dixon discovered a ball of black diorite and a bronze implement of unknown purpose. Both objects are currently in the British Museum.^[28]

The shafts in the Queen's Chamber were explored in 1992 by the German engineer Rudolf Gantenbrink using a crawler robot of his own design which he called "Upuaut 2". He discovered that one of the shafts was blocked by limestone "doors" with two eroded copper "handles". Some years later the National Geographic Society created a similar robot which drilled a small hole in the southern door, only to find another larger door behind it.^[29] The northern passage, which was difficult to navigate because of twists and turns, was also found to be blocked by a

door.^[30]



The Grand Gallery of the Great Pyramid of Giza

The Grand Gallery continues the slope of the Ascending Passage, but is 8.6 metres (28 ft) high and 46.68 metres (153.1 ft) long. At the base it is 2.06 metres (6.8 ft) wide, but after 2.29 metres (7.5 ft) the blocks of stone in the walls are corbelled inwards by 7.6 centimetres (3.0 in) on each side. There are seven of these steps, so at the top the Grand Gallery is only 1.04 metres (3.4 ft) wide. It is roofed by slabs of stone laid at a slightly steeper angle than the floor of the gallery, so that each stone fits into a slot cut in the top of the gallery like the teeth of a ratchet. The purpose was to have each block supported by the wall of the Gallery rather than resting on the block beneath it, which would have resulted in an unacceptable cumulative pressure at the lower end of the Gallery.

At the upper end of the Gallery on the right-hand side there is a hole near the roof which opens into a short tunnel by which access can be gained to the lowest of the Relieving Chambers. The other Relieving Chambers were discovered in 1837/8 by Colonel Howard Vyse and J. S. Perring, who dug tunnels upwards using blasting powder.

The floor of the Grand Gallery consists of a shelf or step on either side, 51 centimetres (20 in) wide, leaving

a lower ramp 1.04 metres (3.4 ft) wide between them. In the shelves there are 54 slots, 27 on each side matched by vertical and horizontal slots in the walls of the Gallery. These form a cross shape that rises out of the slot in the shelf. The purpose of these slots is not known, but the central gutter in the floor of the Gallery, which is the same width as the Ascending Passage, has led to speculation that the blocking stones were stored in the Grand Gallery and the slots held wooden beams to restrain them from sliding down the passage. This, in turn, has led to the proposal that originally many more than 3 blocking stones were intended, to completely fill the Ascending Passage.

At the top of the Grand Gallery there is a step giving onto a horizontal passage approximately 1.02 metres (3.3 ft) long, in which can be detected four slots, three of which were probably intended to hold granite portcullises. Fragments of granite found by Petrie in the Descending Passage may have come from these now vanished doors.

The King's Chamber is 10.47 metres (34.4 ft) from east to west and 5.234 metres (17.17 ft) north to south. It has a flat roof 5.974 metres (19.60 ft) above the floor. 0.91 m (3 ft) above the floor there are two narrow shafts in the north and south walls (one is now filled by an extractor fan to try to circulate air in the pyramid). The purpose of these shafts is not clear: they appear to be aligned on stars or areas of the northern and southern skies, but on the other hand one of them follows a dog-leg course through the masonry so there was not intention to directly sight stars through them. Longtime believed by Egyptologists to be "air shafts" for ventilation, this idea has now been widely abandoned in favor of the shafts serving a ritualistic purpose associated with the ascension of the king's spirit to the heavens^[31]

The King's Chamber is entirely faced with granite. Above the roof, which is formed of nine slabs of stone weighing in total about 400 tons, are five compartments known as Relieving Chambers. The first four, like the King's Chamber, have flat roofs formed by the floor of the chamber above, but the final chamber has a pointed roof. Vyse suspected the presence of upper chambers when he found that he could push a long reed through a crack in the

ceiling of the first chamber. From lower to upper, the chambers are known as "Davidson Chamber", "Wellington Chamber", "Lady Arbuthnot's Chamber" and "Campbell's Chamber". It is believed that the compartments were intended to safeguard the King's Chamber from the possibility of a roof collapsing under the weight of stone above the Chamber. As the chambers were not intended to be seen, they were not finished in any way and a few of the stones still retain mason's marks painted on them. One of the stones in Campbell's Chamber bears a mark, apparently the name of a work gang, which incorporates the only reference in the pyramid to Pharaoh Khufu .

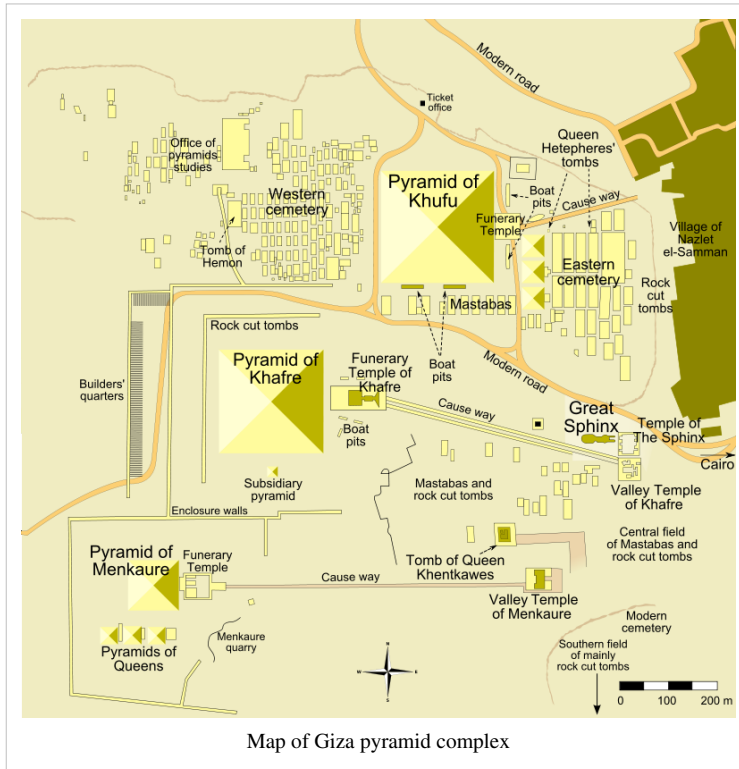
The only object in the King's Chamber is a rectangular granite "sarcophagus", one corner of which is broken. The sarcophagus is slightly larger than the Ascending Passage, which indicates that it must have been placed in the Chamber before the roof was put in place. Unlike the fine masonry of the walls of the Chamber, the sarcophagus is roughly finished, with saw marks visible in several places. This is in contrast with the finely finished and decorated sarcophagi found in other pyramids of the same period. Petrie suggested that such a sarcophagus was intended but was lost in the river on the way north from Aswan and a hurriedly made replacement was used instead.



The entrance of the Pyramid

Entrance

Today tourists enter the Great Pyramid via the Robbers' Tunnel dug by workmen employed by Caliph al-Ma'mun around AD 820. The tunnel is cut straight through the masonry of the pyramid for approximately 27 metres (89 ft), then turns sharply left to encounter the blocking stones in the Ascending Passage. Unable to remove these stones, the workmen tunnelled up beside them through the softer limestone of the Pyramid until they reached the Ascending Passage. It is possible to enter the Descending Passage from this point, but access is usually forbidden.



Pyramid complex

The Great Pyramid is surrounded by a complex of several buildings including small pyramids. The Pyramid Temple, which stood on the east side of the pyramid and measured 52.2 metres (171 ft) north to south and 40 metres (130 ft) east to west, has almost entirely disappeared apart from the black basalt paving. There are only a few remnants of the causeway which linked the pyramid with the valley and the Valley Temple. The Valley Temple is buried beneath the village of Nazlet el-Samman; basalt paving and limestone walls have been found but the site has not been excavated.^[32] ^[33] The basalt blocks show "clear evidence" of having been cut with some kind of saw with an estimated cutting blade 15 ft in length capable of cutting at a rate of 1 1/2 inches (40 mm) a minute. John

Romer suggests this "super saw" may have had copper teeth and weighed up to 300 lbs. He theorizes such a saw could have been attached to a wooden trestle and used in conjunction with possibly vegetable oil, cutting sand, or emery or pounded quartz to cut the blocks and would have required at least a dozen men to operate it.^[34]

On the south side are the subsidiary pyramids, popularly known as Queens' Pyramids. Three remain standing to nearly full height but the fourth was so ruined that its existence was not suspected until the recent discovery of the first course of stones and the remains of the capstone. Hidden beneath the paving around the pyramid was the tomb of Queen Hetepheres, sister-wife of Sneferu and mother of Khufu. Discovered by accident by the Reisner expedition, the burial was intact, though the carefully sealed coffin proved to be empty.

The Giza pyramid complex, which includes among other structures the pyramids of Khufu, Khafre and Menkaure, is surrounded by a cyclopean stone wall, the Wall of the Crow, and outside of which Mark Lehner has discovered a worker's town, otherwise known as "The Lost City", dated by pottery styles, seal impressions, and statigraphy to have been constructed and occupied sometime during the reigns of Khafre (2520-2494 BC) and Menkaure (2490-2472 BC).^[35] ^[36] In the early 1970s, the Australian archaeologist Karl Kromer excavated a mound in the South Field of the plateau. This mound contained artifacts including mudbrick seals of Khufu, which he identified with an artisans' settlement.^[37] Mudbrick buildings just south of Khufu's Valley Temple contained mud sealings of Khufu and have been suggested to be a settlement serving the cult of Khufu after his death.^[38] A workers cemetery used at least between Khufu's reign and the end of the Fifth Dynasty was discovered south of the Wall of the Crow by Zahi Hawass in 1990.^[39]

Boats

There are three boat-shaped pits around the pyramid, of a size and shape to have held complete boats, though so shallow that any superstructure, if there ever was one, must have been removed or disassembled. In May, 1954, the Egyptian archaeologist Kamal el-Mallakh discovered a fourth pit, a long, narrow rectangle, still covered with slabs of stone weighing up to 15 tons. Inside were 1,224 pieces of wood, the longest 23 metres (75 ft) long, the shortest 10 centimetres (0.33 ft). These were entrusted to a native boat builder, Haj Ahmed Yusuf, who slowly and methodically worked out how the pieces fit together. The entire process, including conservation and straightening of the warped wood, took fourteen years.

The result is a spectacular cedar-wood boat 43.6 metres (143 ft) long, its timbers held together by ropes, which is now currently housed in a special boat-shaped, air-conditioned museum beside the pyramid. During construction of this museum, which stands above the boat pit, a second sealed boat pit was discovered. It was deliberately left unopened in the hope that future excavation techniques will allow more information to be recovered.

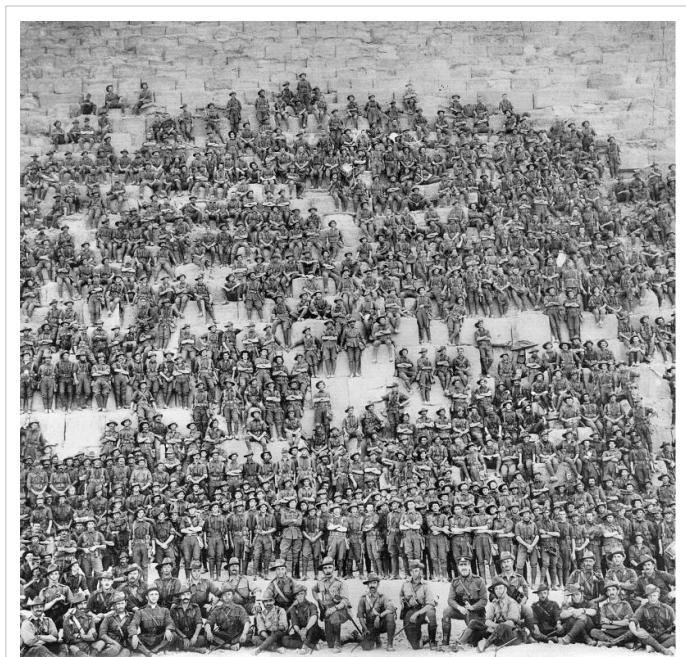
Looting

Although succeeding pyramids were smaller, pyramid building continued until the end of the Middle Kingdom. However, as authors Briar and Hobbs claim, "all the pyramids were robbed" by the New Kingdom, when the construction of royal tombs in a desert valley, now known as the Valley of the Kings, began.^{[40] [41]} Joyce Tyldesley states that the Great Pyramid itself "is known to have been opened and emptied by the Middle Kingdom", before the Arab caliph Abdullah al-Mamun entered the pyramid around AD 820.^[42]

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Group photo of Australian 11th Battalion soldiers on the Great Pyramid in 1915.

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Aerial photography, taken from Eduard Spelterini's balloon on November 21, 1904

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Mexico

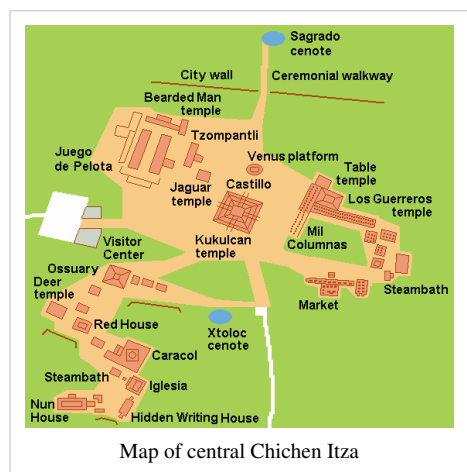
Chichen Itza

Pre-Hispanic City of Chichen-Itza*	
UNESCO World Heritage Site	
	
State Party	 Mexico
Type	Cultural
Criteria	i, ii, iii
Reference	483 ^[1]
Region**	Latin America and the Caribbean
Inscription history	
Inscription	1988 (12th Session)
* Name as inscribed on World Heritage List. ^[2]	
** Region as classified by UNESCO. ^[3]	

Chichen Itza (pronounced /tʃiːˈtʃɛn iːˈtsɑː/,^[2] from Yucatec Maya: *Chi'ch'èen Ìitsha'*,^[3] "at the mouth of the well of the Itza") is a large pre-Columbian archaeological site built by the Maya civilization located in the northern center of the Yucatán Peninsula, in the Yucatán state, present-day Mexico.

Chichen Itza was a major focal point in the northern Maya lowlands from the Late Classic through the Terminal Classic and into the early portion of the Early Postclassic period. The site exhibits a multitude of architectural styles, from what is called "Mexicanized" and reminiscent of styles seen in central Mexico to the Puuc style found among the Puuc Maya of the northern lowlands. The presence of central Mexican styles was once thought to have been representative of direct migration or even conquest from central Mexico, but most contemporary interpretations view the presence of these non-Maya styles more as the result of cultural diffusion.

The ruins of Chichen Itza are federal property, and the site's stewardship is maintained by Mexico's Instituto Nacional de Antropología e Historia (*National Institute of Anthropology and History*, INAH). The land under the



monuments had been privately-owned until March 29, 2010, when it was purchased by the state of Yucatan.^[4]

Name and orthography

The Maya name "*Chich'en Itza*" means "At the mouth of the well of the Itza." This derives from *chi'*, meaning "mouth" or "edge", and *ch'e'en*, meaning "well." Itzá is the name of an ethnic-lineage group that gained political and economic dominance of the northern peninsula. The name is believed to derive from the Maya *itz*, meaning "magic," and (*h*)*á*, meaning "water." Itzá in Spanish is often translated as "Brujas del Agua (Witches of Water)" but a more precise translation would be Magicians of Water.

The name is often represented as **Chichén Itzá** in Spanish and when translated into other languages from Spanish to show that both parts of the name are stressed on their final syllables. Other references prefer to employ a more rigorous orthography in which the word is written according to the Maya language, using **Chich'en Itzá** (pronounced [tʃitʃ'en itsáʔ]). This form preserves the phonemic distinction between *ch'* and *ch*, since the base word *ch'e'en* (which, however, does have a neutral tone vowel "e" in Maya and is not accented or stressed in Maya) begins with a glottalized affricate. The word "Itzá" has a high rise final "a" that is followed by a glottal stop (indicated by the apostrophe).

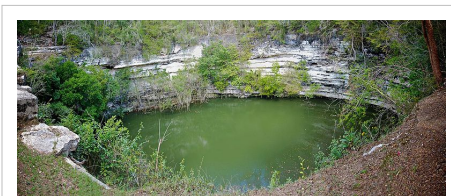
There is evidence in the Chilam Balam books that there was another, earlier name for this city prior to the arrival of the Itza hegemony in northern Yucatán. This name is difficult to define because of the absence of a single standard of orthography, but it is represented variously as Uuc Yabnal,^[5] Uuc Hab Nal,^[6] or Uc Abnal.^[7] While most sources agree the first word means seven, there is considerable debate as to the correct translation of the rest. Among the translations suggested are "Seven Bushes," "Seven Great Houses," or "Seven Lines of Abnal."

History

Northern Yucatán is arid, and the rivers in the interior all run underground. There are two large, natural sink holes, called cenotes, that could have provided plentiful water year round at Chichen, making it attractive for settlement. Of the two cenotes, the "Cenote Sagrado" or Sacred Cenote (also variously known as the Sacred Well or Well of Sacrifice), is the most famous. According to post-Conquest sources (Maya and Spanish), pre-Columbian Maya sacrificed objects and human beings into the cenote as a form of worship to the Maya rain god Chaac. Edward Herbert Thompson dredged the Cenote Sagrado from 1904 to 1910, and recovered artifacts of gold, jade, pottery, and incense, as well as human remains.^[8] A recent study of human remains taken from the Cenote Sagrado found that they had wounds consistent with human sacrifice.^[9]



Feathered Serpent, bottom of "El Castillo" staircase



Cenote Sagrado



Kukulcan's Jaguar Throne, interior temple of "El Castillo"

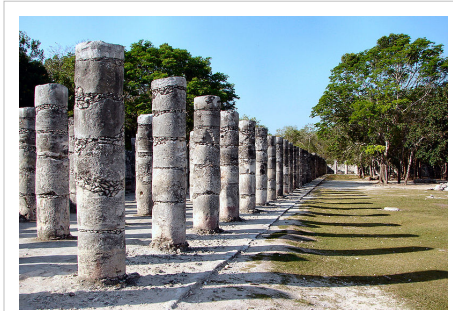
Ascendancy

Chichen Itza rose to regional prominence towards the end of the Early Classic period (roughly 600 AD). It was, however, towards the end of the Late Classic and into the early part of the Terminal Classic that the site became a major regional capital, centralizing and dominating political, sociocultural, economic, and ideological life in the northern Maya lowlands. The ascension of Chichen Itza roughly correlates with the decline and fragmentation of the major centers of the southern Maya lowlands, such as Tikal.

Some ethnohistoric sources claim that in about 987 a Toltec king named Topiltzin Ce Acatl Quetzalcoatl arrived here with an army from central Mexico, and (with local Maya allies) made Chichen Itza his capital, and a second Tula. The art and architecture from this period shows an interesting mix of Maya and Toltec styles. However, the recent re-dating of Chichen Itza's decline (see below) indicates that Chichen Itza is largely a Late/Terminal Classic site, while Tula remains an Early Postclassic site (thus reversing the direction of possible influence).

Political organization

Several archaeologists in late 1980s suggested that unlike previous Maya polities of the Early Classic, Chichen Itza may not have been governed by an individual ruler or a single dynastic lineage. Instead, the city's political organization could have been structured by a "*multepal*" system, which is characterized as rulership through council composed of members of elite ruling lineages.^[10] This theory was popular in the 1990s, but in recent years, the research that supported the concept of the "*multepal*" system has been called into question, if not discredited. The current belief trend in Maya scholarship is toward the more traditional model of the Maya kingdoms of the Classic southern lowlands.^[11]



Columns in the Temple of a Thousand Warriors

Economy

Chichen Itza was a major economic power in the northern Maya lowlands during its apogee. Participating in the water-borne circum-peninsular trade route through its port site of Isla Cerritos, Chichen Itza was able to obtain locally unavailable resources from distant areas such as central Mexico (obsidian) and southern Central America (gold).

Decline

According to Maya chronicles (e.g., the Book of Chilam Balam of Chumayel), Hunac Ceel, ruler of Mayapan, conquered Chichen Itza in the 13th century. Hunac Ceel supposedly prophesied his own rise to power. According to custom at the time, individuals thrown into the Cenote Sagrado were believed to have the power of prophecy if they survived. During one such ceremony, the chronicles state, there were no survivors, so Hunac Ceel leaped into the Cenote Sagrado, and when removed, prophesied his own ascension.

While there is some archaeological evidence that indicates Chichén Itzá was at one time looted and sacked,^[12] there appears to be greater evidence that it could not have been by Mayapan, at least not when Chichén Itzá was an active urban center. Archaeological data now indicates that Chichen Itza fell by around AD 1000, some two centuries

before the rise of Mayapan.^[13] Ongoing research at the site of Mayapan may help resolve this chronological conundrum.

While Chichén Itzá “collapsed” (meaning elite activities ceased and the site rapidly depopulated) it does not appear to have been completely abandoned. According to post-Conquest sources, both Spanish and Maya, the Cenote Sagrado remained a place of pilgrimage.

Spanish arrival

In 1526 Spanish Conquistador Francisco de Montejo (a veteran of the Grijalva and Cortés expeditions) successfully petitioned the King of Spain for a charter to conquer Yucatán. His first campaign in 1527, which covered much of the Yucatán peninsula, decimated his forces but ended with the establishment of a small fort at Xaman Ha', south of what is today Cancún. Montejo returned to Yucatán in 1531 with reinforcements and established his main base at Campeche on the west coast.^[14] He sent his son, Francisco Montejo The Younger, in late 1532 to conquer the interior of the Yucatán Peninsula from the north. The objective from the beginning was to go to Chichén Itzá and establish a capital.^[15]

Montejo the Younger eventually arrived at Chichen Itza, which he renamed Ciudad Real. At first he encountered no resistance, and set about dividing the lands around the city and awarding them to his soldiers. The Maya became more hostile over time, and eventually they laid siege to the Spanish, cutting off their supply line to the coast, and forcing them to barricade themselves among the ruins of ancient city. Months passed, but no reinforcements arrived. Montejo the Younger attempted an all out assault against the Maya and lost 150 of his remaining forces. He was forced to abandon Chichén Itzá in 1534 under cover of darkness. By 1535, all Spanish had been driven from the Yucatán Peninsula.^[16]

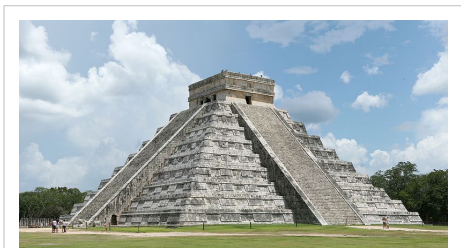
Montejo eventually returned to Yucatan and, by recruiting Maya from Campeche and Champoton, built a large Indio-Spanish army and conquered the peninsula.^[17] The Spanish crown later issued a land grant that included Chichen Itza and by 1588 it was a working cattle ranch.^[18]

Site description

The site^[19] contains many fine stone buildings in various states of preservation, and many have been restored. The buildings are connected by a dense network of formerly paved roads, called *sacbeob*.^[20] Archaeologists have found almost 100 *sacbeob* criss-crossing the site, and extending in all directions from the city.^[21]

The buildings of Chichén Itza are grouped in a series of architectonic sets, and each set was at one time separated from the other by a series of low walls. The three best known of these complexes are the Great North Platform, which includes the monuments of El Castillo, Temple of Warriors and the Great Ball Court; The Ossario Group, which includes the pyramid of the same name as well as the Temple of Xtoloc; and the Central Group, which includes the Caracol, Las Monjas, and Akab Dzib.

South of Las Monjas, in an area known as Chichén Viejo (Old Chichén) and only open to archaeologists, are several other complexes, such as the Group of the Initial Series, Group of the Lintels, and Group of the Old Castle.



High-resolution photo showing the restored sides of El Castillo

Great North Platform

El Castillo

Dominating the center of Chichén is the **Temple of Kukulcan** (the Maya name for Quetzalcoatl), often referred to as "El Castillo" (the castle). This step pyramid has a ground plan of square terraces with stairways up each of the four sides to the temple on top. On the Spring and Autumn equinox, at the rising and setting of the sun, the corner of the structure casts a shadow in the shape of a plumed serpent - Kukulcan, or Quetzalcoatl - along the west side of the north staircase. On these two annual occasions, the shadows from the corner tiers slither down the northern side of the pyramid with the sun's movement to the serpent's head at the base.

Mesoamerican cultures periodically built larger pyramids atop older ones, and this is one such example. In the mid 1930s, the Mexican government sponsored an excavation of El Castillo. After several false starts, they discovered a staircase under the north side of the pyramid. By digging from the top, they found another temple buried below the current one. Inside the temple chamber was a Chac Mool statue and a throne in the shape of Jaguar, painted red and with spots made of inlaid jade.

The Mexican government excavated a tunnel from the base of the north staircase, up the earlier pyramid's stairway to the hidden temple, and opened it to tourists. In 2006, INAH closed the throne room to the public.

Great Ball Court

Archaeologists have identified several courts for playing the Mesoamerican ballgame in Chichén, but the Great Ball Court about 150 metres (490 ft) to the north-west of the Castillo is by far the most impressive. It is the largest ball court in ancient Mesoamerica. It measures 166 by 68 metres (545 × 223 ft). The imposing walls are 12 metres (39 ft) high, and in the center, high up on each of the long walls, are rings carved with intertwining serpents.^[22]

At the base of the high interior walls are slanted benches with sculpted panels of teams of ball players. In one panel, one of the players has been decapitated and from the wound emits seven streams of blood; six become wriggling serpents and the center becomes a winding plant.

At one end of the Great Ball Court is the **North Temple**, popularly called the **Temple of the Bearded Man**. This small masonry building has detailed bas relief carving on the inner walls, including a center figure that has carving under his chin that resembles facial hair.^[23] At the south end is another, much bigger temple, but in ruins.



East side of El Castillo



Great Ballcourt (interior)



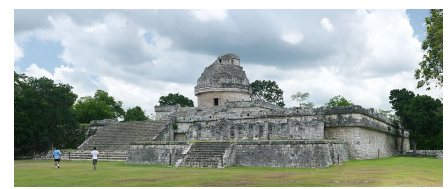
Templo de los Guerreros (Temple of the Warriors)



Ossario.

Built into the east wall are the **Temples of the Jaguar**. The **Upper Temple of the Jaguar** overlooks the ball court and has an entrance guarded by two, large columns carved in the familiar feathered serpent motif. Inside there is a large mural, much destroyed, which depicts a battle scene.

In the entrance to the **Lower Temple of the Jaguar**, which opens behind the ball court, is another Jaguar throne, similar to the one in the inner temple of El Castillo, except that it is well worn and missing paint or other decoration. The outer columns and the walls inside the temple are covered with elaborate bas-relief carvings.



"El Caracol" observatory temple.



"La Iglesia" in Las Monjas complex of buildings.



Tzompantli

Of all the monuments, the Tzompantli is the closest to what one would find in the Mexican Plateau. This monument, a low, flat platform, is surrounded with carved depictions of human skulls.

Platform of the Eagles and the Jaguars

Next to El Castillo are a series of platforms. The Platform of the Eagles and the Jaguars is built in a combination Maya and Toltec styles. Each side has a staircase to the top. Carved into the sides are panels depicting Harpy Eagles^[24] and Jaguars consuming what appear to be human hearts.

Platform of Venus

This platform is dedicated to the planet Venus. In its interior archaeologists discovered a collection of large cones carved out of stone, the purpose of which is unknown. This platform is placed between El Castillo and the Cenote Sagrado.

Sacbe Number One

This *sacbe*, which leads to the Cenote Sagrado, is the largest and most elaborate at Chichen Itza. This "white road" is 270 metres (890 ft) long with an average width of 9 metres (30 ft). It begins at a low wall a few metres from the Platform of Venus. According to archaeologists there once was an extensive building with columns at the beginning of the road.

Cenote Sagrado

The Yucatán Peninsula is a limestone plain, with no rivers or streams. The region is pockmarked with natural sinkholes, called cenotes, which expose the water table to the surface. One of the most impressive is the Cenote Sagrado, which is 60 metres (200 ft) in diameter, and sheer cliffs that drop to the water table some 27 metres (89 ft) below.

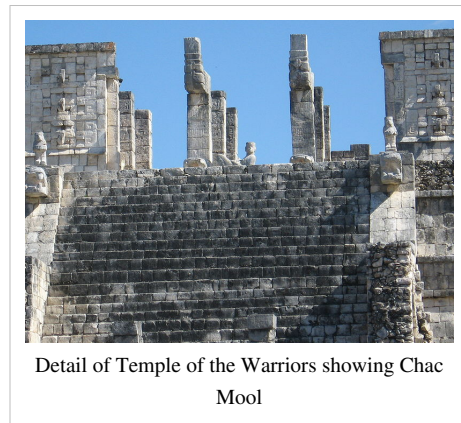
The Cenote Sagrado was a place of pilgrimage for ancient Maya people who, according to ethnohistoric sources, would conduct sacrifices during times of drought. Archaeological investigations support this as thousands of objects have been removed from the bottom of the cenote, including material such as gold, jade, obsidian, shell, wood, cloth, as well as skeletons of children and men.

Temple of the Tables

To the east of El Castillo are a series of buildings, the northernmost is the Temple of the Tables. Its name comes from a series of altars at the top of the structure that are supported by small carved figures of men with upraised arms, called “atlantes.”

Temple of the Warriors

The Temple of the Warriors complex consists of a large stepped pyramid fronted and flanked by rows of carved columns depicting warriors. This complex is analogous to Temple B at the Toltec capital of Tula, and indicates some form of cultural contact between the two regions. The one at Chichen Itza, however, was constructed on a larger scale. At the top of the stairway on the pyramid's summit (and leading towards the entrance of the pyramid's temple) is a Chac Mool. This temple encases or entombs a former structure called The Temple of the Chac Mool. The archeological expedition and restoration of this building was done by the Carnegie Institute of Washington from 1925-1928. A key member of this restoration was Earl H. Morris who published the work from this expedition in two volumes entitled *Temple of the Warriors*.



Detail of Temple of the Warriors showing Chac Mool

Group of a Thousand Columns

Along the south wall of the Temple of Warriors are a series of what are today exposed columns, although when the city was inhabited these would have supported an extensive roof system. The columns are in three distinct sections: an east group, that extends the lines of the front of the Temple of Warriors; a north group, which runs along the south wall of the Temple of Warriors and contains pillars with carvings of soldiers in bas-relief; and a northeast group, which was apparently formed a small temple at the southeast corner of the Temple of Warriors, which contains a rectangular decorated with carvings of people or gods, as well as animals and serpents. The northeast column temple also covers a small marvel of engineering, a channel that funnels all the rainwater from the complex some 40 metres (130 ft) away to a rejollada, a former cenote.

To the south of the Group of a Thousand Columns is a group of three, smaller, interconnected buildings. The **Temple of the Carved Columns** is a small elegant building that consists of a front gallery with an inner corridor that leads to an altar with a Chac Mool. There are also numerous columns with rich, bas-relief carvings of some 40 personages. The **Temple of the Small Tables** which has an exterior motif of x's and o's. And the **Palace of Ahau Balam Kauil** (also known as **Thompson's Temple**), a small building with two levels that has friezes depicting Jaguars (*balam* in Maya) as well as glyphs of the Maya god Kahuil.

Steam Bath

This unique building has three parts: a waiting gallery, a water bath, and a steam chamber that operated by means of heated stones.

El Mercado

This square structure anchors the southern end of the Temple of Warriors complex. It is so named for the shelf of stone that surrounds a large gallery and patio that early explorers theorized was used to display wares as in a marketplace. Today, archaeologists believe that its purpose was more ceremonial than commerce.

Ossario Group

South of the North Group is a smaller platform that has many important structures, several of which appear to be oriented toward the second largest cenote at Chichen Itza, Xtoloc.

Ossario

Like El Castillo, this step-pyramid temple dominates the platform, only on a smaller scale. Like its larger neighbor, it has four sides with staircases on each side. There is a temple on top, but unlike El Castillo, at the center is an opening into the pyramid which leads to a natural cave 12 metres (39 ft) below. Edward H. Thompson excavated this cave in the late 19th century, and because he found several skeletons and artifacts such as jade beads, he named the structure **The High Priests' Temple**. Archaeologists today believe neither that the structure was a tomb nor that the personages buried in it were priests.

Temple of Xtoloc

Outside the Ossario Platform is this recently restored temple which overlooks the other large cenote at Chichen Itza, named after the Maya word for iguana, "Xtoloc." The temple contains a series of pilasters carved with images of people, as well as representations of plants, birds and mythological scenes.

Between the Xtoloc temple and the Ossario are several aligned structures: **Platform of Venus** (which is similar in design to the structure of the same name next to El Castillo), **Platform of the Tombs**, and a small, round structure that is unnamed. These three structures were constructed in a row extending from the Ossario. Beyond them the Ossario platform terminates in a wall, which contains an opening to a sacbe that runs several hundred feet to the Xtoloc temple.

House of the Metates and House of the Mestizas

South of the Ossario, at the boundary of the platform, there are two small buildings that archaeologists believe were residences for important personages.

The Casa Colorada Group

South of the Ossario Group is another small platform that has several structures that are among the oldest in the Chichen Itza archaeological zone.

Casa Colorada

The Casa Colorada, which is Spanish for Red House, is one of the best preserved buildings at Chichen Itza. It also has a Maya name, Chichanchob, which according to INAH may mean "small holes." In one chamber there are extensive carved hieroglyphs that mention rulers of Chichen Itza and possibly of the nearby city of Ek Balam, and contain a Maya date inscribed which correlates to 869 a.d.e., one of the oldest such dates found in all of Chichen Itza.

In 2009, INAH restored a small ball court that adjoined the back wall of the Casa Colorada.^[25]

The House of the Deer

While the Casa Colorada is in a good state of preservation, other buildings in the group, with one exception, are decrepit mounds. One building is half standing, named Casa del Venado (House of the Deer). The origin of the name is unknown, as there are no representations of deer or other animals on the building.

Central Group

Las Monjas

One of the more notable structures at Chichen Itza is a complex of Terminal Classic buildings constructed in the Puuc architectural style. The Spanish nicknamed this complex *Las Monjas* ("The Nuns" or "The Nunnery") but was actually a governmental palace. Just to the east is a small temple (nicknamed *La Iglesia*, "The Church") decorated with elaborate masks of the rain god Chaac.

El Caracol

To the north of *Las Monjas* is a cockeyed, round building on a large square platform. It's nicknamed *El Caracol* ("the snail") because of the stone spiral staircase inside. The structure with its unusual placement on the platform and its round shape (the others are rectangular, in keeping with Maya practice), is theorized to have been a proto-observatory with doors and windows aligned to astronomical events, specifically around the path of Venus as it traverses the heavens.^[26]

Akab Dzib

Located to the east of the Caracol, Akab Dzib means, in Maya, "Dark (in the "Mysterious" sense) Writing." An earlier name of the building, according to a translation of glyphs in the Casa Colorada, is Wa(k)wak Puh Ak Na, "the flat house with the excessive number of chambers," and it was the home of the administrator of Chichén Itzá, kokom Yahawal Cho' K'ak'.^[27] INAH completed a restoration of the building in 2007. It is relatively short, only 6 metres (20 ft) high, and is 50 metres (160 ft) in length and 15 metres (49 ft) wide. The long, western-facing facade has seven doorways. The eastern facade has only four doorways, broken by a large staircase that leads to the roof. This apparently was the front of the structure, and looks out over what is today a steep, but dry, cenote. The southern end of the building has one entrance. The door opens into a small chamber and on the opposite wall is another doorway, above which on the lintel are intricately carved glyphs—the "mysterious" or "obscure" writing that gives the building its name today. Under the lintel in the door jamb is another carved panel of a seated figure surrounded by more glyphs. Inside one of the chambers, near the ceiling, is a painted hand print.

Old Chichen

"Old Chichen" is the nickname for a group of structures to the south of the central site. It includes the Initial Series Group, the Phallic Temple, the Platform of the Great Turtle, the Temple of the Owls, and the Temple of the Monkeys.

Other structures

Chichen Itza also has a variety of other structures densely packed in the ceremonial center of about 5 square kilometres (1.9 sq mi) and several outlying subsidiary sites.

Caves of Balankanche

Approximately 4 km (2.5 mi) west of the Chichen Itza archaeological zone are a network of sacred caves known as Balankanche (Spanish: *Gruta de Balankanche*), **Balamka'anche'** in Modern Maya). In the caves, a large selection of ancient pottery and idols may be seen still in the positions where they were left in pre-Columbian times.

The location of the cave has been well known in modern times. Edward Thompson and Alfred Tozzer visited it in 1905. A.S. Pearse and a team of biologists explored the cave in 1932 and 1936. E. Wyllys Andrews IV also explored the cave in the 1930s. Edwin Shook and R.E. Smith explored the cave on behalf of the Carnegie Institution in 1954, and dug several trenches to recover potsherds and other artifacts. Shook determined that the cave had been inhabited over a long period, at least from the Preclassic to the post-conquest era.^[28]

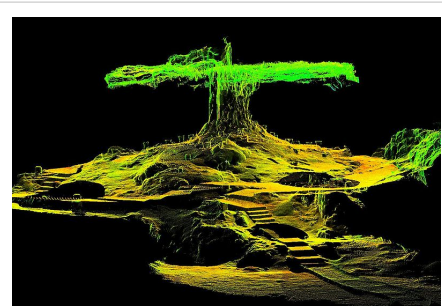
On 15 September 1959, José Humberto Gómez, a local guide, discovered a false wall in the cave. Behind it he found an extended network of caves with significant quantities of undisturbed archaeological remains, including pottery and stone-carved censers, stone implements and jewelry. INAH converted the cave into an underground museum, and the objects after being catalogued were returned to their original place so visitors can see them *in situ*.^[29]

Archaeological investigations

Chichen Itza entered the popular imagination in 1843 with the book *Incidents of Travel in Yucatan* by John Lloyd Stephens (with illustrations by Frederick Catherwood). The book recounted Stephens' visit to Yucatán and his tour of Maya cities, including Chichén Itzá. The book prompted other explorations of the city. In 1860, Desire Charnay surveyed Chichén Itzá and took numerous photographs that he published in *Cités et ruines américaines* (1863).

In 1875, Augustus Le Plongeon and his wife Alice Dixon Le Plongeon visited Chichén, and excavated a statue of a figure on its back, knees drawn up, upper torso raised on its elbows with a plate on its stomach.

Augustus Le Plongeon called it "Chaacmol" (later renamed "Chac Mool," which has been the term to describe all types of this statuary found in Mesoamerica). Teobert Maler and Alfred Maudslay explored Chichén in the 1880s



Composite Laser scan image of Chichen Itza's Cave of Balankanche, showing how the shape of its great limestone column is strongly evocative of the World Tree in Maya mythological belief systems.



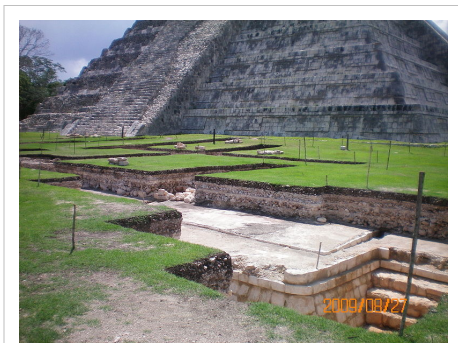
Photo of the great limestone column in the Cave of Balankanche, surrounded by Tlaloc-themed incense burners

and both spent several weeks at the site and took extensive photographs. Maudslay published the first long-form description of Chichen Itza in his book, *Biologia Centrali-Americana*.

In 1894 the United States Consul to Yucatán, Edward H. Thompson purchased the Hacienda Chichén, which included the ruins of Chichen Itza. For 30 years, Thompson explored the ancient city. His discoveries included the earliest dated carving upon a lintel in the Temple of the Initial Series and the excavation of several graves in the Ossario (High Priest's Temple). Thompson is most famous for dredging the Cenote Sagrado (Sacred Cenote) from 1904 to 1910, where he recovered artifacts of gold, copper and carved jade, as well as the first-ever examples of what were believed to be pre-Columbian Maya cloth and wooden weapons. Thompson shipped the bulk of the artifacts to the Peabody Museum at Harvard University.

In 1913, archaeologist Sylvanus G. Morley persuaded the Carnegie Institution to fund an extensive archaeological project at Chichen Itza, which included mapping the ruins and restoring several of the monuments. The Mexican Revolution and the following government instability prevented the Carnegie from beginning work until 1924. Over the course of 10 years, the Carnegie researchers excavated and restored the Temple of Warriors and the Caracol. At the same time, the Mexican government excavated and restored El Castillo and the Great Ball Court.

In 1926, the Mexican government charged Edward Thompson with theft, claiming he stole the artifacts from the Cenote Sagrado and smuggled them out of the country. The government seized the Hacienda Chichén. Thompson, who was in the United States at the time, never returned to Yucatán. He wrote about his research and investigations of the Maya culture in a book *People of the Serpent* published in 1932. He died in New Jersey in 1935. In 1944 the Mexican Supreme Court ruled that Thompson had broken no laws and returned Chichen Itza to his heirs. The Thompsons sold the hacienda to tourism pioneer Fernando Barbachano Peon.^[30]



Excavations next to El Castillo began in 2009

There have been two later expeditions to recover artifacts from the Cenote Sagrado, in 1961 and 1967. The first was sponsored by the National Geographic, and the second by private interests. Both projects were supervised by Mexico's National Institute of Anthropology and History (INAH). INAH has conducted an ongoing effort to excavate and restore other monuments in the archaeological zone, including the Ossario, Akab D'zib, and several buildings in Chichén Viejo (Old Chichen).

In 2009, to investigate construction that predated El Castillo, archaeologists began excavations adjacent to El Castillo.

Tourism

Tourism has been a factor at Chichen Itza for more than a century. John Lloyd Stephens, who popularized the Maya Yucatán in the public's imagination with his book *Incidents of Travel in Yucatan*, inspired many to make a pilgrimage to Chichén Itzá. Even before the book was published, Benjamin Norman and Baron Emanuel von Friedrichsthal traveled to Chichen after meeting Stephens, and both published the results of what they found. Friedrichsthal was the first to photograph Chichen Itza, using the recently invented daguerreotype.^[31]

After Edward Thompson in 1894 purchased the Hacienda Chichén, which included Chichen Itza, he received a constant stream of visitors. In 1910 he announced his intention to construct a hotel on his property, but abandoned those plans, probably because of the Mexican Revolution.

In the early 1920s, a group of Yucatecans, led by writer/photographer Francisco Gomez Rul, began working toward expanding tourism to Yucatán. They urged Governor Felipe Carrillo Puerto to build roads to the more famous monuments, including Chichen Itza. In 1923, Governor Carrillo Puerto officially opened the highway to Chichen Itza. Gomez Rul published one of the first guidebooks to Yucatán and the ruins.

Gomez Rul's son-in-law, Fernando Barbachano Peon (a grandnephew of former Yucatán Governor Miguel Barbachano), started Yucatán's first official tourism business in the early 1920s. He began by meeting passengers that arrived by steamship to Progreso, the port north of Merida, and persuading them to spend a week in Yucatán, after which they would catch the next steamship to their next destination. In his first year Barbachano Peon reportedly was only able to convince seven passengers to leave the ship and join him on a tour. In the mid-1920s Barbachano Peon persuaded Edward Thompson to sell 5 acres (20000 m²) next to Chichen for a hotel. In 1930, the Mayaland Hotel opened, just north of the Hacienda Chichén, which had been taken over by the Carnegie Institution.^[32]

In 1944, Barbachano Peon purchased all of the Hacienda Chichén, including Chichen Itza, from the heirs of Edward Thompson.^[30] Around that same time the Carnegie Institution completed its work at Chichen Itza and abandoned the Hacienda Chichén, which Barbachano turned into another seasonal hotel.

In 1972, Mexico enacted the Ley Federal Sobre Monumentos y Zonas Arqueológicas, Artísticas e Históricas (Federal Law over Monuments and Archeological, Artistic and Historic Sites) that put all the nation's pre-Columbian monuments, including those at Chichen Itza, under federal ownership.^[33] There were now hundreds, if not thousands, of visitors every year to Chichen Itza, and more were expected with the development of the Cancún resort area to the east.

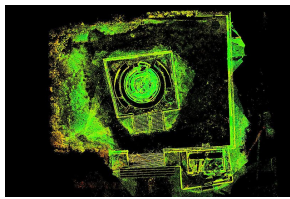
In the 1980s, Chichen Itza began to receive an influx of visitors on the day of the spring equinox. Today several thousand show up to see the light-and-shadow effect on the Temple of Kukulcan in which the feathered serpent god supposedly can be seen to crawl down the side of the pyramid.^[34]

Chichen Itza, a UNESCO World Heritage Site, is the second-most visited of Mexico's archaeological sites.^[35] The archaeological site draws many visitors from the popular tourist resort of Cancún, who make a day trip on tour buses. In 2007, Chichen Itza's El Castillo was named one of the New Seven Wonders of the World after a worldwide vote. Despite the fact that the vote was sponsored by a commercial enterprise, and that its methodology was criticized, the vote was embraced by government and tourism officials in Mexico who project that as a result of the publicity the number of tourists expected to visit Chichen will double by 2012.^[36] The ensuing publicity re-ignited debate in Mexico over the ownership of the site, which culminated in the state of Yucatan on 29 March 2010 purchasing the land under which the most recognized monuments rest from owner Hans Juergen Thies Barbachano.^[37]

Over the past several years, INAH, which manages the site, has been closing monuments to public access. While visitors can walk around them, they can no longer climb them or go inside their chambers. The most recent was El Castillo, which was closed after a San Diego, Calif., woman fell to her death in 2006.^[38]



Photo gallery



Composite Laser scan plan image of Chichen Itza's El Caracol from above, showing directional orientations and interior layout.



Photo of El Caracol, observatory of Chichen Itza



Temple of the Warriors in 1986. Note that the Temple of the Big Tables, immediately to the left, was unrestored at that time.



Stone Ring located 9 m (30 ft) above the floor of the Great Ballcourt, Chichen Itza



Archaeologist Alfred Maudslay at Chichen in 1889.



Venus Platform in the Great Plaza, Chichen Itza.



Kukulcán pyramid

See also

- List of archaeoastronomical sites sorted by country
- List of Mesoamerican pyramids

Notes

- [1] <http://whc.unesco.org/en/list/483>
- [2] See also "Chichén Itzá" (http://inogolo.com/pronunciation/d1123/Chichen_Itza). *English Pronunciation Guide to the Names of People, Places, and Stuff*. Inogolo. . Retrieved 2007-11-21.
- [3] Barrera Vásquez et al., 1980, *Cordemex dictionary*
- [4] Concerning the legal basis of the ownership of Chichen and other sites of patrimony, see Breglia (2006), in particular Chapter 3, "Chichen Itza, a Century of Privatization". Regarding ongoing conflicts over the ownership of Chichen Itza, see Castañeda (2005). Regarding purchase, see "Yucatán: paga gobierno 220 mdp por terrenos de Chichén Itzá," *La Jornada*, 30 March 2010, retrieved 30 March 2010 from <http://www.jornada.unam.mx/2010/03/30/index.php?section=cultura&article=a06n1cul>
- [5] Uuc Yabnal is variously translated as "Seven Great House", per Richard N. Luxton (translator), *The Book of Chumayel: The Counsel Book of the Yucatec Maya, 1539-1638* (Walnut Creek, Calif.: Aegean Park Press, 1996) 141 ISBN 0-89412-244-4
- [6] Uuc Hab Nal is translated as "Seven Bushy Places" in Peter O. Koch, *The Aztecs, the Conquistadors, and the Making of Mexican Culture* (???: McFarland & Co., 2006) 19 ISBN 0-7864-2252-1
- [7] Uuc Yabnal becomes Uc Abnal, meaning the "Seven Abnals" or "Seven Lines of Abnal," where Abnal is a family name, per Ralph L. Roys, *The Book of Chilam Balam of Chumayel*. (Norman, Okla.: University of Oklahoma Press, Norman. 1967) 133n7
- [8] Coggins (1992).
- [9] Anda Alanís (2007)
- [10] David Freidel, "Yaxuna Archaeological Survey: A Report of the 1988 Field Season" (retrieved from the FAMSI--Foundation for the Advancement of Mesoamerican Studies—Web site Sept. 20, 2008, www.famsi.org/research/freidel/1988Freidel.pdf) 6. See also, Sharer and Traxler (2006:581)
- [11] See Jeff Karl Kowalski, Cynthia Kristan-Graham (editors), *Twin Tollans: Chichén Itzá, Tula, and the Epiclassic to Early Postclassic Mesoamerican World*: Washington D.C.: Dumbarton Oaks, 2007) 166-7 ISBN 0-88402-323-0

- [12] J. Eric S. Thompson, *The Rise and Fall of Maya Civilization* (Norman, Okla.: University of Oklahoma Press, 1954, 1966) 137 ISBN 0-8061-0301-9
- [13] For summation of this re-dating proposal, see in particular Andrews *et al.* (2003).
- [14] Clendinnen, Inga; *Ambivalent Conquests: Maya and Spaniard in Yucatán, 1517-1570.* (pg 23) ISBN 0-521-37981-4
- [15] Robert S. Chamberlain, *The Conquest and Colonization of Yucatán 1517-1550* (Washington D.C.: Carnegie Institution of Washington, 1948) 19-20, 64, 97, 134-135
- [16] Robert S. Chamberlain, *The Conquest and Colonization of Yucatán 1517-1550* (Washington D.C.: Carnegie Institution of Washington, 1948) 132-149
- [17] Clendinnen, Inga; *Ambivalent Conquests: Maya and Spaniard in Yucatán, 1517-1570.* (pg 41) ISBN 0-521-37981-4
- [18] Lisa Breglia, *Monumental Ambivalence: The Politics of Heritage* (Austin, Texas: University of Texas Press, 2006) 67
- [19] Unless otherwise noted, information in this section was drawn from "Chichen Itza, Yucatan" by Olgo Cano, *Arqueologia Mexicana*, Vol. 9 No. 53 (January–February 2002) 80-87
- [20] From Mayan: *sakb'e*, meaning "white way/road". Plural form is *sacbeob* (or in modern Maya orthography, *sakb'eb'*).
- [21] "Almost a Hundred Sacbeob Led to Chichen Itza," INAH Web site, http://dti.inah.gob.mx/index.php?option=com_content&task=blogsection&id=39&Itemid=150, recovered 10 October 2008
- [22] A popular explanation is that the objective of the game was to pass a ball through one of the rings, however in other, smaller ball courts there is no ring, only a post.
- [23] Cirerol Sansores (1948, pp.94–96).
- [24] Tozzer, Alfred Marston; Glover Morrill Allen (1910). *Animal figures in the Maya codices* (<http://books.google.com/?id=nFoTAAAYAAJ>). The Museum. pp. 334–336. .
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- [26] Aveni (1997, pp.135–138)
- [27] Voss and Kremer (2000)
- [28] Andrews IV (1960, pp.28–31).
- [29] Andrews IV (1970).
- [30] Osborne (2007).
- [31] See entry, "Friedrichsthal, Baron Emanuel von", in Palmquist & Kailbourn (2000, p.252).
- [32] Madeira (1931, pp. 108-9)
- [33] Breglia (2006, pp.45–46).
- [34] See Quetzil Castaneda (1996) In *The Museum of Maya Culture* (University of Minnesota Press) for a book length study of tourism at Chichen, including a chapter on the equinox ritual. For a 90 minute ethnographic documentary of new age spiritualism at the Equinox see Jeff Himpele and Castaneda (1997)[*Incidents of Travel in Chichen Itza*] (Documentary Educational Resources).
- [35] "Compendio Estadístico del Turismo en México 2006," Secretaría de Turismo, Mexico City, D.F.
- [36] "Chichen Itza podría duplicar visitantes en 5 años si es declarada maravilla," EFE news service, June 29, 2007. Figure is attributed to Francisco Lopez Mena, director of Consejo de Promoción Turística de México (CPTM).
- [37] Osborne (2007); "Yucatán compra 80 has en la zona de Chichén Itzá," *La Jornada*, 30 March 2010, retrieved 30 March 2010 from <http://www.jornada.unam.mx/2010/03/30/index.php?section=cultura&article=a06n1cul>
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External links

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- Chichen Itza Digital Media Archive (<http://archive.cyark.org/chichen-itza-info>) (creative commons-licensed photos, laser scans, panoramas), with particularly detailed information on El Caracol and el Castillo, using data from a National Science Foundation/CyArk research partnership
- Chichen Itza archaeologists (<http://www.haciendachichen.com/archaeologists.htm>)
- UNESCO (<http://whc.unesco.org/en/list/483>) page about Chichen Itza World Heritage site
- American Egypt (<http://www.americanegypt.com/index.htm>), contains information and articles relating to Chichen Itza
- Ancient Observatories (<http://www.exploratorium.edu/ancientobs/chichen/index.html>) page on Chichen Itza

Geographical coordinates: 20°40′58.44″N 88°34′7.14″W

Temple of the Inscriptions

The **Temple of the Inscriptions** is the largest Mesoamerican stepped pyramid structure at the pre-Columbian Maya civilization site of Palenque, located in the modern-day state of Chiapas, Mexico. The structure was specifically built as the funerary monument for K'inich Janaab' Pakal,^[1] *ajaw* or ruler of Palenque in the 7th century whose reign over the polity lasted almost 70 years. Construction of this monument commenced in the last decade of his life, and was completed by his son and successor K'inich Kan B'alam II.^[2] Within Palenque, the Temple of the Inscriptions is located in an area known as the Temple of the Inscriptions' Court and stands at a right angle to the Southeast of the Palace.^[3] The Temple of the Inscriptions has been significant in the study of the ancient Maya, owing to the extraordinary sample of hieroglyphic text found on the Inscription Tablets, the impressive sculptural panels on the piers of the building, and the finds inside the tomb of Pakal.^[4] ^[5]



Temple of Inscriptions

Structure

The structure consists of a "temple" structure that sits atop an eight-stepped pyramid (for a total of nine levels). The five entrances in the front of the building are surrounded by piers bearing both carved images and the hieroglyphic texts in Maya script for which the temple was named. Inside the temple, a stairway leads to the crypt containing the sarcophagus of Pakal.

History

The Temple of Inscriptions was finished a short time after A.D. 683. The construction was initiated by Pakal himself, although his son, K'inich Kan B'alam II completed the structure and its final decoration.^[6]

Despite the fact that Palenque, and the Temple of Inscriptions itself, had been visited and studied for more than two hundred years, the tomb of Pakal was not discovered until 1952. Alberto Ruz Lhuillier, a Mexican archaeologist, removed a stone slab from the floor of the temple, revealing a stairway filled with rubble. Two years later, when the stairway was cleared, it was discovered that it led into Pakal's tomb.^[7]

Piers

The temple has six piers, or vertical panels. These are labeled A through F, each with texts, artistic representations, or both executed in reliefs made from plaster stucco. Piers A and F have only hieroglyphic text on them. Piers B through E have images of people holding an infant-like figure, which has a snake as one leg.^[8]

Pier A

Pier A's decoration consists entirely of hieroglyphic text. However, only eleven glyphs and glyph portions survive to this day. Among these glyphs, "capture" can be clearly seen, but who or what was captured is unknown because the corresponding glyphs are unreadable.

Pier B

Pier B depicts a scene in which a human figure holds the "child" God K, one of whose legs is a serpent, in his hand.

The human figure is actually life size (165 cm tall), but its position and perspective make it appear much larger. It wears an elaborate feather headdress, a jaguar skin skirt, and a belt. The figure also used to wear a loincloth and a short beaded cape, but due to damage those are largely missing today, as is the head of the figure.

It is thought that the figure held by the human figure is God K, although his characteristic "flared forehead" is only visible on Pier D. The figure of God K, often described as an "infant" or "child," has one human leg and one serpent-leg. The human leg ends in a six-toed foot that is cradled by the other figure. It is likely, especially considering the emphasis placed on the polydactyly, that this feature is a reference to Pakal's son, Kan B'alam II, who is portrayed in portraits with six fingers on one hand and six toes on one foot.

Pier C

The standing figure on Pier C is thought to be a woman, possibly Pakal's mother, Lady Zac-Kuk. The appearance of the psychoduct (a hollow duct that goes from the outer temple into the tomb of Pakal) and the stone band that connects to it have led many to compare the structure to an umbilical cord. The fact that this "umbilical cord" connects the figure on Pier C to Pakal's tomb (and by extension, Pakal himself) supports the identification of the figure as Lady Zac-Kuk. The umbilical cord can then be interpreted as a reference to the royal bloodline.

Pier D

Pier D provides the evidence that the “baby” figure is, in fact, God K. In this depiction of the “baby” figure, it wears an “axe” or “flare” including a mirror (visible below the feathers of the standing figure’s headdress), something characteristic of God K. The figure on this pier is more complete than the same figure on any of the other piers. Also present in the depiction of God K are three vertical cuts on the god’s back. These have been shown to be intentional, but their meaning is still unknown.

Pier E

The standing figure on Pier E is most likely Kan B’alam I. The elaborate headdress worn by the figure contains glyphs that identify him as “chan-bahlum.” It is unlikely that this refers to Kan B’alam II because he is thought to be represented by the figure of God K. Because Kan B’alam II, great-great-grandson of Kan B’alam I, finished the decoration of the Temple of Inscriptions, this can be seen as an effort to reinforce the legitimacy of his claim to the throne; he is emphasizing his relationship to his ancestor and namesake, as well as his relationship to his father and grandmother.

Pier F

Pier F has only one glyph block that remains today. It contains glyphs for what is thought to be a title, translated as “dead rabbit”, followed by the title and name “Mah K’ina Kan-B’alam,” after which comes an unknown glyph (possibly another title), and the glyph for Palenque.

Coloration

Although much of the color on the piers has deteriorated, some is still visible today. Originally, the piers would have been extraordinarily colorful. Bright red, yellow, and blue would have been seen on their stucco sculpture. A thin coat of light red paint would have been applied to all of the stucco sculpture as a sort of background coloring while the stucco was still wet, binding the color to the building. Because the temple was repeatedly repainted, one can observe layers of pigment between layers of stucco. The color blue signified the Heavens and the Gods and would have been applied to things relating to the gods, as well as the glyphic texts on the sculpture. The color yellow related to Xibalba, the Maya underworld, which was associated with jaguars, so the jaguar skirts were colored accordingly.

Inscription tablets

The Temple of Inscriptions gets its name from three hieroglyphic tablets, known as the East Tablet, the Central Tablet, and the West Tablet, on the temple’s inner walls. These tablets emphasize the idea that events that happened in the past will be repeated on the same calendar date, a theme also found in the Books of Chilam Balam, and constitute one of the longest known Maya inscriptions (617 glyphs). Columns E through F mark the beginning of a record of various events in Pakal’s life that continues until the last two columns on the tablets, which announce his death and name Kan B’alam II as his heir. All of the tablets, excluding the final two columns, were completed during Pakal’s lifetime.^[9]

The Tomb of Pakal

Structure

To prevent the collapse of the tomb due to the immense weight of the pyramid, the architects designed the hut-shaped chamber using cross vaulting and recessed buttresses.^[10]

Artifacts

The tomb of Pakal yielded several important archaeological finds and works of art.

Sarcophagus

Among these finds was the lid of Pakal's sarcophagus. In the image that covers it, Pakal lies on top of the "earth monster." Below him are the open jaws of a jaguar, symbolizing Xibalba. Above him is the Celestial Bird, perched atop the Cosmic Tree (represented by a cross) which, in turn, holds a Serpent in its branches. Thus, in the image Pakal lies between two worlds: the heavens and the underworld. Also on the sarcophagus are Pakal's ancestors, arraigned in a line going back six generations.^[11]



The lid of the sarcophagus.

Other

Pakal's death mask is another extraordinary artifact found in the tomb. The face of the mask is made entirely of jade, while the eyes consist of shells, mother of pearl, and obsidian.

There were several smaller jade heads packed into Pakal's sarcophagus and a stucco portrait of the king was found under the base of it.

Five skeletons, both male and female, were found at the entrance of the crypt. These sacrificial victims were intended to follow Pakal into Xibalba.^[12]

Notes

All information on the piers was taken from Robertson 1983: 29-53.

[1] Guenter:1

[2] Guenter:4

[3] Robertson 1983:map 3

[4] Robertson 1983:24,26,54

[5] Stierlin 2001:79

[6] Guenter:3-4

[7] Robertson 1983:23

[8] Robertson 1983

[9] Robertson 1983:54

[10] Stierlin 2001:77



[11] Stierlin 2001:80

[12] Stierlin 2001:79

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Uxmal

Pre-Hispanic Town of Uxmal*	
UNESCO World Heritage Site	
	
State Party	 Mexico
Type	Cultural
Criteria	i, ii, iii
Reference	791 ^[1]
Region**	Latin America and the Caribbean
Inscription history	
Inscription	1996 (20th Session)
<small>* Name as inscribed on World Heritage List. ^[2]</small> <small>** Region as classified by UNESCO. ^[3]</small>	

Uxmal (Yucatec Maya: *Óoxmáal* [oːjˈmaːl]) is a large pre-Columbian ruined city of the Maya civilization in the state of Yucatán, Mexico. It is 78 km south of Mérida, Yucatán, or 110 km from that city on Highway 261 towards Campeche, Campeche), 15 km south-southeast of the town of Muna and in the municipality of Santa Elena.

Uxmal is pronounced English pronunciation: /uːjˈmɑːl/ *oo-sh-MAHL* in English.^[2] The place name is Pre-Columbian and it is usually assumed to be an archaic Maya language phrase meaning "Built Three Times", although some scholars of the Maya language dispute this derivation.

Uxmal hold some of the most complex and beautiful examples of the regional Puuc-style architecture, and its magnificent pyramids and structures make it a popular tourist destination.

Ancient history



Map of a central portion of Uxmal

While much work has been done at the popular tourist destination of Uxmal to consolidate and restore buildings, little in the way of serious archeological excavation and research has been done; therefore, the city's dates of occupation are unknown and the estimated population (about 25,000 people) is at present only a very rough guess subject to change upon better data. Most of the city's major construction took place while Uxmal was the capital of a Late Classic Maya state around 850-925 AD, though after about 1000 AD, Toltec invaders took over and most building ceased by 1100 AD.

Maya chronicles say that Uxmal was founded about 500 A.D. by Hun Uitzil Chac Tutul Xiu. For generations Uxmal was ruled over by the Xiu family, was the most powerful site in western Yucatán, and for a while in alliance with Chichen Itza dominated all of the northern Maya area. Sometime after about 1200 no new major construction seems to have been made at Uxmal, possibly related to the fall of Uxmal's ally Chichen Itza and the shift of power in Yucatán to Mayapan. The Xiu moved their capital to Maní, and the population of Uxmal declined.

Uxmal was dominant from 875 to 900 CE. The Maya dynasty expanded their dominion over their neighbors. This prominence didn't last long. Population dispersed around 1000 CE.

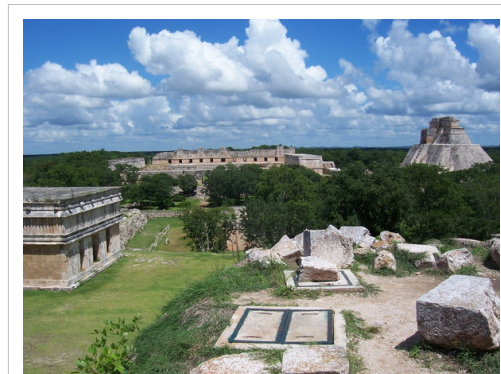
After the Spanish conquest of Yucatán (in which the Xiu allied themselves with the Spanish), early colonial documents suggest that Uxmal was still an inhabited place of some importance into the 1550s, but no Spanish town was built here and Uxmal was soon after largely abandoned.

Description of the site

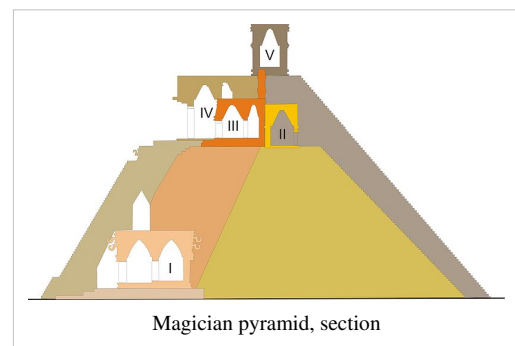
Even before the restoration work Uxmal was in better condition than many other Maya sites thanks to being unusually well built. Much was built with well-cut stones set into a core of concrete not relying on plaster to hold the building together. The Maya architecture here is considered matched only by that of Palenque in elegance and beauty. The Puuc style of Maya architecture predominates. Thanks to its good state of preservation, it is one of the few Maya cities where the casual visitor can get a good idea of how the entire ceremonial center looked in ancient times.

Some of the more noteworthy buildings include:

- **The Governor's Palace**, a long low building atop a huge platform, with the longest façades in Pre-Columbian Mesoamerica.



Panorama of Uxmal



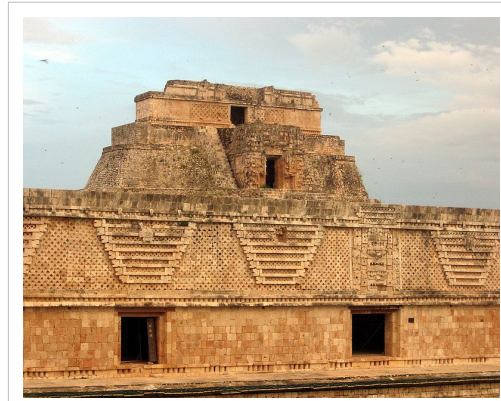
Magician pyramid, section

- The **Adivino** (a.k.a. the Pyramid of the Magician or the Pyramid of the Dwarf), is a stepped pyramid structure, unusual among Maya structures in that its layers' outlines are oval or elliptical in shape, instead of the more common rectilinear plan. It was a common practice in Mesoamerica to build new temple pyramids atop older ones, but here a newer pyramid was built centered slightly to the east of the older pyramid, so that on the west side the temple atop the old pyramid is preserved, with the newer temple above it. The structure features in one of the best-known tales of Yucatec Maya folklore, "el enano del Uxmal" (*the dwarf of Uxmal*), which is also the basis for the structure's common name. Multiple versions of this tale are recorded, and the story was further popularised after one of these was recounted by John Lloyd Stephens in his influential 1841 book, *Incidents of Travel in Central America, Chiapas, and Yucatan*. In the version told to Stephens in 1840, the pyramid was magically built overnight during a series of challenges issued to a dwarf by the *gobernador* (ruler or king) of Uxmal, as part of a competing trial of strength and magic against the king orchestrated by the dwarf's mother (a *bruja*, or *witch*).^[3]
- The **Nunnery Quadrangle** (a nickname given to it by the Spanish; it was a government palace) is the finest of Uxmal's several fine quadrangles of long buildings with elaborately carved façades on both the inside and outside faces.
- A large **Ballcourt** for playing the Mesoamerican ballgame, which an inscription there informs us was dedicated in 901 by the ruler Chan Chak K'ak'nal Ajaw, also known as Lord Chac before the decipherment of his corresponding name glyphs.

A number of other temple-pyramids, quadrangles, and other monuments, some of significant size, and in varying states of preservation, are also at Uxmal. These include North Long Building, House of the Birds, House of the Turtles, Grand Pyramid, House of the Doves, and South Temple.

The majority of hieroglyphic inscriptions were on a series of stone stelae unusually grouped together on a single platform. The stelae depict the ancient rulers of the city, and they show signs that they were deliberately broken and toppled in antiquity; some were re-erected and repaired. A further suggestion of possible war or battle is found in the remains of a wall which encircled most of the central ceremonial center.

A large raised stone pedestrian causeway links Uxmal with the site of Kabah, some 18 km to the south. Archaeological research at the small island site of Uaymil, located to the west on the Gulf coast, may have served as a port for Uxmal and provided the site access to the circum-peninsular trade network.



Detail of the eastern building of the Nunnery Quadrangle, with Adivino pyramid showing behind.



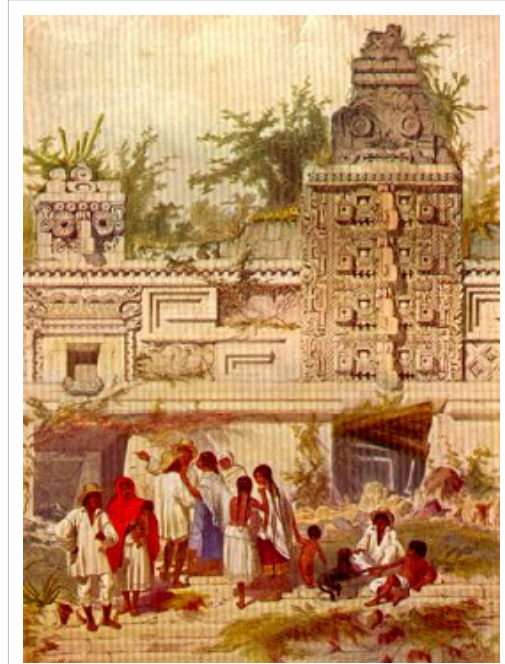
Detail of the Nunnery Quadrangle, showing the mosaic-like works on the buildings.



La Gran Pirámide (The Great Pyramid) at Uxmal

Modern history of the ruins

The site, located not far from Mérida beside a road to Campeche, has attracted many visitors since the time of Mexico's independence. The first detailed account of the ruins was published by Jean Frederic Waldeck in 1838. John Lloyd Stephens and Frederick Catherwood made two extended visits to Uxmal in the early 1840s, with architect/draftsman Catherwood reportedly making so many plans and drawings that they could be used to construct a duplicate of the ancient city (unfortunately most of the drawings are lost.) Désiré Charnay took a series of photographs of Uxmal in 1860. Some three years later Empress Carlota of Mexico visited Uxmal; in preparation for her visit local authorities had some statues and architectural elements depicting phallic themes removed from the ancient façades.



Detail of "Nunnery Quadrangle" façade as drawn by Catherwood

Sylvanus G. Morley made a map of the site in 1909 which included some previously overlooked buildings. The Mexican government's first project to consolidate some of the structures from risk of collapse or further decay came in 1927. In 1930 Frans Blom led a Tulane University expedition to the site which included making plaster casts of the façades of the "Nunnery Quadrangle"; using these casts a replica of the Quadrangle was constructed and displayed at the 1933 World's Fair in Chicago, Illinois. Unfortunately, the plaster replicas of the architecture were destroyed following the fair, but some of the plaster casts of Uxmal's monuments are still kept at Tulane's Middle American Research Institute. In 1936 a further Mexican government repair and consolidation program was begun under José Erosa Peniche.

Queen Elizabeth II of the United Kingdom visited on 27 February 1975 for the inauguration of the site's *sound & light show*; when the presentation reached the point where the sound system played the Maya prayer to Chaac, a sudden torrential downpour fell upon the gathered dignitaries (including Gaspar Antonio Xiu, descendant of noble Mayan Lineage, the Xiu), despite the fact that it was the middle of the dry season.^[4]

Three hotels and a small museum have been built within walking distance of the ancient city.

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External links

- Uxmal on mayaruins.com (<http://mayaruins.com/uxmal01.html>) Map of the site's central portion and various photographs.
- Architecture, Restoration, and Imaging of the Maya Cities of Uxmal, Kabah, Sayil, and Labna (<http://academic.reed.edu/uxmal/>), documentation project by Prof. Charles Rhyne, Reed College
- animated 3D-reconstruction on Uxmal-3D.com (<http://www.uxmal-3d.com>)
- Uxmal - The Mayan Kingdom (http://inneroptics.net/mayan_kingdom_book/Uxmal/) - A well researched photographic eBook on Uxmal and the Maya

Geographical coordinates: 20°21'34"N 89°46'17"W

Peru

Machu Picchu

Historic Sanctuary of Machu Picchu*	
UNESCO World Heritage Site	
	
Huayna Picchu towers above the ruins of Machu Picchu	
Type	Mixed
Criteria	i, iii, vii, ix
Reference	274 ^[1]
Region**	Latin America and The Caribbean
Inscription history	
Inscription	1983 (Seventh Session)
	
Map showing location of Machu Picchu in Peru	
<p>* Name as inscribed on World Heritage List. ^[2]</p> <p>** Region as classified by UNESCO. ^[3]</p>	

Machu Picchu (Quechua: *Machu Pikchu*) – "Old Mountain", pronounced [ˈmɑtʃu ˈpiktʃu] – is a pre-Columbian 15th-century Inca site located 2430 metres (7970 ft) above sea level.^{[2] [3]} It is situated on a mountain ridge above the Urubamba Valley in Peru, which is 80 kilometres (50 mi) northwest of Cusco and through which the Urubamba River flows. Most archaeologists believe that Machu Picchu was built as an estate for the Inca emperor Pachacuti (1438–1472). Often referred to as "The Lost City of the Incas", it is perhaps the most familiar icon of the Inca World.

The Incas started building the estate around AD 1400 but abandoned it as an official site for the Inca rulers a century later at the time of the Spanish Conquest. Although known locally, it was unknown to the outside world before being brought to international attention in 1911 by the American historian Hiram Bingham. Since then, Machu Picchu has become an important tourist attraction.

Since the site was never known to the Spanish during their conquest, it is highly significant as a relatively intact cultural site. Machu Picchu was declared a Peruvian Historical Sanctuary in 1981 and a UNESCO World Heritage Site in 1983.^[3] In 2007, Machu Picchu was voted one of the New Seven Wonders of the World in a worldwide Internet poll.

Machu Picchu was built in the classical Inca style, with polished dry-stone walls. Its three primary buildings are the *Intihuatana*, the *Temple of the Sun*, and the *Room of the Three Windows*. These are located in what is known by archaeologists as the *Sacred District* of Machu Picchu. In September 2007, Peru and Yale University almost reached an agreement regarding the return of artifacts which Yale has held since Hiram Bingham removed them from Machu Picchu in the early 20th century. In November 2010, a Yale University representative agreed to return the artifacts to a Peruvian university.^[4]

History

Machu Picchu was built around 1450, at the height of the Inca Empire.^[5] It was abandoned just over 100 years later, in 1572, as a belated result of the Spanish Conquest.^[5]^[6] It is likely that most of its inhabitants died from smallpox introduced by travelers before the Spanish conquistadores arrived in the area. The latter had notes of a place called *Piccho*, although there is no record of the Spanish having visited the remote city. The types of sacred rocks defaced by the conquistadors in other locations are untouched at Machu Picchu.^[6]

Hiram Bingham theorized that the complex was the traditional birthplace of the Incan "Virgins of the Suns".^[7] More recent research by scholars such as John Rowe and Richard Burger, has convinced most archaeologists that Machu Picchu was an estate of the Inca emperor Pachacuti.^[6] In addition, Johan Reinhard presented evidence that the site was selected because of its position relative to sacred landscape features such as its mountains, which are purported to be in alignment with key astronomical events important to the Incas.

Johan Reinhard believes Machu Picchu to be a sacred religious site. This theory stands mainly because of where Machu Picchu is located. Reinhard calls it "sacred geography" because the site is built on and around mountains that hold high religious importance in the Inca culture and in culture that previously occupied the land. At the highest point of the mountain in which Machu Picchu was named after, there are "artificial platforms [and] these had a religious function, as is clear from the Inca ritual offerings found buried under them" (Reinhard 2007). These platforms are also found in other Incan religious sites. The site's other stone structures have finely worked stones with niches and from what the "Spaniards wrote about Inca sites, we know that these [types of] building[s] were of ritual significance" (Reinhard 2007). This would be the most convincing evidence that Reinhard points out because this type of stylistic stonework is only found at the religious sites so it would be natural that they would put it into this religious site.^[8] Another theory maintains that Machu Picchu was an Inca *llaqta*, a settlement built to control the economy of conquered regions. Yet another asserts that it may have been built as a prison for a select few who had committed heinous crimes against Inca society. An alternative theory is that it is an agricultural testing station. Different types of crops could be tested in the many different micro-climates afforded by the location and the terraces; these were not large enough to grow food on a large scale, but may have been used to determine what could grow where. Another theory suggests that the city was built for the gods to live in, or for the coronation of kings.^[9]



View of the city of Machu Picchu in 1911

Although the citadel is located only about 80 kilometers (50 miles) from Cusco, the Inca capital, the Spanish never found it and consequently did not plunder or destroy it, as they did many other sites.^[6] Over the centuries, the surrounding jungle grew over much of the site, and few outsiders knew of its existence.

On 24 July 1911, Hiram Bingham announced the find of Machu Picchu to scholars. An American historian employed as a lecturer at Yale University, Bingham had been searching for the city of Vilcabamba, the last Inca refuge during the Spanish conquest. He had worked for years in previous trips and explorations around the zone. Pablito Alvarez, a local 11 year-old Quechuas boy, led Bingham up to Machu Picchu.^[6]^[10] Some Quechuas lived in the original structures at Machu Picchu.

Bingham started archaeological studies and completed a survey of the area. He called the complex "The Lost City of the Incas", which was the title of his first book. Bingham made several more trips and conducted excavations on the site through 1915, collecting various artifacts which he took back to Yale. He wrote a number of books and articles about the discovery of Machu Picchu.

The site received significant publicity after the National Geographic Society devoted their entire April 1913 issue to Machu Picchu.

In 1981 Peru declared an area of 325.92 square kilometers surrounding Machu Picchu as a "Historical Sanctuary". In addition to the ruins, the sanctuary includes a large portion of the adjoining region, rich with flora and fauna.

In 1983 UNESCO designated Machu Picchu a World Heritage Site, describing it as "an absolute masterpiece of architecture and a unique testimony to the Inca civilization".^[2]

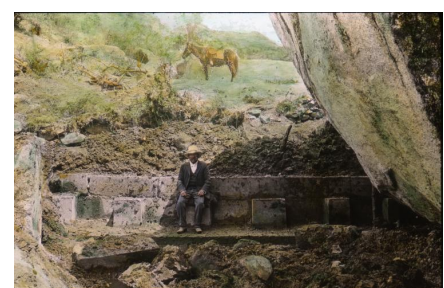
The World Monuments Fund placed Machu Picchu on its 2008 Watch List of the 100 Most Endangered Sites in the world because of environmental degradation. This has resulted from the impact of tourism, uncontrolled development in the nearby town of Aguas Calientes, which included a poorly sited tram to ease visitor access, and the construction of a bridge across the Vilcanota River, which is likely to bring even more tourists to the site, in defiance of a court order and government protests against it.

Early encounters

Although Bingham was the first person to bring word of the ruins to the outside world, other outsiders were said to have seen Machu Picchu before him. Simone Waisbard, a long-time researcher of Cusco, claims that Enrique Palma, Gabino Sánchez, and Agustín Lizárraga left their names engraved on one of the rocks at Machu Picchu on 14 July 1901. In 1904, an engineer named Franklin supposedly spotted the ruins from a distant mountain. He told Thomas Payne, an English Christian missionary living in the region, about the site, Payne's family members claim. They also report that in 1906, Payne and fellow missionary Stuart E. McNairn (1867–1956) climbed up to the ruins.



A complete overview of the site as seen from Huayna Picchu



Man sitting on ruins, hand-colored glass slide by Harry Ward Foote, who accompanied Hiram Bingham to Machu Picchu, 1911

The site may have been discovered and plundered in 1867 by a German businessman, Augusto Berns.^[11] There is some evidence that a German engineer, J. M. von Hassel, arrived earlier. Maps found by historians show references to Machu Picchu as early as 1874.^[12]

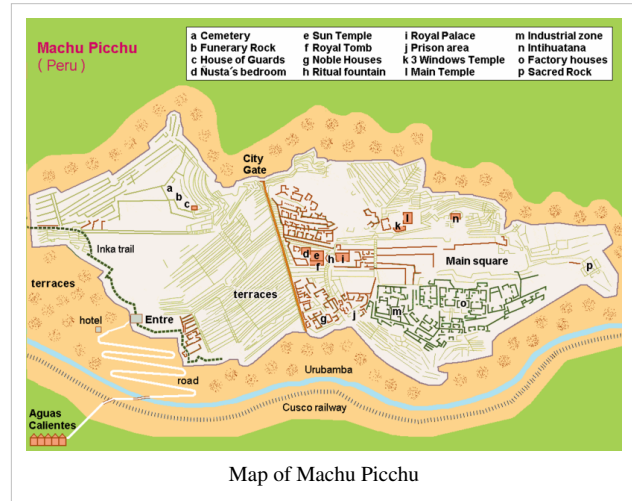
Geography

Machu Picchu lies in the southern hemisphere, some 13 degrees south of the equator.^[13] It is 80 kilometers northwest of Cusco, on the crest of the mountain Machu Picchu, located about 2450 metres (8040 ft) above mean sea level, over 1000 metres (3300 ft) lower than Cusco, which has an altitude of 3600 metres (11800 ft).^[13] As such, it had a milder climate than the Inca capital. It is one of the most important archaeological sites in South America, one of the most visited tourist attractions in all of Latin America^[14] and the most visited tourist attraction in Peru.

The year at Machu Picchu is divided between wet and dry seasons, with the majority of annual rain falling from October through to April. It can rain at any time of the year.^[13]

Machu Picchu is situated above a loop of the Urubamba River, which surrounds the site on three sides, with cliffs dropping vertically for 450 metres (1480 ft) to the river at their base. The area is subject to morning mists rising from the river.^[6] The location of the city was a military secret, and its deep precipices and steep mountains provided excellent natural defenses. The Inca Bridge, an Inca rope bridge, across the Urubamba River in the Pongo de Mainique, provided a secret entrance for the Inca army. Another Inca bridge was built to the west of Machu Picchu, the tree-trunk bridge, at a location where a gap occurs in the cliff that measures 6 metres (20 ft). It could be bridged by two tree trunks, but with the trees removed, there was a 570 metres (1870 ft) fall to the base of the cliffs.

The city sits in a saddle between the two mountains Machu Picchu and Huayna Picchu,^[6] with a commanding view down two valleys and a nearly impassable mountain at its back. It has a water supply from springs that cannot be blocked easily, and enough land to grow food for about four times as many people as ever lived there. The hillsides leading to it have been terraced, not only to provide more farmland to grow crops, but to steepen the slopes which invaders would have to ascend. The terraces reduced soil erosion and protected against landslides.^[15] Two high-altitude routes from Machu Picchu go across the mountains back to Cusco, one through the sun gate, and the other across the Inca bridge. Both could be easily blocked, should invaders approach along them. Regardless of its original purpose, it is strategically located and readily defended.



The site



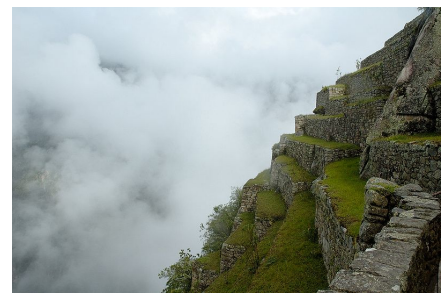
Partially restored Inca building

The ruins of Machu Picchu are divided into two main sections known as the Urban and Agricultural Sectors, divided by a wall. The Agricultural Sector is further subdivided into Upper and Lower sectors, while the Urban Sector is split into East and West sectors, separated by wide plazas.^[6]

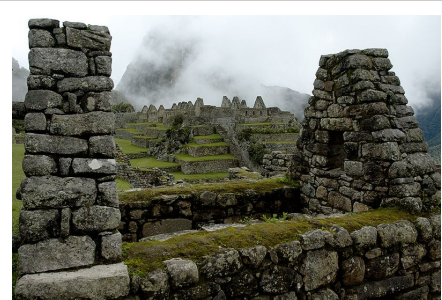
The central buildings of Machu Picchu use the classical Inca architectural style of polished dry-stone walls of regular shape. The Incas were masters of this technique, called ashlar, in which blocks of stone are cut to fit together tightly without mortar. Many junctions in

the central city are so perfect that it is said not even a blade of grass fits between the stones.

Some Inca buildings were constructed using mortar, but by Inca standards this was quick, shoddy construction, and was not used in the building of important structures. Peru is a highly seismic land, and mortar-free construction was more earthquake-resistant than using mortar. The stones of the dry-stone walls built by the Incas can move slightly and resettle without the walls collapsing.



Terraced Fields of Machu Picchu



View of the residential section of Machu Picchu



A llama at Machu Picchu.

Inca walls had numerous design details that helped protect them against collapsing in an earthquake. Doors and windows are trapezoidal and tilt inward from bottom to top; corners usually are rounded; inside corners often incline slightly into the rooms; and "L"-shaped blocks often were used to tie outside corners of the structure together. These walls do not rise straight from bottom to top but are offset slightly from row to row.

The Incas never used the wheel in any practical manner. Its use in toys demonstrates that the principle was well-known to them, although it was not applied in their engineering. The lack of strong draft animals, as well as steep terrain and dense vegetation issues, may have rendered the wheel impractical. How they moved and placed the enormous blocks of stones remains a mystery, although the general belief is that they used hundreds of men to push the stones up inclined planes. A few of the stones still have knobs on them that could have been used to lever them into position; it is believed that after the stones were placed, the Incas would have sanded the knobs

away, but a few were overlooked.

The space is composed of 140 structures or features, including temples, sanctuaries, parks, and residences that include houses with thatched roofs. There are more than one hundred flights of stone steps –often completely carved from a single block of granite –and numerous water fountains. These were interconnected by channels and water-drains perforated in the rock that were designed for the original irrigation system. Evidence suggests that the irrigation system was used to carry water from a holy spring to each of the houses in turn.

According to archaeologists, the urban sector of Machu Picchu was divided into three great districts: the Sacred District, the Popular District to the south, and the District of the Priests and the Nobility.



Temple of the Sun at Machu Picchu

Located in the first zone are the primary archaeological treasures: the *Intihuatana*, the *Temple of the Sun* and the *Room of the Three Windows*. These were dedicated to *Inti*, their sun god and greatest deity. The Popular District, or Residential District, is the place where the lower-class people lived. It includes storage buildings and simple houses.

The royalty area, a sector for the nobility, is a group of houses located in rows over a slope; the residence of the *Amatas* (wise persons) was characterized by its reddish walls, and the zone of the *Ñustas* (princesses) had trapezoid-shaped rooms. The Monumental

Mausoleum is a carved statue with a vaulted interior and carved drawings. It was used for rites or sacrifices.

As part of their road system, the Incas built a road to the Machu Picchu region. Today, tens of thousands of tourists walk the Inca Trail to visit Machu Picchu each year. They acclimatise at Cusco before starting on the two- to four-day journey on foot from the Urubamba valley, walking up through the Andes mountain range to the isolated city.

The people of Machu Picchu were connected to long-distance trade, as shown by non-local artifacts found at the site. As an example, Bingham found unmodified obsidian nodules at the entrance gateway. In the 1970s, Burger and Asaro determined that these obsidian samples were from the *Titicaca* or Chivay obsidian source, and that the samples from Machu Picchu showed long-distance transport of this obsidian type in pre-hispanic Peru.^[16]

The **Guardhouse** is a three-sided building, with one of its long sides opening onto the Terrace of the Ceremonial Rock. The three-sided style of Inca architecture is known as the *wayrona* style.^[17]

3D laser scanning of site

In 2005 and 2009, the University of Arkansas made detailed laser scans of the entire Machu Picchu site and of the ruins at the top of the adjacent Huayna Picchu mountain. The university has made the scan data available online for research purposes.^[18]

January 2010 evacuation

In January 2010, heavy rain caused flooding which buried or washed away roads and railways leading to Machu Picchu, trapping more than 2,000 locals and over 2,000 tourists, who were taken out by airlift. Machu Picchu was temporarily closed,^[19] but it reopened on 28 February 2010.^[20]

Intihuatana stone

The *Intihuatana* stone is one of many ritual stones in South America. These stones are arranged to point directly at the sun during the winter solstice. The name of the stone (coined perhaps by Bingham) is derived from the Quechua language: inti means 'sun', and wata- is the verb root 'to tie, hitch (up)' ('huata-' is simply a Spanish spelling). The Quechua -na suffix derives nouns for tools or places. Hence inti watana is literally an instrument or place to 'tie up the sun', often expressed in English as "The Hitching Post of the Sun". The Inca believed the stone held the sun in its place along its annual path in the sky. At midday on October 27 and February 14, the sun stands almost above the pillar—casting no shadow at all. Researchers believe that it was built as an astronomic clock or calendar.



The *Intihuatana* ("sun-tier") is believed to have been designed as an astronomic clock or calendar by the Incas

Concerns over tourism

Machu Picchu is a UNESCO World Heritage Site. Since its discovery in 1911, a growing number of tourists visit Machu Picchu, reaching 400,000 in 2003.^[21] As Peru's most visited tourist attraction and major revenue generator, it is continually threatened by economic and commercial forces. In the late 1990s, the Peruvian government granted concessions to allow the construction of a cable car and development of a luxury hotel, including a tourist complex with boutiques and restaurants. Many people protested against the plans, including members of the Peruvian public, international scientists, and academics, as they were worried that the greater numbers of visitors would pose tremendous physical burdens on the ruins.^[22] Many protested a plan to build a bridge to the site as well.^[23] A no-fly zone exists above the area.^[24] UNESCO is considering putting Machu Picchu on its List of World Heritage Sites in Danger.^[23]

During the 1980s a large rock from Machu Picchu's central plaza was moved out of its alignment to a different location to create a helicopter landing zone. Since the 1990s, the government has forbidden helicopter landings there. In 2006 a Cusco-based company, Helicusco, sought to have tourist flights over Machu Picchu and initially received a license to do so, but the government quickly overturned the decision.^[25]



View of Machu Picchu from Huayna Picchu, showing the Hiram Bingham Highway used by tour buses to and from the town of Aguas Calientes

Controversy with Yale University

In 1912 and 1914–15, Bingham excavated treasures from Machu Picchu—ceramic vessels, silver statues, jewelry and human bones—and took them from Peru to Yale University in the United States for further study, supposedly for a period of 18 months. Yale has retained the artifacts until now, under the argument that Peru did not have the infrastructure or proper conditions to take care of the pieces.

Eliane Karp, an anthropologist who is married to the former Peruvian President Alejandro Toledo, accused Yale of profiting from Peru's cultural heritage by claiming title to thousands of pieces removed by Bingham. Many have been on display at Yale's Peabody Museum since. Yale returned some of the artifacts to Peru, but the university kept the remainder, claiming its position was supported by federal case law involving Peruvian antiquities.^[26]

On 19 September 2007, the *Courant* reported that Peru and Yale had reached an agreement regarding the requested return of the artifacts. The agreement includes sponsorship of a joint traveling exhibition and construction of a new museum and research center in Cusco about which Yale will advise Peruvian officials. Yale acknowledges Peru's title to all the excavated objects from Machu Picchu, but Yale will share rights with Peru in the research collection, part of which will remain at Yale as an object of continuing study.^[27]

On 19 June 2008, National Geographic Society's vice-president Terry Garcia was quoted by daily *La República*. "We were part of this agreement. National Geographic was there, we know what was said, the objects were lent and should be returned."

On 21 November 2010, Yale University agreed in principle to the return of the controversial artifacts to their original home in Peru.



Panoramic photograph of Machu Picchu, looking towards Huayna Picchu



Panoramic photograph of the residential section

In media

The 1954 film *Secret of the Incas* was filmed by Paramount Pictures on location at Cusco and Machu Picchu, the first time that a major Hollywood studio filmed on site. Five hundred indigenous people were hired as extras in the film.^[28]

Machu Picchu is also featured prominently in the 2004 film *The Motorcycle Diaries*, a biopic based on the 1952 youthful travel memoir of Marxist revolutionary Che Guevara.^[29] A review noted, "The scenes at Machu Picchu are worth watching several times over."^[30]

The song "Kilimanjaro" from the 2010 film *Enthiran* was filmed in Machu Picchu.^[31] The sanction for filming was granted only after direct intervention from the Indian government.^{[32] [33]}

Twin towns

-  Haworth, United Kingdom^[34]

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External links

- Machu Picchu Video (http://www.glenndixon.org/Machu_Picchu_2.html)
- UNESCO – Machu Picchu (World Heritage) (http://whc.unesco.org/pg.cfm?cid=31&id_site=274)
- Wright Paleohydrological Institute (<http://www.wrightpaleo.com/>) with reports on water management at Machu Picchu
- 3D model of Machu Picchu (<http://sketchup.google.com/3dwarehouse/details?mid=736735667eaa157548846c67671d9660>)
- GigaPan image of Machu Picchu (<http://www.gigapan.org/gigapans/47942/>)
- Machu Picchu travel guide from Wikitravel
- Machu Picchu (http://www.dmoz.org/Regional/South_America/Peru/Departments/Cusco/Urubamba/Machu_Picchu/) at the Open Directory Project
- Mysteries of Machu Picchu (<http://www.life.com/image/first/in-gallery/46071/mysteries-of-machu-picchu>) - slideshow by *Life magazine*

Geographical coordinates: 13°09′47″S 72°32′44″W

Sacsayhuamán

Sacsayhuamán (also known as *Saksaq Waman*, *Sacsahuaman* or *Saxahuaman*) is a walled complex near Cusco, the former capital of the Inca empire. The site, at an altitude of 3701 m, was added to the UNESCO World Heritage List in 1983.

Description

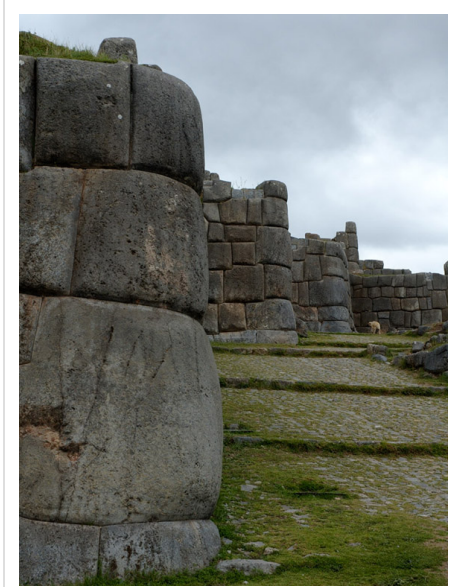
Located on a steep hill that overlooks the city, it contains an impressive view of the valley to the southeast. Surface collections of pottery at Sacsayhuaman indicate that the earliest occupation of the hill top dates back at least a millennium and excavations have revealed that there was a substantial early-Inca (Killke Period) occupation. The complex was greatly expanded during the period of Inca imperial rule and has now become one of the most famous archaeological sites in the Americas^[1]

Because of its location high above Cuzco and its immense terrace walls, this area of Sacsayhuaman is frequently referred to as a fortress^[2]. Some writers also believe the complex was built specifically to represent the head of a puma, the effigy shape which *Sacsayhuamán* together with Cuzco forms when seen from above. The importance of its military functions was highlighted in 1556 when Manco Inca lay siege to Cuzco.^[3] Much of the fighting occurred in and round Sacsayhuaman as it was critical for maintaining control over the city. It is clear from descriptions of the siege, as well as from excavations at the site, that there were towers on its summit as well as a series of other buildings. For example Pedro Sancho, who visited the complex before the siege, mentions the labyrinth like quality of the complex and the fact that it held a great number of storage rooms filled with a wide variety of items. He also notes that there were buildings with large windows that looked over the city. These structures, like so much of the site, have long since been destroyed.^[4]

Other early accounts of Cuzco indicate that Sacsayhuaman included a Sun Temple, which suggests that the complex was the focus of ritual activities as well. The large plaza area, capable of holding thousands of people, is well designed for ceremonial activities and several of the large structures at the site may also have been used during rituals. It is also clear from early accounts that the complex held a great number of storage rooms. Pedro Pizarro, describes the storage rooms that were within the complex and which were filled with military equipment.^[5]

The best-known zone of Sacsayhuaman includes its great plaza and its adjacent three massive terrace walls. The stones used in the construction of these terraces among the largest used in any building in prehispanic America and display a precision of fitting that is unmatched in the Americas.^[6] The stones are so closely spaced that a single piece of paper will not fit between many of the stones. This precision, combined with the rounded corners of the blocks, the variety of their interlocking shapes, and the way the walls lean inward, is thought to have helped the ruins survive devastating earthquakes in Cuzco. The longest of three walls is about 400 meters. They are about 6 meters tall. The estimated volume of stone is over 6,000 cubic meters. Estimates for the weight of the largest limestone block vary from 128 tonnes to almost 200 tonnes.^{[7] [8]}

Following the siege of Cuzco, the Spaniards began to use Sacsayhuaman as a source of stones for building Spanish Cuzco and within a few years much of the complex was demolished. The site was destroyed block-by-block to build the new governmental and religious buildings of the city, as well as the houses of the wealthiest Spaniards. In the words of Garcilaso de la Vega (1966:471 [1609: Part 1, Book. Bk. 7, Ch. 29]): “to save themselves the expense,



Sideways view of the walls of Sacsayhuamán showing the details of the stonework and the angle of the walls.

effort and delay with which the Indians worked the stone, they pulled down all the smooth masonry in the walls. There is indeed not a house in the city that has not been made of this stone, or at least the houses built by the Spaniards.” Today, tragically, only the stones that were too large to be easily moved remain at the site.^[9]

On 13 March 2008, archaeologists discovered additional ruins the periphery of *Sacsayhuaman*. They are believed to have been built by the Killke culture, while clearly ceremonial in nature, the exact function remains unknown. These people built structures and occupied the site for hundreds of years before the Inca, between 900 and 1200 AD.^[10]

In January 2010, parts of the site were damaged during periods of heavy rainfall in the region.^[11]

Theories about construction of walls

The Inca used similar construction techniques in building Sacsayhuaman as they used on all their stonework, albeit on a far more massive scale.^[12] The stones were rough-cut to the approximate shape in the quarries using river cobbles.^[13] They were then dragged by rope to the construction site, a feat that at times required hundreds of men^[14]. The ropes were so impressive that they warranted mentioned by Diego de Trujillo (1948:63 [1571]) as he inspected a room filled with building materials. The stones were then shaped into their final form at the building site and then laid in place.^[15] The work, while supervised by Inca architects, was largely carried out by groups of individuals fulfilling their labor obligations to the state. In this system of “mita” or “turn” labor, each village or ethnic group provided a certain number of individuals to participate in public works projects.^[16]

Although multiple regions might provide labor for a single, large-scale state project, the ethnic composition of the work-gangs remained intact, as different groups were assigned different tasks. Cieza de León (1976:153-154), who visited Sacsayhuaman two times in the late 1540's, mentions the quarrying of the stones, their transposition to the site, and the digging of foundation trenches. All this was conducted by rotational labor under the close supervision of Imperial architects.^[17]

Vince Lee is an author, architect, and explorer who has studied and consulted on various ancient sites where people moved large megaliths. He theorized that the blocks at *Sacsayhuaman* were put into place by carving them and then lowering them into place. The stones would have been precisely carved in advance to create the tight joints made to fit into prepared pockets in the wall. Then the stones would be towed up a ramp and above the wall, where they would be placed on top of a stack of logs. The logs would be removed one at a time to lower the stones into place. In contrast Protzen, a professor of architecture, has shown how the Inca built long and complex ramps within the stone quarries near Ollantaytambo, and how additional ramps were built to drag the blocks to the construction above the village.^[18] He suggests that similar ramps would have been built at Sacsayhuaman.

Modern-day use

Today, Peruvians celebrate *Inti Raymi*, the annual Inca festival of the winter solstice and new year. It is held near *Sacsayhuamán* on 24 June. Some Cusqueños use the large field within the walls of the complex for jogging, *tai chi*, and other athletic activities.



Panorama of Sacsayhuamán with the city of Cusco in the background

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- [2] Bauer 2007
- [3] Hemming 1970; *Conquest of the Incas*
- [4] Hyslop 1990, Bauer 2007
- [5] Pizarro 1921:272-273
- [6] Bauer (2007) *Ancient Cuzco*. University of Texas Press
- [7] *Seventy Wonders of the Ancient World*, ed. Chris Scarre, 1999 pp. 220-3
- [8] *Readers Digest*: "Mysteries of the Ancient Americas: The New World Before Columbus", 1986, p. 220-1
- [9] Bauer (2007) *Ancient Cuzco*. University of Texa Press
- [10] "Pre-Inca temple uncovered in Peru" (<http://edition.cnn.com/2008/TECH/03/15/peru.temple.ap/index.html>), CNN, 15 Mar 2008, retrieved on 16 March 2008.
- [11] Heavy rainfall in Peru (<http://news.bbc.co.uk/1/hi/world/americas/8480013.stm>), *BBC News*, 26 January 2010
- [12] Bauer 2007
- [13] (Protzen 1986; 1991)
- [14] (Gutierrez de Santa Clara 1963:252 [ca. 1600])
- [15] (Lee 1986)
- [16] Bauer 2007
- [17] Bauer 2007
- [18] (Protzen 1991)

External links

- BBC Article New Discoveries at Sacsayhuamán (<http://news.bbc.co.uk/2/hi/americas/7295754.stm>)

Geographical coordinates: 13°30′28″S 71°58′56″W

Ollantaytambo

Ollantaytambo Ullantaytampu	
— Town —	
	
	
<p>Ollantaytambo</p> <p>Coordinates: 13°15′29″S 72°15′48″W</p>	
Country	 Peru
Region	Cusco
Province	Urubamba
District	Ollantaytambo
Elevation	2792 m (9160 ft)
Time zone	PET (UTC-5)

Ollantaytambo is a town and an Inca archaeological site in southern Peru some 60 kilometers northwest of the city of Cusco. It is located at an altitude of 2,792 meters (9,160 feet) above sea level in the district of Ollantaytambo, province of Urubamba, Cusco region. During the Inca Empire, Ollantaytambo was the royal estate of Emperor Pachacuti who conquered the region, built the town and a ceremonial center. At the time of the Spanish conquest of Peru it served as a stronghold for Manco Inca Yupanqui, leader of the Inca resistance. Nowadays it is an important tourist attraction on account of its Inca buildings and as one of the most common starting points for the three-day, four-night hike known as the Inca Trail.

History

Around the mid-15th century, the Inca emperor Pachacuti conquered and razed Ollantaytambo; the town and the nearby region were incorporated into his personal estate.^[1] The emperor rebuilt the town with sumptuous constructions and undertook extensive works of terracing and irrigation in the Urubamba Valley; the town provided lodging for the Inca nobility while the terraces were farmed by *yanaconas*, retainers of the emperor.^[2] After Pachacuti's death, the estate came under the administration of his *panaqa*, his family clan.^[3]

During the Spanish conquest of Peru Ollantaytambo served as a temporary capital for Manco Inca, leader of the native resistance against the conquistadors. He fortified the town and its approaches in the direction of the former Inca capital of Cusco, which had fallen under Spanish domination.^[4] In 1536, on the plain of Mascabamba, near Ollantaytambo, Manco Inca defeated a Spanish expedition blocking their advance from a set of high terraces and flooding the plain.^[5] Despite his victory, however, Manco Inca did not consider his position tenable so the following year he withdrew to the heavily forested site of Vilcabamba.^[6]

In 1540, the native population of Ollantaytambo was assigned in *encomienda* to Hernando Pizarro.^[7]

In the 19th century the Inca ruins at Ollantaytambo attracted the attention of several foreign explorers, among them, Clements Markham, Ephraim Squier, Charles Wiener and Ernst Middendorf published accounts of their findings.^[8]

Description

The town of Ollantaytambo is located along the Patakancha River, close to the point where it joins the Urubamba River. The main settlement is located on the left margin of the Patakancha with a smaller compound called 'Araqhama on the right margin. The main Inca ceremonial center is located beyond 'Araqhama on a hill called Cerro Bandolista. There are several Inca structures on the surroundings, what follows is a brief description of the main sites.

Town

The main settlement at Ollantaytambo has an orthogonal layout with four longitudinal streets crossed by seven parallel streets.^[9] At the center of this grid, the Incas built a large plaza which may have been up to four blocks large; it was open to the east and surrounded by halls and other town blocks on its other three sides.^[10] Inca buildings to the north of the plaza were built out of unworked fieldstones while those to the west and to the south were made with cut and fitted stones.^[11] All blocks on the southern half of the town were built to the same design: each comprised two *kancha*, walled compounds with four one-room buildings around a central courtyard.^[12] Buildings in the northern half are more varied in design, however, most are in such a bad condition that their original plan is hard to establish.^[13]



'Araqhama and the plaza of Manyaraki



A typical Inca doorway still used in the town.
Note the single stone lintel, a sign of importance.

Ollantaytambo dates from the late 15th century and has some of the oldest continuously occupied dwellings in South America.^[14] Its layout and buildings have been altered to different degrees by later constructions, for instance, on the southern edge of the town an Inca esplanade with the original entrance to the town was rebuilt as a Plaza de Armas surrounded by colonial and republican buildings.^[15] The plaza at the center of the town also disappeared as several buildings were built over it in colonial times.^[16]

'Araqhama is a western prolongation of the main settlement, across the Patakancha River; it features a large plaza, called Manyaraki, surrounded by constructions made out of adobe and semi-cut stones. These buildings have a much larger area than their counterparts in the main settlement, they also have very tall walls and oversized doors. To the south there are other structures, but smaller and built out of fieldstones. 'Araqhama has been continuously occupied since Inca times, as evidenced by the Roman Catholic church on the eastern side of the plaza.^[17] To the north of Manyaraki there are several sanctuaries with carved stones, sculpted rock faces and elaborate waterworks, they include the Templo de Agua and the Baño de la Ñusta.^[18]

Temple Hill

'Araqhama is bordered to the west by Cerro Bandolista, a steep hill on which the Incas built a ceremonial center. The part of the hill facing the town is occupied by the terraces of Pumataallis, framed on both flanks by rock outcrops. Due to impressive character of these terraces, the Temple Hill is commonly known as the Fortress, however, this is a misnomer as the main functions of this site were religious. The main access to the ceremonial center is a series of stairways that climb to the top of the terrace complex. At this point, the site is divided into three main areas: the Middle sector, directly in front of the terraces; the Temple sector, to the south; and the Funerary sector, to the north.^[19]



Wall of the Six Monoliths

The Temple sector is built out of cut and fitted stones in contrast to the other two sectors of the Temple Hill which are made out of fieldstones. It is accessed via a stairway that ends on a terrace with a half finished gate and the Enclosure of the Ten Niches, a one room building. Behind them there is an open space which hosts the Platform of the Carved Seat and two unfinished monumental walls. The main structure of the whole sector is the Sun Temple, an uncompleted building which features the Wall of the Six Monoliths.^[20] The Middle and Funerary sectors have several rectangular buildings, some of them with two floors; there are also several fountains in the Middle sector.^[21]

The unfinished structures at the Temple Hill and the numerous stone blocks that litter the site indicate that it was still undergoing construction at the time of its abandonment. Some of the blocks show evidences of having been removed from finished walls, which provides evidence that a major remodeling effort was also underway.^[22] It is unknown which event halted construction at the Temple Hill, likely candidates include the war of succession between Huáscar and Atahualpa, the Spanish Conquest of Peru and the retreat of Manco Inca from Ollantaytambo to Vilcabamba.^[23]



"The bath of the princess", a fountain at the base of the ruins.

Terraces

The valleys of the Urubamba and Patakancha rivers along Ollantaytambo are covered by an extensive set of agricultural terraces which start at the bottom of the valleys and climb up the surrounding hills. The terraces permitted farming on otherwise unusable terrain; they also allowed the Incas to take advantage of the different ecological zones created by variations in altitude.^[24] Terraces at Ollantaytambo were built to a higher standard than common Inca agricultural terraces, for instance, they have higher walls made of cut stones instead of rough fieldstones. This type of high-prestige terracing is also found in other Inca royal estates such as Chinchero, Pisaq, and Yucay.^[25]



Terraces of Pumattallis

A set of sunken terraces start south of Ollantaytambo's Plaza de Armas, stretching all the way to the Urubamba River. They are about 700 meters long, 60 meters wide and up to 15 meters below the level of surrounding terraces; due to their shape they are called *Callejón*, the Spanish word for alley. Land inside Callejón is protected from the wind by lateral walls which also absorb solar radiation during the day and release it during the night; this creates a microclimate zone 2 to 3°C warmer than the ground above it. These conditions allowed the Incas to grow species of plants native to lower altitudes that otherwise could not have flourished at this site.^[26]

At the southern end of Callejón, overlooking the Urubamba River, there is an Inca site called Q'ellu Raqay. Its interconnected buildings and plazas form an unusual design quite unlike the single-room structures common in Inca architecture. As the site is isolated from the rest of Ollantaytambo and surrounded by an elaborate terraces, it has been postulated that it was a palace built for emperor Pachacuti.^[27]

Storehouses

The Incas built several storehouses (Quechua: *qollqa*) out of fieldstones on the hills surrounding Ollantaytambo. Their location at high altitudes, where there is more wind and lower temperatures, defended their contents against decay. To enhance this effect, the Ollantaytambo *qollqas* feature ventilation systems. It is believed that they were used to store the production of the agricultural terraces built around the site.^[28] Grain would be poured in the windows on the uphill side of each building, then emptied out through the downhill side window.^[29]



Inca storehouses near Ollantaytambo

Quarries

The main quarries of Ollantaytambo were located at Kachiqhata, in a ravine across the Urubamba River some 5 kilometers from the town. The site features three main quarrying areas: Mullup'urku, Kantirayoq, and Sirkusirkuyoq; all of them provided blocks of rose rhyolite for the elaborate buildings of the Temple Hill. An elaborate network of roads, ramps, and slides connected them with the main building areas. In the quarries there are several *chullpas*, small stone towers used as burial sites in Pre-Hispanic times.^[30]

Defenses

As Ollantaytambo is surrounded by mountains, the main access routes run along the Urubamba Valley; there the Incas built roads connecting the site with Machu Picchu to the west and Písaq to the east. During the Spanish conquest of Peru, emperor Manco Inca fortified the eastern approaches to fend off Spanish attacks from Cusco. The first line of defense was a steep bank of terraces at Pachar, near the confluence of the Anta and Urubamba rivers. Behind it, the Incas channeled the Urubamba to make it cross the valley from right to left and back thus forming two more lines, which were backed by the fortifications of Choqana on the left bank and 'Inkapintay on the right bank. Past them, at the plain of Mascabamba, eleven high terraces closed the valley between the mountains and a deep canyon formed by the Urubamba. The only way to continue was through the gate of T'iyupunku, a thick defensive wall with two narrow doorways. To the west of Ollantaytambo, the small fort of Choquequillca defended the road to Machu Picchu. In the event of these fortifications being overrun, the Temple Hill itself with its high terraces provided a last line of defense against invaders.^[31]

See also

- Inca architecture
- Sacred Valley
- Tourism in Peru
- List of megalithic sites
- PeruRail

Notes

- [1] Protzen, *Inca architecture*, p. 19.
- [2] Protzen, *Inca architecture*, p. 64.
- [3] Protzen, *Inca architecture*, p. 27.
- [4] Protzen, *Inca architecture*, p. 26.
- [5] Protzen, *Inca architecture*, p. 23.
- [6] Hemming, *The conquest*, pp. 222–223.
- [7] Glave and Remy, *Estructura agraria*, p. 6.
- [8] Hemming, *The conquest*, pp. 559.
- [9] Protzen, *Inca architecture*, p. 50.
- [10] Protzen, *Inca architecture*, pp. 50, 52.
- [11] Protzen, *Inca architecture*, p. 52.
- [12] Protzen, *Inca architecture*, p. 53.
- [13] Protzen, *Inca architecture*, p. 65.
- [14] Kubler, *The art and architecture*, pp. 462–463.
- [15] Protzen, *Inca architecture*, pp. 48–49.
- [16] Gasparini and Margolies, *Inca architecture*, p. 71.
- [17] Protzen, *Inca architecture*, pp. 66–70.
- [18] Protzen, *Inca architecture*, p. 28.
- [19] Protzen, *Inca architecture*, pp. 73–74.
- [20] Protzen, *Inca architecture*, pp. 81–87.
- [21] Protzen, *Inca architecture*, pp. 87–91.
- [22] Protzen, *Inca architecture*, pp. 92–94.
- [23] Protzen, *Inca architecture*, p. 269.
- [24] Protzen, *Inca architecture*, pp. 30–34.
- [25] Hyslop, *Inka settlement*, pp. 282–284.
- [26] Protzen, *Inca architecture*, p. 97.
- [27] Protzen, *Inca architecture*, pp. 102–110.
- [28] Protzen, *Inca architecture*, pp. 111–135.
- [29] Robert Randall, referenced by Peter Frost, p148 "Exploring Cusco", 1999.
- [30] Protzen, *Inca architecture*, pp. 137–153.
- [31] Protzen, *Inca architecture*, pp. 22–26.

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External links

- Ollantaytambo travel guide from Wikitravel
- CATCCO (<http://www.catcco.org>), local museum

Geographical coordinates: 13°15′29″S 72°15′48″W﻿ / ﻿13.25806°S 72.26333°W﻿ / -13.25806; -72.26333

Nazca Lines

Geographical coordinates: 14°43'00"S 75°08'00"W

Lines and Geoglyphs of Nazca and Pampas de Jumana*	
UNESCO World Heritage Site	
	
State Party	Peru
Type	Cultural
Criteria	i, iii, iv
Reference	700 ^[1]
Region**	Latin America and the Caribbean
Inscription history	
Inscription	1994 (18th Session)
<small>* Name as inscribed on World Heritage List.^[2]</small> <small>** Region as classified by UNESCO.^[3]</small>	

The **Nazca Lines** are a series of ancient geoglyphs located in the Nazca Desert in southern Peru. They were designated a UNESCO World Heritage Site in 1994. The high, arid plateau stretches more than 80 kilometres (50 mi) between the towns of Nazca and Palpa on the *Pampas de Jumana* about 400 km south of Lima. Although some local geoglyphs resemble Paracas motifs, scholars believe the Nazca Lines were created by the Nazca culture between 400 and 650 AD.^[2] The hundreds of individual figures range in complexity from simple lines to stylized hummingbirds, spiders, monkeys, fish, sharks or orcas, llamas, and lizards.

The lines are shallow designs made in the ground by removing the ubiquitous reddish pebbles and uncovering the whitish ground beneath. Hundreds are simple lines or geometric shapes; more than seventy are designs of animal, bird, fish or human figures. The largest figures are over 200 metres (660 ft) across. Scholars differ in interpreting the purpose of the designs, but they generally ascribe religious significance to them.

The geometric ones could indicate the flow of water or be connected to rituals to summon water. The spiders, birds, and plants could be fertility symbols. Other possible explanations include: irrigation schemes or giant astronomical calendars.^[3]

Due to the dry, windless and stable climate of the plateau and its isolation, for the most part the lines have been preserved. Extremely rare changes in weather may temporarily alter the general designs.

Discovery and construction

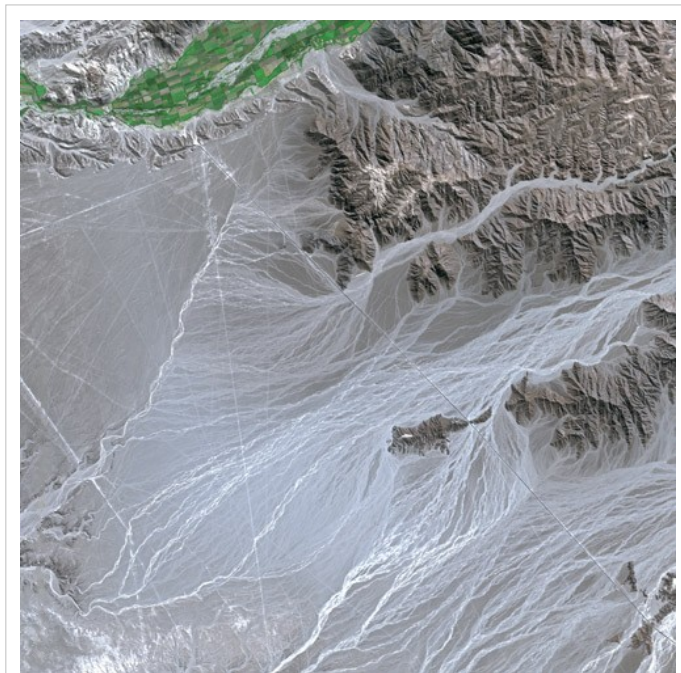
After people traveled over the area by plane in the 1930s and saw the Nazca Lines from the air, anthropologists started studying them. One of the issues that intrigued scholars was to try to understand how they were made.

Scholars have theorized the Nazca people could have used simple tools and surveying equipment to construct the lines. Studies have found wooden stakes in the ground at the end of some lines, which support this theory. One such stake was carbon-dated and the basis for establishing the age of the design complex. Researcher Joe Nickell of the University of Kentucky has reproduced the figures by using tools and technology available to the Nazca people. The *National Geographic* called his work "remarkable in its exactness" when compared to the actual lines.^[4] With careful planning and simple technologies, a small team of people could recreate even the largest figures within days, without any aerial assistance.^[5] Most of the lines form a trench about six inches deep.

The lines were made by removing the reddish-brown iron oxide-coated pebbles that cover the surface of the Nazca desert. When the gravel is removed, the light-colored earth beneath shows in lines of sharply contrasting color and tone. The Nazca "drew" several hundred simple but huge curvilinear animal and human figures by this technique. In total, the earthwork project is huge and complex: the area encompassing the lines is nearly 500 square kilometres (190 sq mi), and the largest figures can span nearly 270 metres (890 ft). The extremely dry, windless, and constant climate of the Nazca region has preserved the lines well. The Nazca desert is one of the driest on Earth and maintains a temperature around 25 °C (77 °F) all year round. The lack of wind has helped keep the lines uncovered and visible to the present day.

Purpose

Archeologists, ethnologists and anthropologists have studied the ancient Nazca culture and the complex to try to determine the purpose of the lines and figures. One theory is that the Nazca people created them to be seen by their gods in the sky. Kosok and Reiche advanced a purpose related to astronomy and cosmology: the lines were intended to act as a kind of observatory, to point to the places on the distant horizon where the sun and other celestial bodies rose or set. Many prehistoric indigenous cultures in the Americas and elsewhere constructed earthworks that combined such astronomical sighting with their religious cosmology, as did the later Mississippian culture at Cahokia in present-day United States. Another example is Stonehenge in England. But, Gerald Hawkins and Anthony Aveni, experts in archaeoastronomy, concluded in 1990 that there was insufficient evidence to support such an astronomical explanation.^[6]



Nazca Lines seen from SPOT Satellite

In 1985, the archaeologist Johan Reinhard published archaeological, ethnographic, and historical data demonstrating that worship of mountains and other water sources predominated in Nazca religion and economy from ancient to recent times. He theorized that the lines and figures were part of religious practices involving the worship of deities associated with the availability of water, which directly related to the success and productivity of crops. He interpreted the lines as sacred paths leading to places where these deities could be worshiped. The figures were symbols representing animals and objects meant to invoke the gods' aid in supplying water. But, the precise

meanings of many of the individual geoglyphs remain unsolved as of 2010.

Henri Stierlin, a Swiss art historian specializing in Egypt and the Middle East, published a book in 1983 linking the Nazca Lines to the production of ancient textiles which archeologists have found wrapping mummies of the Paracas culture.^[7] He contended that the people may have used the lines and trapezes as giant, primitive looms to fabricate the extremely long strings and wide pieces of textile that are typical of the area. By his theory, the figurative patterns (smaller and less common) were meant only for ritualistic purposes.

Alternative theories

Some individuals propose alternative theories. Jim Woodmann believes that the Nazca Lines could not have been made without some form of manned flight to see the figures properly. Based on his study of available technology, he suggests that a hot air balloon was the only possible means of flight. To test this hypothesis, Woodmann made a hot-air balloon using materials and techniques which he understood were available to the Nazca people. The balloon flew, after a fashion. Most scholars have rejected Woodmann's thesis,^[5] because of the lack of any evidence of such balloons.^[8]

Swiss author Erich von Däniken suggests the Nazca lines and other complex constructions represent higher technological knowledge than he believes existed when the glyphs were created. Von Däniken maintains that the Nazca lines in Peru are runways of an ancient airfield that was used by extraterrestrials mistaken by the natives to be their gods.

Maria Reiche's protegee Phillis Pitluga, an astronomer at the Adler Planetarium & Astronomy Museum, believes, based on computer aided studies of star alignments, that the giant spider figure is an anamorphic diagram of the constellation Orion. She further suggests that three

of the straight lines leading to the figure were used to track the changing declinations of the three stars of Orion's Belt but does not take into account the other twelve lines. Aveni has commented on her work, saying

I really had trouble finding good evidence to back up what she contended. Pitluga never laid out the criteria for selecting the lines she chose to measure, nor did she pay much attention to the archaeological data Clarkson and Silverman had unearthed. Her case did little justice to other information about the coastal cultures, save applying, with subtle contortions, Urton's representations of constellations from the highlands. As historian Jacquetta Hawkes might ask: was she getting the pampa she desired?^[9]



Satellite picture of an area containing lines. North is to the right.
(Coordinates: 14°43'S 75°08'W)

Environmental concerns

People trying to preserve the Nazca Lines are concerned about threats of pollution and erosion caused by deforestation in the region.

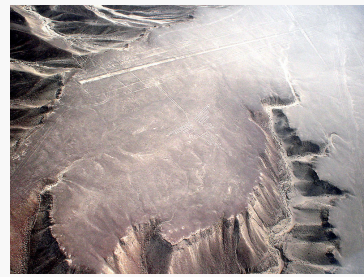
The Lines themselves are superficial, they are only 10 to 30 cm deep and could be washed away...

Nazca has only ever received a small amount of rain. But now there are great changes to the weather all over the world. The Lines cannot resist heavy rain without being damaged.

– Viktoria Nikitzki of the Maria Reiche Centre^[10]

After flooding and mudslides in the area in mid-February 2007, Mario Olaechea Aquije, archaeological resident from Peru's National Institute of Culture, and a team of specialists surveyed the area. He said, "[T]he mudslides and heavy rains did not appear to have caused any significant damage to the Nazca Lines," but the nearby Southern Pan-American Highway did suffer damage, and "the damage done to the roads should serve as a reminder to just how fragile these figures are."^[11]

Images



The Hummingbird



The Condor



The Heron



The Astronaut



The Spider



The Pelican



The Dog



Seaweed

Notes

- [1] <http://whc.unesco.org/en/list/700>
- [2] Helaine Silverman, David Browne (1991). "New evidence for the date of the Nazca lines" (<http://www.antiquity.ac.uk/Ant/065/Ant0650208.htm>). *Antiquity* **65** (247): 208–220.
- [3] Brown, Cynthia Stokes (2007). *Big History*. New York: The New Press. pp. 167. ISBN 978-1-59558-196-9.
- [4] Nickell, Joe (2005). *Unsolved History: Investigating Mysteries of the Past* (<http://books.google.co.uk/books?id=1V-BIdlc9YEC&pg=PA6&dq=joe+nickell+nazca+lines&cd=1#v=onepage&q=nazca&f=false>), The University Press of Kentucky ISBN 978-0813191379, pp. 13-16
- [5] Katherine Reece, "Grounding the Nasca Balloon" (<http://www.hallofmaat.com/modules.php?name=Articles&file=article&sid=96>), *Into the Hall of Ma'at* website
- [6] Cameron, Ian (1990). *Kingdom of the Sun God: a history of the Andes and their people*. New York: Facts on File. p. 46. ISBN 0-8160-2581-9.
- [7] Stierlin (1983)
- [8] Haughton (2007)

- [9] Aveni, Anthony F. *Between the Lines: The Mystery of the Giant Ground Drawings of Ancient Nasca, Peru*. Austin Texas: University of Texas Press. 1 July 2006 ISBN0292704968 p.205 (<http://books.google.co.uk/books?id=J5mEfUJgno0C&pg=PA204&dq=pitluga+nazca+lines&ei=zpVES4LGEJ-SygTgp53oBw&client=firefox-a&cd=1#v=onepage&q=&f=false>)
- [10] Shafik Meghji, "Flooding and tourism threaten Peru's mysterious Nazca Lines" (<http://news.independent.co.uk/world/americas/article47725.ece>), *The Independent*, July 17, 2004. Accessed April 02, 2007.
- [11] Living in Peru. "Peru: Nazca Lines escape mudslides" (<http://www.livinginperu.com/news/3228>), *Living in Peru*, February 20, 2007. Accessed April 02, 2007.

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Further reading

- Johnson, Emma. 2007. The 'Mysterious' Nazca Lines (<http://pseudoarchaeology.org/b01-johnson.html>). PARA Web Bibliography B-01.

External links

- Nazca lines (http://www.dmoz.org/Science/Social_Sciences/Archaeology/Alternative/South_America/Nazca_lines/) at the Open Directory Project
- Nazca Lines in Google Earth (<http://www.gearthhacks.com/dlfile6087/Nazca-lines-overlay.htm>)

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