Worlds Below:

Chthonic Architecture and Ritual Spaces of the Mediterranean

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ARC 548: Architecture and the History of the Earth

May 13, 2021

To suggest that the conditions of the Earth have influenced the development of civilizations, and therefore architecture, is nothing new. We are quite familiar with the idea that humans tend to settle where water is easily accessible, the ground is fertile for agriculture, and there are adequate resources for building shelter. There's also a fairly common recognition that the physical conditions of the ground influence what architecture will emerge there. A notable example is the cliff-dwellings of the Mesa Verde region in present-day Colorado. Due to changes in climate, Mesa Verde's populations saw considerable growth in the Pueblo III period, resulting in increased reliance on agriculture and the emergence of denser settlements. For both natural protection but also defense in periods of warfare, many of these settlements took advantage of naturally occuring alcoves in the cliff faces, producing the architecture this region is now well-known for.[1]

Fig. 1 — Cyclopean walls built on fault scarps at the Lion Gate. Photo from Wikimedia by Sharon Morellus.

[1] John Kantner, "The AD 1200s: the Great Pueblo period," in *Ancient Puebloan Southwest* (Cambridge: Cambridge University Press, 2004), 163-171.

Other instances may not be so obvious. Ian S. Stewart and Luigi Piccardi have written on how the seismic faults of the Aegean region, which are at times deadly and destructive, have also contributed to sites which are well-suited to the settlement and growth of cities.[2] In Mycenae, for example, fault movement over time produced limestone scarps or bluffs. The fault scarps act as natural ramparts on which the cyclopean walls could be built, and can be clearly scene in photos of the famous Lion Gate (Fig. 1).[3] Combined with natural springs—also the result of seismic activity—these scarps provided advantageous conditions on which Mycenae could be founded.

It can be seen in both the cases of Mesa Verde and Mycenae how geological conditions have not only provided important natural resources but also features which have allowed populations to better defend and shelter themselves. What is less widely considered, however, is how the conditions of the Earth have motivated architecture outside of shelter and survival—more specifically, how unique natural and geological occurrences have been appropriated for, or even motivated, spiritual and ritual practices. While these spaces and architectures are often analyzed within their relationships to pre-existing societies and cultures, the ways in which they are related foremost to the Earth is not as frequently considered. This paper is the result of research on the architecture of ritual spaces, especially those with chthonic associations, and the geological conditions that have produced them.

Connections between the spirit world or world of the dead and the depths of the Earth are common across cultures. The widespread belief in the under- or netherworld as a supernatural plane deep beneath the ground has produced associations with the subterranean as spiritual and liminal space. As part of research on the Chalcolithic Ghassulian culture in present-day Jordan,

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[2] Ian S. Stewart and Luigi Piccardi, "Seismic faults and sacred sanctuaries in Aegean antiquity," *Proceedings of the Geologists' Association* 128, no. 5-6 (October 2017): 711-721.

[3] Ibid., 712.

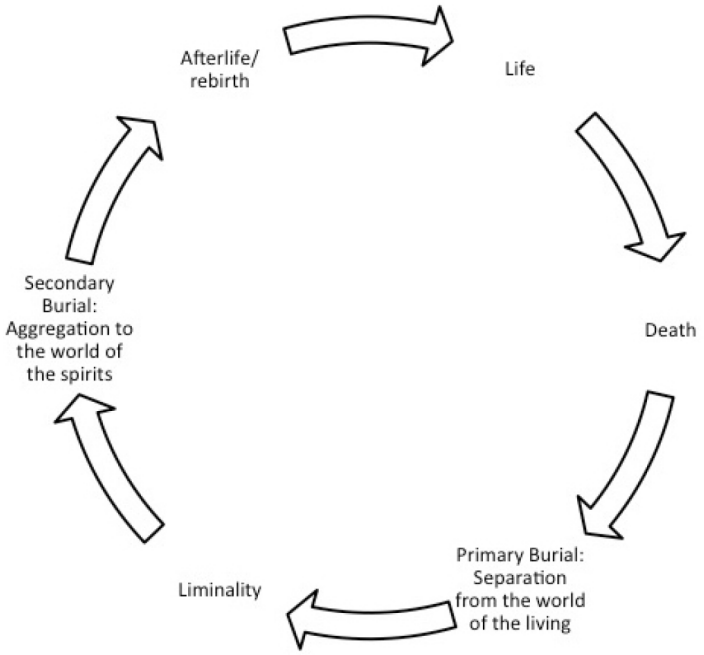

Fig. 2 — Diagram showing funery processes of Chalcolithic period. From Bernadette Drabsch.

Bernadette Drabsch states:

> Why the people of this zone chose the damp and dark caves into which to place their exquisite ossuaries and treasures and dispose of their dead remains unknown at this point. Yet it is possible that the position of the caves within the landscape, with their difficult access and subterranean other-worldly nature was of particular importance. The environmental position of the caves would have invested them with an atmosphere of liminality, becoming a place of transition where mortuary rituals could be performed and the bones of the deceased placed in the dark, womb-like earthen caverns. This perhaps implies that the earth was viewed as a mother, into which the bodies were placed to be reborn at a later stage.[4]

[4] Bernadette Drabsch, "Society, Culture and Ritual Context," in *The Mysterious Wall Paintings of Teleilat Ghassul, Jordan: In Context* (Oxford: Archaeopress Publishing, 2015), 24.

While this analysis is by no means universal and should not be removed from its specific context, Drabsch's assessment on the liminality of these spaces makes an important point that the liminal quality inherent in the cave as a geological formation—as simultaneously belonging to the subterranean and to the surface—is what motivates its inclusion in rituals of conceptual liminal space, such as between life and death.

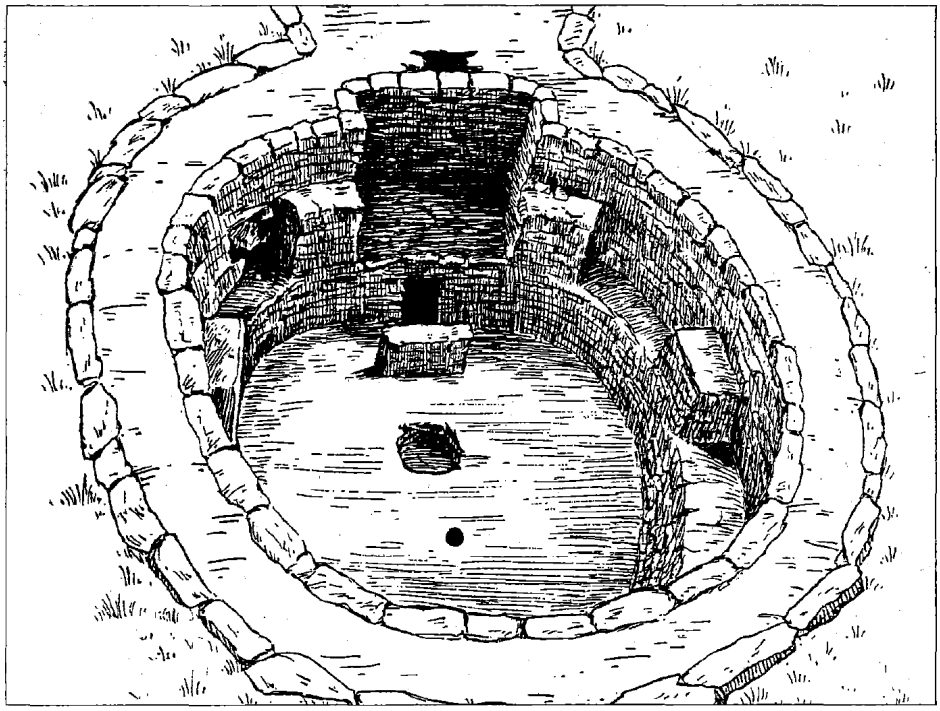

Fig. 3 — Illustration of a kiva and sipapu. From William D. Lipe.

As in the previous case, chthonic spaces are often naturally occurring, geological phenomena found and appropriated for ritual use. The research collected by Holley Moyes in *Sacred Darkness: A Global Perspective on the Ritual Use of Caves* demonstrates the significance of "the ritual use of caves for sacred, religious, special, or cultic pursuits as a generalized cultural phenomenon, cross-cutting temporal and spatial boundaries."[5] At other times they are artificial

[5] Holley Moyes, ed., introduction to *Sacred Darkness: A Global Perspective on the Ritual Use of Caves* (Boulder: University Press of Colorado, 2012), 1.

spaces, intended to somehow connect the inhabitants with the underworld through excavation in a similar (or perhaps opposite) way as temples and monuments erected toward deities in the heavens.[6] Returning to the earlier example of Mesa Verde provides an example in the form of the *kiva* (Fig. 3). The kiva is a small pit dug into the earth which doubled as a gathering and ritual space. Typically contained within a kiva is a smaller pit known as the *sipapu*, which was symbolic of the place where living beings were believed to have first entered the world from the underworld.[7]

Often, the distinction of naturally occurring and artificial is not mutually exclusive. As with the previous examples of Mycenae and Mesa Verde as architectures which are deeply rooted in conditions of the Earth, many ritual spaces are the result of local geological phenomena around which architecture has been built. As Moyes points out, the definition of ritual is broad, and attempting to relate this to the equally broad ideas of geology and nature is difficult.[8] Thus, for the purposes of this paper, I will confine myself geographically to the seismically active regions of southern Italy and the Aegean, expanding on the work of Stewart and Piccardi, and with the understanding that similar research might be conducted elsewhere. These confines alone are still fairly broad, and rich with connections between architecture, ritual, and the Earth.

Perhaps the most notable ritual site within this region is the Acropolis of Athens. Beyond the Parthenon, the sacred hill of the Acropolis is covered with architecture and other sites dedicated to various deities and their rituals. The rocky outcroppings of the hill are carved with several cave-shrines, notably the caves of Pan, Zeus and Apollo Pythios, and beneath these is the

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[6] Timothy Carson, "Life, Death and Rebirth," in *Liminal Reality and Transformational Power: Revised Edition: Transition, Renewal and Hope* (Cambridge: The Lutterworth Press, 2016), 6.

[7] William D. Lipe, "The Mesa Verde Region during Chaco Times," in *The Mesa Verde World: Explorations in Ancestral Pueblo Archaeology*, ed. David Grant Noble (Santa Fe: School of American Research Press, 2006), 31.

[8] Holley Moyes, ed., introduction to *Sacred Darkness: A Global Perspective on the Ritual Use of Caves* (Boulder: University Press of Colorado, 2012), 7.

Klepsydra, a spring that has provided water across Athens' history (Fig. 4).[9] The spring of the Klepsydra emerged from a cave within the hillside, and was believed to be the sanctuary of a nymph, Empedo. Additionally, adjacent to the Klepsydra is a paved court considered a ritual space connected with the cave-shrine of Apollo Pythios.[10]

Fig. 4 — View of the Acropolis from the Areopagus. The Klepsydra is behind vegetation at the base of the hill, beneath the cave. From Wikimedia.

From the grotto-like nymphaeum of the Klepsydra to the cave-shrines with possible chthonic associations, especially in the case of Apollo Pythios, and then further up to the temples given prominence on top of the hill, the Acropolis demonstrates a holistic use of the natural landscape as ritual space. The Acropolis is a klippe, a massive piece of Earth which has been seismically displaced such that it stands as a fairly flat-topped hill amid a relatively flat plain, a fact that has resulted in its use as both citadel and religious center across its history.[11] Emerging

[9] Arthur W. Parsons, "Klepsydra and the Paved Court of the Pythion," *Hesperia: The Journal of the American School of Classical Studies at Athens* 12, no. 3 (July - September, 1943): 193, 234.

[10] Ibid., 232-35.

[11] Manuel Regueiro y González-Barros, Michael Stamatakis and Konstantinos Laskaridis, "The geology of the Acropolis (Athens, Greece)," *European Geologist* 38 (November 2014): 45-47.

from within it is the spring of the Klepsydra, which has served not only as a source of water but also as a sacred place—or rather, *because* it is a source of water it is also a sacred place through its nymph. Finally, the cliff faces between the temples at the top of the hill and the Klepsydra and court at its base have been crafted into cave-shrines for deities who are simultaneously connected to the Earth through caves, yet are also openly displayed out into the city. Additionally, the shrine of Apollo Pythios gains further chthonic connotations through its connection to the paved court within the base of the hill and the rituals there which proceed on to the Pythia of Delphi.[12]

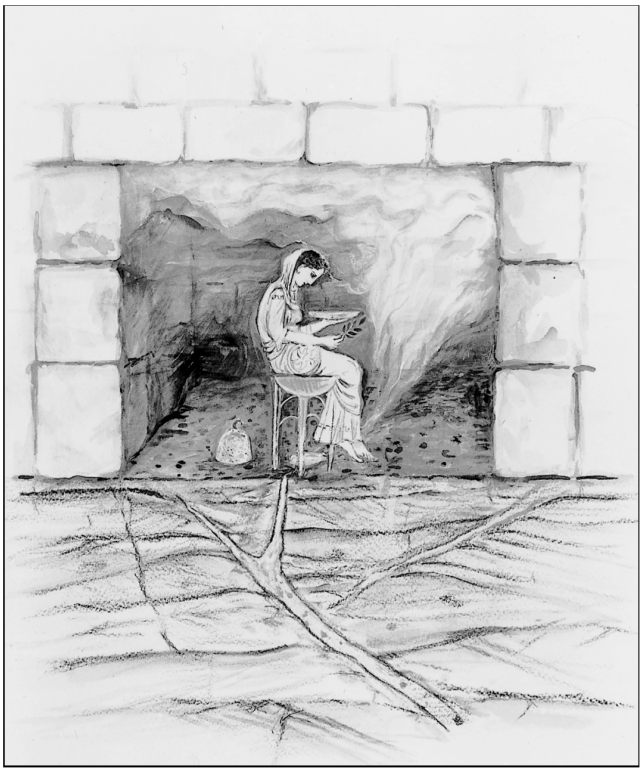

Fig. 5 — Sketch of the Pythia in the adyton, seated above fissures. From De Boer et. al.

Of course, the Temple of Apollo at Delphi is another notable ritual site with long-established ties to the Earth. Classical sources claim that the oracle, a woman called the Pythia, would enter the adyton below the temple where she sat on a tripod and inhaled vapors

[12] Arthur W. Parsons, "Klepsydra and the Paved Court of the Pythion," 235.

from the Earth, allowing her to enter into a trance and deliver her answers.[13] Plutarch, who was a priest at the Temple of Apollo, claimed that "the gaseous emission in the adyton was weak and unpredictable, but it had a sweet smell like perfume" and that the Pythia could also receive the vapors through spring water.[14] Until recently, Plutarch's identification of vapors within the Pythia's chamber had been widely considered fiction, as no evidence of such vapors currently exist within the adyton. However, recent studies by J.Z. de Boer, J.R. Hale and J. Chanton have demonstrated that the Temple of Apollo is actually situated above two faults, which could reasonably have contributed to the vapors and springs which Plutarch described.[15] Upon further investigation of an extant spring near the temple, de Boer et. al. discovered traces of ethylene, a chemical known for a sweet smell and symptoms of intoxication which fit Plutarch's descriptions of the Pythia. Additionally, their research determined that heat produced by seismic activity and porosity of the stone within the adyton could have allowed other chemicals to vaporize (Fig. 5).[16]

The Temple of Apollo is a notable example not only because of the way its architecture functions, but because its geological conditions were well-understood, at least in Plutarch's own time. While the exact circumstances of its founding are hard to determine, this suggests the architecture of the Temple of Apollo, including its unusual subterranean adyton, was built to harness the observed emission of vapors and their presence in the spring water. There appears to be no artifice, no ignorance of or attempt to hide the conditions which allowed for a trance. Rather, the Pythia's submersion into the adyton, consuming or bathing in spring water, and positioning herself on a seat above fissures which emitted these vapors were all considered

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[13] J.Z. de Boer, J.R. Hale and J. Chanton, "New evidence for the geological origins of the ancient Delphic oracle (Greece)," *Geology* 29, no. 8 (August 2001): 707.

[14] Ibid.

[15] Ibid., 708.

[16] Ibid., 709.

mechanisms which allowed for the Pythia to achieve an elevated spiritual state and perform the ritual. And, as Plutarch suggested, once the geological condition changed and the vapors or spring waters ceased or diminished, the prominence of the Delphic Oracle went into decline.[17]

Fig. 6 — Aerial view of the Plutonium showing the grotto (center) and theater seats. From web.

A similar phenomenon gave rise to the Plutonium at Hierapolis in present-day Turkey. The Plutonium was a temple built around a sacred grotto dedicated to Hades, into which priests would lead sacrificial animals, dragging them out after sudden death while they themselves went unharmed. Strabo recounts his visit to the Plutonium:

> . . . an opening of only moderate size, large enough to admit a man, but it reaches a considerable depth, and it is enclosed by a quadrilateral handrail, about half a plethrum in circumference, and this space is full of a vapour so misty and dense that one can scarcely see the ground. Now to those who approach the handrail anywhere round the enclosure the air is harmless, since the outside is free from

[17] J.Z. de Boer, et. al., "New evidence for the geological origins of the ancient Delphic oracle," 707.

> that vapor in calm weather, for the vapor then stays inside the enclosure, but any animal that passes inside meets instant death. At any rate, bulls that are led into it fall and are dragged out dead; and I threw in sparrows and they immediately breathed their last and fell. But the Galli, who are eunuchs, pass inside with such impunity that they even approach the opening, bend over it, and descend into it to a certain depth, though they hold their breath as much as they can (for I could see in their countenances an indication of a kind of suffocating attack, as it were) . . .[18]

As with Plutarch at Delphi, it's important to note that Strabo recognized by observation not only that the vapors were responsible for the animals' deaths—which could still be and were attributed to Hades or the guardian beast Kerberos—but that the priests themselves understood this and survived by holding their breath, as recognized by their countenance.

Recently, Hardy Pfanz, Galip Yüce, Ahmet H. Gulbay, and Ali Gokgoz were able to use gas sensor systems to investigate chambers beneath the Temple of Apollo, where the Plutonium was originally believed to be located, and around the more recently discovered and excavated grotto that is now considered to be the Plutonium mentioned in classical sources. The results revealed high concentrations of carbon dioxide gas in both chambers, suggesting the presence of a carbon dioxide lake in the cavities beneath the temples more than capable of killing a person or animal in no more than a few minutes.[19] As Strabo observed, priests entering these chambers and grottos were only able to survive by keeping their heads above these invisible lakes, holding their breath, and exiting quickly.

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[18] Strabo, *Geography*, trans. H. L. Jones (Cambridge, MA: Harvard University Press, 1924), XIII, 4, 14.

[19] Hardy Pfanz, Galip Yüce, Ahmet H. Gulbay, and Ali Gokgoz, "Deadly CO_2 gases in the Plutonium of Hierapolis (Denizli, Turkey)," *Archaeological and Anthropological Sciences* 11 (2019): 1359-71.

This natural occurrence is, similarly to Delphi, the result of the temples being established in an active fault zone, which has allowed these gases to be released, escaping the surface at the locations of these temples.[20] These same faults have contributed to the hot springs which Hierapolis is also famous for. Strabo also mentions the strange waters of these springs, which "so easily congeals and changes into stone that people conduct streams of it through ditches and thus make stone fences consisting of single stones."[21] Both the baths and the Plutonium are made possible by the same geological activity, producing geothermally heated springs as well as emitting carbon dioxide vapors. Enjoyment of the hot springs, and the fascination of its strange waters as well as the Plutonium, contributed to a culture of tourism in Hierapolis. Thus, the architecture of the Plutonium is one of a theater, in which visitors are drawn into terraced seats to observe the spectacle of the sacrifice. Like Strabo, visitors were even able to purchase birds and other animals to participate in the ritual themselves.

Both the Temple of Apollo at Delphi and the Plutonium at Hierapolis demonstrate architectures which are inseparable from the geological phenomena which produced them. Typically, temple architecture is considered as a kind of place-making, in which the architecture itself delineates a site which is considered sacred and within which rituals may occur. Yet the close connection of these temples, the geogenic emissions which occur beneath them, and the rituals that have been built through their different uses means that the architecture must be considered as secondary. The place has already been made long, long ago, and so the architectures built here are meant to respond to rituals, not produce them. This is not to say that the architecture is insignificant, merely an observer in some sacred act between humans and the Earth; on the contrary, the architecture gains more significance in the way it navigates these

[20] Ian S. Stewart and Luigi Piccardi, "Seismic faults and sacred sanctuaries in Aegean antiquity," 717.

[21] Strabo, *Geography*, XIII, 4, 14.

unusual terrains. The Temple of Apollo at Delphi, for example, is built with the understanding that despite its demarcation above, and whatever other rituals might occur there, the most significant space lies beneath the ground, in the adyton where the Pythia enters her trance. On the other hand, the most significant space in the Plutonium is deadly and uninhabitable, and so the architecture there has been produced with the intention of displaying the ritual, centered on the grotto and its procession.

Both of these spaces rely on found conditions of the Earth, but also on their architectures. To whatever extent the building is allowing the Pythia or the priests of the Plutonion to perform their rituals is negligible—the springs and vapors would still be there to produce a trance, and the grotto would remain just as deadly. However, the power of the architecture is in giving context to these rituals in their performance for others. Mythologies and histories have been built around the procession to the Delphic Oracle, where to finally be received one must descend beneath the ground. In the liminal space of the adyton, the Pythia becomes a medium between worlds and imparts her wisdom, allowing the visitor to reemerge from the Earth, awakened to their fate. The Plutonium, though not as notable as Delphi, is a powerful liminal space in itself. In other temples, a sacrifice is the performance of a ritual in which an animal is offered, but in the Plutonium visitors also bear witness to the location of their crossover—carefully mediated by the benches of the theater. Approaching the grotto themselves, the threshold clearly demarcated against the temple wall, visitors come face to face with the Gate of Hell. Releasing their bird and watching it fall, they realize exactly how close they are, only to return safely to their seats.

Just as Drabsch has analyzed that the Chalcolithic peoples of Teleilat Ghassul may have embraced the liminal space of the cave as befitting the liminality inherent in the act of burial—a rite of passage by which those who have been separated from the living are finally passed into

memory—the adyton and the grotto are architectural acts by which the liminality of the cave is reinterpreted in the performance of these chthonic rituals. In other words, the adyton and the grotto construct an idea of liminality around the ritual sites, allowing for their reception as chthonic rather than merely geological phenomena.

Ultimately, the reception of these spaces is bound to mythology and cultural understandings of the chthonic in Greek and Roman antiquity. Further research should be conducted into similar geological phenomena and their resulting architecture in other places of the world and across history, particularly those with an idea of the underworld, to investigate for similar ideas of liminality. Holley Moyes' cross-cultural investigation of ritual spaces in the cave is a strong example of what this research might look like. Additionally, separate research might consider other geological occurrences, or ritual spaces tied to other spiritual concepts. Through this body of research, we might begin to build on our understandings of architecture, ritual and the Earth.

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