

The Snakes of Göbekli Tepe: An Ethological Consideration

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Göbekli Tepe is an important and well-documented Pre-Pottery Neolithic (PPN) site near Şanlıurfa in modern-day Turkey (e.g. Schmidt 2005, 2010, 2011; Clare *et al.* 2018) featuring stone pillars with animal imagery. The animal most frequently depicted is the snake, most likely the *Macrovipera lebetina*. Four hypotheses for the meaning of the snake imagery have been previously suggested: As a representation of the penis; as a death related symbology; as supporting a narrative with the goal of building loyalty; and as associated with the “journeys” of a shaman. Each of these are considered against the actual snake depictions and actual snake behavior. Ethological data would seem to best align with the snake as a death related symbol, although that use itself could also facilitate loyalty or be associated with shamanistic activities.

Although detailed descriptions can be found in the works cited herein, for this article most salient among Göbekli Tepe many features are the sculpted “T-shaped” stone pillars arranged around the perimeter of a series of circular enclosures. A strong case has been made that the site was not a residential, but rather a ritual, center (e.g. Notroff *et al.* 2015). These structures then are generally understood to constitute the oldest known examples of monumental architecture, and constituting the oldest known “temple” (Norenzayan 2013).

Geophysical surveys suggest a total of some 200 large (up to 5+ meters) pillars, of which 69 have so

far been excavated. These pillars generally contain animal imagery, whose purpose has been the subject of considerable discussion (e.g. Schmidt 2006; Morenz and Schmidt 2009; Schmidt 2012; Notroff *et al.* 2016) although a common view is that they are facilitating a narrative in some literal sense, likely manifested through story telling and/or rituals (e.g. Benz and Bauer 2015; Henley 2018).

Based on an analysis of the first four enclosures to have been excavated, Peters and Schmidt (2004) previously reported that snakes were the most depicted animal, accounting for 28.4% of the representations and about double the second most commonly depicted animal, the fox at 14.8%. It should be noted that this was a conservative accounting, as groups of snakes were scored only as one instance. Looking at the structure of the head, the relationship of the head to length, and in context (see below), the snake being sculpted was most probably the highly venomous *Macrovipera lebetina*.

As for that context, Dietrich *et al.* (2020: 320-321) support the view that whatever their ultimate purpose that the animals were likely intended to be frightening. Specifically, they write: “These animals are depicted attacking: Aurochs, for instance, are usually shown with lowered head and presented horns; foxes are leaping as if approaching prey, or in a threatening pose, snakes are appearing as whole packs, and scorpions over-sized.”



Fig. 1 Snakes shown on different pillars at Göbekli Tepe. (courtesy of the Göbekli Tepe Project, Deutsches Archäologisches Institut)

This general description of the animals as “fierce” has been widely accepted, and at times further developed. For example, Benz and Bauer (2013) have argued that these depictions may have conveyed a frightening narrative intended to develop social control and/or build cohesion and cooperation. On such an account, the gist of this narrative was most likely something akin to predator-prey, or “protection.” Subsequently, they (Benz and Bauer 2015) refocus this thesis to frame the snake (along with the scorpion and other standardized images) as associated with the role of shaman. Related, Schmidt (*e.g.* 2006, 2012) suggested the story being told at Göbekli Tepe was one of life and death. For him, the context could have been educational (*e.g.* concerning hunting, funeral practices), social (*e.g.* initiating new members, strengthening groups), memorial (*e.g.* exchanging and encoding information), or some combination of all those within a religious framework likely concerning death. All of these ideas can also be reconciled with Norenzayan’s (2013) suggestion that the site can be seen as evidence for a theology that featured supernatural watchers (see also Henley 2018).

Somewhat differently, Hodder and Meskell (2011) note the obvious possible link between the snake imagery and the penis. Indeed, there is much here to suggest sexuality – including both the general phallic shape of the pillars themselves (elongate, pronounced head) and the fact that all the fierce animals (as biologically appropriate) are depicted as male with a penis showing. With that said, four different theories about the snakes of Göbekli Tepe seem to have been suggested: That the snakes represent 1) the penis; that the snakes (as well as the other fierce creatures) represent 2) something death related; that the snakes (as well as the other fierce creatures) represent 3) a narrative with the goal of behavioral control by building loyalty (cooperation, cohesion, *etc.*) in the group, to social elites, to shamanistic ideals, or even in relation to a shared belief in supernatural watchers; or 4) that snakes represent “the shaman’s journey” itself (Benz and Bauer 2015: 9).

It should be noted that these options are not mutually exclusive. For example, Benz and Bauer (2015) also underscore the association between snakes and death, suggesting then the sort of death-related rituals Schmidt focuses on could have been a part of the “shaman’s journey.” Obviously, other options surely could also obtain and some, such as clan symbols, have been alluded to (*e.g.* Peters and Schmidt 2004). That said, even if the animal imagery collectively served as such emblems, that still begs the questions of what the snake itself may have meant as a symbol.

One other matter also needs to be introduced here; the quality of the animal images. They are generally highly realistic – some amazingly so (see the first panel in the figure). Indeed, they are so realistic that exceptions have been noted as assuredly meaningful. For example, Schmidt 2006 and Dietrich *et al.* 2020: 321-322, in the context of discussing masks found at the site) underline that some crane images appear to have

human legs: “Their unusual human-like legs contradict the otherwise detailed and correct naturalistic depiction of many other birds’ anatomical details – and therefore might indeed indicate masked humans.” Following this logic, what could a deeper consideration of the snake art possibly reveal?

If we make the assumption that the snakes at Göbekli Tepe mean the same (or the same “basic”) thing in all contexts, then it is not likely the literal penis. Considering just the three samples provided in the figure, if we accept the premise that the juxtaposition of images here actually was intended to mean something – to tell a story if you will – what stories could possibly be told if snake means penis in each case? Of course, by metaphoric extension (*e.g.* Johnson 1987), the snake(s) instead could mean man, or striking, or potency, or guile, and all of those remain plausible even if penis *per se* is eliminated.

The primary curiosity for us is the depiction of snakes in groups, as snakes are not generally regarded as social animals. Although there is some evidence for limited intraspecific activity in a few contexts (*e.g.* Gillingham 1987; Greene 1997) such as thermoregulation or defense, there are two well-documented situations where “packs” of snakes do obtain: Groups of male snakes could be seen pursuing a female with the intention of mating (*e.g.* Crews and Garstka 1982; Rivas and Burghardt 2005), and in the context of emerging from hibernaculum (*e.g.* Parker and Brown 1973; Burger and Zappalorti 2015) which can contain literally thousands of individuals (Crews 1983).

Sadly, little is known about the behavior of these reptiles in this region even by genus experts (K. Mebert, pers. comm. 2019) or resident herpetologists (K. Çiçek, pers. comm. 2019). *Macrovipera lebetina* is a “highly defensive” if not aggressive snake, especially at night, and known for a distinctive loud hiss used to frighten potential predators. It does aestivate in rocky slopes, and very interestingly, given the potential role of Göbekli Tepe in the advent of agriculture (*e.g.* Notroff *et al.* 2015) is documented to frequent bushy terrain at the edge of agricultural developments (Mallow *et al.* 2003). Mebert reports that the “snake encounter rate can be quite high for agricultural workers,” and that in modern day Şanlıurfa these snakes “can be quite common on the surface in, or next to, the agricultural fields during April to June.” There is also some suggestion that a related species (*Macrovipera schweizeri*) may congregate near water sources (Nilson *et al.* 1999), in part to ambush birds.

Assuming, that a group female-tracking (*e.g.* Ford and Schofield 1984) or group mating in this species could have been observed, we return to the possibility that the snakes do in some sense represent something sexual (and perhaps the penis, metaphorically). Nevertheless, it should be noted that the likelihood of observing such an ad hoc group mating-related activity seems extremely low, and as such an improbable explanation for why groups of snakes would become an oft-used pictogram.

The other situation where groups of snakes might more reliably be seen is at their exit from aestivation. As this would happen annually at essentially the same time, and likely at the same general location (e.g. Wastell and Mackessy 2016), it is possible that such an event could have been witnessed by many (and so the “right”) hunter-gatherers. As such, snakes could be seen annually “disappearing into the earth” only to reliably be later seen (and possibly as a group) returning from their “journey” (as per Benz and Bauer 2015). Likewise, if dormant snakes were viewed as dead, or something akin to dead, then their mass exodus from dens and return to life could readily align with Schmidt’s idea that the imagery – and perhaps especially the snake imagery – was linked to death (see also Fagan 2017). This then could also be consistent with the shaman’s journey into, and back from, a spiritual world as suggested by Benz and Bauer.

One final option would be that like the oversized scorpions noted by Dietrich *et al.* 2020 the sculptors purposefully crafted something they had never actually seen – snakes in groups – so as to make the image more “fierce”. If so, one could imagine how such a mythic narrative may intersect with the ideas of predator-prey or of conjuring an image of something (a group of advancing vipers) that one would certainly desire protection from. But that said, if the image was just fanciful and had no basis in observed nature, why just groups of snakes? Why not flying snakes, or snakes with spears? Surely if the idea was simply to make the snake just seem more “fierce,” options beyond increasing numbers would have obtained.

In sum, although the actual behavior of snakes or other animals cannot fully explain what role they served at Göbekli Tepe, we submit that it is an important (and seemingly neglected; though do see Russel and McGowan 2003) bit of data for assessing the relevant theories. Additionally, it is perhaps noteworthy that snakes (and other animals) also appear on smaller objects found at Göbekli Tepe that have generally been hypothesized to be cups/bowls, shaft-straighteners, and symbolic plaquettes. Perhaps something about the animals depicted could refine the understanding of such objects. For example, beyond just shape, the sudden appearance, striking speed, and deadliness of a snake could associate them with weaponized projectiles (see Morenz and Schmidt 2009) supporting the hypothesis of shaft-straightener. Conversely, the functionality of such objects could further illuminate why a given animal was being depicted on such a thing. Still, even Benz and Bauer’s (2015) excellent and comprehensive consideration of the imagery at Göbekli Tepe and associated sites is largely silent about the actual behavior of the animals involved.

In this case, and given the general realism seen in the animals depicted, that groups of snakes do “return to life” and exit aestivation (or hibernation) sites in groups annually at similar locations would seem to favor Schmidt’s death account or Benz and Bauer’s notion of a journey “there and back again.” Nevertheless, Mebert

(K. Mebert, pers. comm. 2019) notes that even today local leaders may use tales of “many large snakes” as a “fear politic” to intimidate and manipulate. As such, some combination of using snake imagery around the matter of death but for behavioral control also seems plausible – and as was noted previously, these hypotheses are not mutually exclusive. Our point here was not to argue for any one answer but to suggest a role for ethology in developing, refining, and evaluating such ideas. Indeed, as more pillars are revealed and the circumstances of naturalistic and exaggerated animal depictions is further studied, such ethological information can surely provide both clues for further theory-building and an ongoing empirical “critique” for subsequent theory evaluation.

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