

# Journal of Archaeology and Ancient History

---

**2019**

**Number 26**

---

**Editor:** Karl-Johan Lindholm

**Editorial Board:** Assyriology: Olof Pedersén. Archaeology: Anders Kaliff, Neil Price.  
Classical Archaeology and Ancient History: Gunnel Ekroth, Lars Karlsson.  
Global Archaeology: Paul Lane.

---

**Editorial history:** [www.arkeologi.uu.se/Journal/](http://www.arkeologi.uu.se/Journal/)

**ISSN:** 2001-1199

---

**Published:** 2019-12-13 at <http://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-398528>

---

## **Water at ancient Greek sanctuaries: medium of divine presence or commodity for mortal visitors?**

Hedvig von Ehrenheim<sup>1</sup>, Patrik Klingborg<sup>2</sup>, Axel Frejman<sup>3</sup>

<sup>1</sup> Corresponding author, Hedvig von Ehrenheim, Department of Archaeology and Ancient History, Uppsala University. P.O. Box 626, 751 26 Uppsala, Sweden.  
[hedvig.vonehrenheim@antiken.uu.se](mailto:hedvig.vonehrenheim@antiken.uu.se).

<sup>2</sup> Patrik Klingborg, Department of Archaeology and Ancient History, Uppsala University. P.O. Box 626, 751 26 Uppsala, Sweden. [patrik.klingborg@antiken.uu.se](mailto:patrik.klingborg@antiken.uu.se); Swedish Institute at Athens, Mitseon 9, 117 42 Athens, Greece. [patrik.klingborg@sia.gr](mailto:patrik.klingborg@sia.gr).

<sup>3</sup> Axel Frejman, Department of Archaeology and Ancient History, Uppsala University. P.O. Box 626, 751 26 Uppsala, Sweden. [axel.frejman@antiken.uu.se](mailto:axel.frejman@antiken.uu.se).



**UPPSALA  
UNIVERSITET**

Department of Archaeology and Ancient History  
Uppsala University, Sweden

## **ABSTRACT**

This article presents the newly started project “Water at ancient Greek sanctuaries: medium of divine presence or commodity for mortal visitors?”, the aim of which is to explore water usage at Greek sanctuaries in Archaic to Hellenistic times. In order to do so the project is divided into three separate studies. The first is how water was used in sanctuaries: where was water accessible through natural and man-made infrastructure, for what activities was it utilized, and which of these can be considered ritual and/or utilitarian? The second focuses on the means by which water was utilized, i.e. how was water management infrastructure adapted to ritual and utilitarian needs, and how did the need and access to water shape ritual and utilitarian activity at the sanctuary? The third part is an overarching analysis, combining the first two parts, which will expand our knowledge of perceptions of human activities in the god’s dwelling: how did ritual and utilitarian uses of water differ at a perceptual level?

## **KEYWORDS**

Greek sanctuaries, Water, Spatiality, Utilitarian use, Ritual practices, Purification

# **Water at ancient Greek sanctuaries: medium of divine presence or commodity for mortal visitors?**

## **Introduction**

Water is essential for the formation of human societies and sites, modern as well as ancient. This is true not the least in the warm and dry climate of the Mediterranean summer. Ancient Greek sanctuaries were no exception to this. In fact, it can be argued that water was more important at sanctuaries than most other sites, as it was necessary for not only survival and utilitarian needs, but also ritual purposes (ritual is here understood as religious ritual). Water usage included for example drinking, cooking and cleaning, beside ritual purification and the washing of cult images. Despite this dual need, within the framework of the study of ancient Greek sanctuaries water has almost exclusively been viewed as serving ritual purposes. Apart from an early study by Martin Ninck, and the seminal study of René Ginouvès, water at sanctuaries has rarely been explored beyond cursory overviews (Ninck 1921; Ginouvès 1962. See also Muthmann 1975; Cole 1988; Lambrinoudakis 1994; Hoessly 2001; Androvitsanea 2014; Yegül 2015; de Cazanove 2015). Consequently, and due to its critical function for survival and ritual activities at Greek sanctuaries, there is a need to document and analyse how water was supplied, used and understood in these settings.

The objective of this article is to present the recently initiated project *Water at ancient Greek sanctuaries: medium of divine presence or commodity for mortal visitors?* This is a project financed by the Swedish Reserach Council, which will form a five-year study, hosted by Uppsala University, and performed by the three authors on a part-time basis. The aim of the project is to explore the use of water, ritual and utilitarian, in ancient Greek sanctuaries during the Archaic to Hellenistic periods (700–31 BCE). In this article, we will bring attention to the need for such a study, providing theoretical and methodological approaches for studying water usage at

Greek sanctuaries as well as discussing some preliminary findings.<sup>4</sup> The project explores three main aims: 1) How was water used in sanctuaries? Where was water accessible through natural and man-made infrastructure, for what activities was it utilized, and which of these can be considered ritual and/or utilitarian? 2) By which means was water utilized, i.e. how was water management infrastructure adapted to ritual and utilitarian needs, and how did the need and access to water shape ritual and utilitarian activity at the sanctuary? 3) How does the targeted study of water in sanctuaries alter our understanding of Greek cult and religion?

Through our approach, which takes its starting point in a commodity, water, we hope to provide a new methodological framework for the study of activity patterns at Greek sanctuaries, while also joining an emerging field where the totality of sacred space is studied. Studies on the sanctuary as a community formed by the visitors and personnel there are coming to the fore. These concern, among other things, sanctuaries as places for periodic markets, Panhellenic games, and places of refuge (periodic markets: de Ligt & de Neeve 1988; games: Morgan 1990; sanctuaries as places of refuge: Sinn 1992 and 1993; Panhellenism: Scott 2010).

## Previous research

Water in Greek religion, and consequently at Greek sanctuaries, is traditionally thought to almost exclusively have had a purificatory function (Eitrem 1915, 76–132; Ginouvès 1962, 327–373; Parker 1983, 226; Burkert 1985, 76). In addition to this, other ritual uses have also been proposed. For example curative functions, especially at healing sanctuaries (Ginouvès 1962; Boudon 1994; Lambrinoudakis 1994; Hoessly 2001) and ritual cleaning of sacred images (Ginouvès 1962, 281–298). The physical remains of fountains, wells, cisterns and baths at sanctuaries have been treated by earlier scholars (for some examples, see Glaser 1983 for fountains generally; Mallwitz 1999, 186–200 for wells in Olympia; *Corinth* 18:3 for cisterns in the sanctuary of Demeter and Kore and below for bathing), but the actual use of these features, and their role within the sanctuary has not received the same attention.

To understand the purificatory function of water at sanctuaries, we must understand the concept of miasma. Miasma is a religious pollution, which can, but need not be, associated with what we would define as moral wrongdoing. Importantly, a worshipper could not approach the divine with miasma – s/he had to be *kātharós*, *katharos*, clean (Parker 1983; Neumann 1992; Bendlin 2000; Parker 2018). To quote the Hippocratic text *Morb. Sacr.* 148.55–57/4.55–60: “We [humans] mark out the boundaries of

---

<sup>4</sup> The full studies are currently under production and expected to be published throughout the project.

temples and temene for the gods so that no one may enter them, we are sprinkled with holy (ἁγνός, hagnos) water, not as being polluted, but as laying aside any other pollution which we formerly had.” (translation by Jones 1923, 151). It is important to note that katharos, the opposite of miaros (μῑᾱρός, “with miasma”), is an almost technical term, whereas hagnos, holy, is a quality which the water is imbued with (Parker 1983, 150; Parker 2018). In terms of purifying worshippers entering the temenos and communicating with the divine, it is mostly assumed that water was the purificatory agent (Ginouvès 1962, passim; Cole 1988). Several words were used for the act. The terms ἁγνίζω and ἁγνεύω stem from hagnos while λούω was used for purifications specifically with water and νίζω when the hands and feet were concerned. Χέρνιψ was the water used for washing the hands of the priest and participants at a sacrifice.

The concept of water as holy and a purificatory agent was also connected to a notion of divine presence in nature, which, apart from the practical needs of water, could also have influenced the siting of a sanctuary. Water would have a strong connection to *naiadae*, or water nymphs living by, or possibly personifying their sources (Ginouvès 1962, 327–373; Larson 2001; Sourvinou-Inwood 2005).

While the purifying agency of water in the sanctuaries cannot be denied, previous scholarship has, for the most part, completely disregarded the practical aspects of water at sanctuaries, providing sustenance for both short and long-term visitors. Especially in sanctuaries hosting Panhellenic games, or catering for the needs of the sick, water structures (water supply installations and baths) were essential. These aspects have been overlooked in modern studies, guided by a will to spot holy agency in all material evidence associated with water at the sacred sites (Ninck 1921; Ginouvès 1962; Cole 1988; Hägg, Marinatos & Nordquist 1988). Camp (1977, 31–32, see also comment on Cole 1988) has even argued that all water in ancient Greece, per definition, was holy. Our study aims to integrate Greek sanctuaries in the full range of social complexity within the ancient communities.

Previous research concerning the technical aspects of water supply at Greek sanctuaries has often focused on single, and almost always monumental, structures. For example, most monumental fountains and installations are well published (e.g. the Sacred Spring at Corinth, see *Corinth* 1:6; the Castalia in Delphi, for an extensive bibliography see Glaser 1983, 101; the bath at Nemea, see *Nemea* 1, 188–261). It has also been common practice to publish the fills from wells as the finds within them have attracted great attention (e.g. Caskey 1960; Schauer 1997; Kimmey 2017). In some cases more extensive parts of the total water supply system has been published, such as for the sanctuary of Poseidon at Isthmia (in particular *Isthmia* 2, 22–31). Yet, with the exception of the ongoing project *Wasser und Kult im Heraion von Samos* by the German Institute at Athens, the water supply in sanctuaries has not been systematically explored beyond technical publication. Rarely, if ever, has it been discussed how the water supply affected activities at the sanctuaries.

## Concepts and method

In our analysis of water usage at Greek sanctuaries, two theoretical questions are central. The first is how to differentiate between expressions of ritual and utilitarian use of water. The second concerns how to view the agency created through the interaction between water sources/use points and humans at sanctuaries, including how activities at these sanctuaries were shaped by, and in turn shaped water usage. In order to approach these questions we use a framework where the dichotomy has been replaced by a spectrum of ritual and utilitarian usages of water, distributed on a scale from sacred to profane, but without acknowledging the two as profoundly distinct and separate spheres. At the same time, we draw on post-humanist and materialist theories in order to investigate how the mere presence of water influenced activities at sanctuaries.

### RITUAL AND UTILITARIAN

In a sacred law from Kos, from the first half of the 2nd century BCE, it is stated that a slave boy was donated to a sanctuary in order take care of “matters, whether sacred (ἱερά) or secular (βέβαλα)” (*IG* XII.4 349). While we do not intend to primarily explore the tension between sacred and profane, the way in which water and water usage at Greek sanctuaries has almost exclusively been treated as sacred and/or used for ritual activity (Ninck 1921; Ginouvès 1962; Muthmann 1975; Cole 1988; Lambrinoudakis 1994) makes the difference between these terms impossible to avoid. In practice, these differences relate to an ontological bipartition of the world following a division into sacred and profane, both in terms of space and in terms of acts (Ekroth *forthcoming*).

While utilizing the terms sacred and profane for practical reasons, we do not believe that such a strict dichotomy necessarily existed in antiquity. We rather follow Robert Parkers view that the sacred “appears as the intensely venerable rather than the absolutely other” (Parker 1983, 150–153, see also Goffman 1956, 473–502; Goffman 1972, 47–96 on the same concept). In other words, when entering the god’s temenos, the piece of land set apart for and owned by the god, or participating in a sacrifice at the god’s altar, the worshipper did not enter into another sphere, but rather into a house belonging to an intensely venerable owner. In this approach on the Greek perception of the “sacred”, to sprinkle your hands with water before entering was primarily an act of respect towards the god (cf. Parker 2011, 280, on the concept of respect shown to kings, heroes and gods).

Turning to the spatiality of Greek sanctuaries, they were formed by temene (from τέμνειν, to cut off), areas set apart for the god (Pakkanen 2008, 246; Ekroth *forthcoming*), but could have additional structures and activities connected to the sanctuary outside of the temenos (Frejman *forthcoming*). Thus, in one sense there was a very real and sharp divide between sacred and profane space. Humans could use the temenos, but not for any purpose, and it was strictly forbidden to pollute the god’s temenos. In many cases boundary markers, or even walls, indicated where the temenos border was located (Ekroth *forthcoming*).

In practice, however, the distinction between sacred and profane space could have been far less clear-cut than the border of the temenos (Sinn 2003; Frejman *forthcoming*). One can also find seemingly contradictory spaces in the ancient texts, such as a ‘bebelon alsos’, a ‘profane sacred grove’ (Aeschylus *Supp.* 509, see Sinn 1993 for a discussion). Moreover, if we look at the empirical material of water usage in Greek sanctuaries, acts defined by the Greeks as sacred could occur in profane space, as well as profane acts in sacred space. Acts could also transcend ritual boundaries, as did water sources. At the sanctuary of Poseidon at Kalaureia the same water source could be accessed both from inside and outside of the presumed temenos (Wide & Kjellberg 1895, 286; Wells *et al.* 2005, 135, 199–201, 205; Pakkanen 2008, 243–255; Wells *et al.* 2008, 41, 44, 109. For the water supply with bibliography, see Klingborg 2017, nos. 264–265). Furthermore, although there was a clear distinction in regulation inside and outside a temenos, and the temenos was clearly a border between more sacred and less sacred space, it is not clear whether the temenos was a border between sacred and profane space. However, in order to achieve a working definition, for the purpose of this project the temenos will be treated as the border between sacred and profane space, while acknowledging that this was not absolute in terms of activities. Moreover, we also hold that within the temenos, different degrees of closeness to the divine was acknowledged. Special purifications could be required for example to enter the abaton, or incubation dormitory, denoting the need to be extra pure when encountering the divine, as well as the higher probability of encountering the god in this particular location (Ehrenheim 2009). At Isthmia, the sacrificial area has been suggested to have been fenced off, as to restrict access and limit onlookers from the stadium below (Gebhard 1993, 169–170).

## **SPATIALITY AND MOVEMENT**

Humans are immersed in the space around them; they interact with this space and the things present there, which together makes up their environment (Ingold 1993; 2000, 172–188). This interaction shapes both the environment and the activities therein. In order to understand these interactions, as well as study spatiality and movement in sanctuaries, we draw on frameworks from post-humanism and what is often called new materialism. Though many theoretical perspectives have been consulted (for example Latour 1999; 2005; Barad 2007; Witmore 2007; Hodder 2003; 2012), we are mostly inspired by Tim Ingold, who emphasizes the effect matter has on humans through its properties (Ingold 2007; 2008; 2010). Ingold for example raises the question of how our perception of stone changes depending on if it is dry or wet, due of the material properties of stone (Ingold 2007). Such perspectives could be used to understand the sprinkling of water at sanctuaries in new and intriguing ways, where both the human action of sprinkling, and the material properties of the water and that which is sprinkled interact to produce the desired effect of the ritual. The landscape, in the sense of the space around us and the natural or man-made features there, should likewise not be reduced to a backdrop in which activities took place. It too has an active role in the interactions between

humans and matter. As Ingold notes, humans make their way through the landscape, not over it or across it (Ingold 2000, 241). Humans, things, and landscape can therefore be understood as having co-shaped the archaeological record. In this way, we strive towards a flat ontology and hope to avoid a dualism between non-human and human, nature and culture.

As such, the presence of water sources, installations and use points contributed to forming activities at sites. These activities could, in turn, create further needs for water exploitation and usage. Thus, there is an interconnection of material resources and human needs. Based on this we acknowledge that an interdependent relationship between water sources/installations and humans existed, in contrast to common views holding that humans predominantly shaped activities in sanctuaries. Within this relationship, human action was enabled and shaped through the access to water and installations connected to this, while the water infrastructure was in turn shaped by human needs. For example, the activities in a rural sanctuary without a water source would be limited by how much water could be carried there. This (lack of) interaction with water on site may have generated the need to create a water source. If the same sanctuary was then equipped with a well a new range of activities would be enabled though the combination of the presence of water and wishes of humans participating in activities there; it would make possible longer periods of stay, sacrificial meat could be boiled and implements used in the sacrifice washed. With time, some of these activities may have become considered necessary at the site, turning the well from a useful addition to a necessary component, forcing humans to ensure that it remained functional through maintenance. Furthermore, the agency created between water sources, humans and other structures in sanctuaries would often cause ripple effects. For example, the well may have required maintenance at some point, it could be decided that it was necessary to pave the area around it or create rules for how it could be used – there is evidence for all of these in the empirical material. The well would also provide a new spatial focal point in the sanctuary, as it constituted a place that humans had to frequent in order to perform a wide range of activities. As such, it would create and maintain new movement patterns, in turn influencing other activities at the site and its future development.

Through the complex interactions between water, water installations and humans, activity patterns in the sanctuaries were simultaneously shaped, enabled and limited. Using this theoretical approach in our future analysis will open for a broader aetiology of local variations of cultic expression, both ritual as well as more broadly, concerning social life at the sanctuaries. Importantly, though, this paper will make a first presentation of the potential of the archaeological, literary and epigraphic testimonia chosen for the purpose of our coming study. A comprehensive analysis inspired by perspectives from new materialism will follow after completing the collection and evaluation the sources themselves.



## Research foci

In order to reach a fuller understanding of the functions of water at sanctuaries, our project encompasses three interconnected studies outlined below with some central evidence in order to showcase how the project aims can be addressed. The first focuses on the usages of water in Greek sanctuaries, ritual as well as utilitarian. What ritual and utilitarian uses can be identified from textual, epigraphic, and iconographic sources? The analysis will be largely based on the extant literary and epigraphic testimonia. The second explores the spatiality of water at five representative sites. How did the presence – or lack – of water and water sources affect movement and daily life at these sanctuaries? Here we will briefly outline our approach by turning to the material from the sanctuary of Poseidon at Isthmia. The third study investigates cognitive spheres such as ideas, thoughts, and unspoken practices of ancient water use at sanctuaries. How was water viewed? Was all water sacred as has sometimes been claimed? What rules and perceptions were applicable if a water source was considered sacred? In this article, we exemplify our third study by a sortie into whether springs and fountains (and their water) were viewed as sacred or not within the framework of Greek cults and sanctuaries. Following the publication of each separate study, the project will produce a more comprehensive monograph on the usage of water in Greek sanctuaries.

### USING WATER

Since water installations in sanctuaries have been interpreted in terms of ritual needs, ritual purification has commonly been the suggested use of water, although other ritual uses such as for washing sacred images, as a curative agent, and in connection to oracles also existed. With the help of extensive databases on textual testimonia and archaeological evidence of water availability (e.g. wells, fountains, perirrhanteria etc.) our project, however, analyses the details of both ritual and utilitarian water usage.

Knowledge of the details of how purifications were performed relies heavily on the study of Ginouvès (Ginouvès 1962, followed by Parker 1983, 226–227; Burkert 1985, 76; Cole 1988; Bonnechere 2018). The written testimonia in fact rarely give details on the purifications, but inscriptions can help discern varying practices. Commonly, sprinkling with water (presumably from a perirrhanterion) when entering a sanctuary is envisioned in modern scholarship. A passage from the Hippocratic corpuses is often used to ascertain this practice (*Morb. Sacr.* 148.55–57/4.50–60). There were, however, also other forms of ritual purification with water, such as the washing from the head down as attested in the Hellenistic *Lex Sacra* Yuntđağ from Pergamon (Müller 2010). Such purifications would have created a considerably more extensive need for water than just sprinkling, in particular if performed by large groups of individuals. The larger need for water could physically alter the appearance of the area where purifications occurred, often but not necessarily only at the entrance of the temenos, with new water installations, as perirrhanteria could not hold enough water for such rituals. Another factor in terms of ritual purification is that while the

use of freshwater is usually envisioned, this was not always the case. In Aristophanes' *Plutus* seawater was used (Ar. *Plut.* 656; see also Ehrenheim 2015, 36). Here worshippers about to enter the temenos were washed at the sea some distance from the sanctuary. However, in the vast majority of cases the specific way in which the purifications were performed is not mentioned. For example, in a purity regulation from an unknown sanctuary at Eresos dating to the 2nd or beginning of 1st c. BCE (*CGRN* 181 = *IG* XII Suppl., 126) washing is mentioned repeatedly, but not the extent of the washing. Similar formulations only stating that washing occurred also appear in other regulations (*CGRN* 211–214, 217 = *TAM* V, 530; Müller 2003; Comparetti 1926; *Milet* I.7 202; *NGSL*, 7). A careful analysis of all evidence will hopefully reveal the variations and exceptions of the purificatory rituals at sanctuaries, and their need of water.

Beside ritual purification, the washing of images is often discussed (Ginouvès 1962, 283–298). However, actual evidence for such rituals is thin, especially in early periods (Romano 1988, 129). A 3rd century BCE inscription from Athens testifies to the washing of two cult statues before the procession of Aphrodite Pandemos (*CGRN* 136 = *IG* II<sup>2</sup>, 659 = *IG* IV, 840). Yet, similarly to ritual purification, the nature of washing images is often not made explicit, and it did not necessarily take place in the sanctuary or involve freshwater. For example, most scholars believe that the regularly occurring rite of Plynteria in Athens, where the old image of Athena Polias was re-clothed, also included washing the sculpture in the sea at Phaleron (Herington 1955, 29–30 including a compelling contrary view; Jordan 1979, 35; Dillon 2002, 133). The washing of cult statues in the sea is also known for images of Hera in the Heraion at Samos, and Aphrodite at Paphos on Cyprus (Romano 1988, 129). Washing was also not limited to images of proper gods. In the dossier of a familial cult of Diomedon at Kos, dated to c. 325 BCE, it is specified that the portraits of Diomedon's ancestors should be washed (*CGRN* 96 = *IG* XII, 4 1:348). While not gods, this seems to point towards a distinct cultic and ritual practice.

Various forms of oracular activity using water are also attested (Halliday 1913, 116–144; Ginouvès 1962, 327–373; Bonnechere 2018). The most famous example is the Pythia at Delphi. Presumably, she bathed in water from the Kastalia spring, and possibly drank from the Kassotis, before pronouncing the future, although evidence for this is considerably thinner than usually assumed (Eurip. *Phoen.* 222–225; Paus. 10.24.7; Parke 1978; Fontenrose 1988, 83–84; Dillon 1997, 83–84). Other examples include the sanctuaries of Apollo at Didyma and Klaros, as well as the oracle of Demeter at Patras (Herbillon 1929, 34; Fontenrose 1988, 83–84). On a much smaller scale the excavations under Jutta Stroszeck at Kerameikos have most recently located an oracle well, still to be published in full (Stroszeck 2016, 31–35). In a considerably less securely identified instance, Thomas Dunbabin (1951) suggested that the oracle at Perachora (mentioned only once, Strabo 8.22) involved *phialai* sinking or floating in a pool. Water in sanctuaries could also have other miraculous abilities, such as at the sanctuary of Zeus at Taenarum on the Peloponnese where a spring was said

to once have had the ability to show harbours and ships to those gazing into the water (Paus. 3.25.8).

Bathing could be both utilitarian and ritual in healing sanctuaries (e.g. Ginouvès 1962, 349–361). Most often bathhouses were placed, or interpreted to have been placed, outside the temenos border. In terms of ritual activities curative bathing is testified in Roman sources (e.g. Boudon 1994; Wickkiser *forthcoming*), and has often been presupposed for the Classical and Hellenistic periods (Ginouvès 1962, 349–361). For example, at the Asklepieion of Corinth it has been suggested that a chamber close to the space interpreted as abaton was used for baths before incubation during Classical and Hellenistic times (*Corinth* 14, 26, 46–50, 157). Similarly, Ginouvès, based on Kavvadias' excavation reports, wrote that the well by the abaton at Epidauros, as well as the earliest bath, were used for ablutions before incubation. Ginouvès is indecisive on the ritual uses of the baths at Troizen, as they also offered hot water. The baths at Gortys, and above all Cos, he, however, interprets as not only serving as a preparatory ablution before incubation, but also hygienic as well as medical purposes. Wickkiser (*forthcoming*), cautiously suggests, on the analogy of water cures in Hippocratic writings, that curative uses of water in Asklepieia antedates the Roman testimonia at hand (for influences of Hippocratic medicine on Asclepian cures, see Ehrenheim *forthcoming*). Monika Trümper (2014), on the other hand, clearly states that the Greek baths at the Asklepieion of Epidauros were not used in any curative function.

Looking at evidence on water usage at Epidauros in Classical times, there is a healing inscription written down around 350 BC, upon an earlier original (*IG IV*<sup>2</sup>, 1, 121.1–7, iama A1; for the date see LiDonnici 1995, 76–82). It relates how a woman miraculously gave birth to a full-grown son, outside the temenos, who then got up by himself and washed in the fountain. Notably, here the water is included in the story as a source of getting clean, not any form of ritual usage. Complexities such as this, and how to interpret the textual material in the light of archaeological finds, offer good reasons to look at the evidence on water sources in Greek sanctuaries anew and make a comprehensive evaluation.

Turning to purely utilitarian uses of water, major bath installations without known ritual functions exists at e.g. the large Panhellenic sanctuaries at Olympia (Mallwitz 1972), Delphi (Ginouvès 1962), Isthmia (Gregory 1995, 303–312) and Nemea (*Nemea* 1, 188–261). Smaller sanctuaries, such as the sanctuary of Aphaia on Aegina, could also host baths, albeit more rarely (Furtwängler 1906, 94–95). The exact function of these baths is debated (cf. Fournet *et al.* 2013). There is also evidence suggesting non-ritual uses, such as an inscription from Epidauros testifying to how a blind man lost his oil bottle in the bath during seemingly non-ritual circumstance (iama C 22; Ehrenheim 2015, 37–38). Though it is doubtless an area in need of further investigations, in general, it is quite possible that bathing installations became desirable as the activities at a sanctuary grew enough to include a large number of participants.

Other than bathing, non-ritual water uses at Greek sanctuaries have rarely been systematically explored (except for Panessa 1983 and Klingborg

*forthcoming*). Despite the scholarly interest in water for ritual purposes, the evidence for utilitarian uses strongly suggests that these needs were considerably greater in terms of the required volume. For example, water was needed for drinking, cooking, washing and watering of plants and animals (Klingborg *forthcoming*).

Drinking relates to both humans and animals. Notably there is, to our knowledge, only one known occurrence where humans were directly restricted from freely accessing water at a sanctuary for drinking (*LSCG* 178 = *IG I*<sup>3</sup>, 256, but see also *Thuc.* 4.97.3). This is important because it suggests that the way in which a specific water source was viewed – e.g. as sacred, the property of the god, or simply as a regular water source – did not matter when it came to human drinking. A small number of cases where animals were restricted from drinking from specific sources in sanctuaries or on the gods' property are also known (*LSCG* 79, 25–26 = *CID* 4, 108; *CGRN* 181 = *IG XIII Suppl.*, 126).

However, regardless of local rules, both humans and animals in sanctuaries would need to drink water in order to survive and consequently stress the water supply one way or another. For humans this means a consumption of at least 2.5–3 litres per day (Reed & Reed 2013, table 9.1. See also Klingborg & Finné 2018 on human water consumption). On an individual basis, such small volumes present no issue, but as soon as we envision thousands of festival visitors staying for days or even weeks, the volumes quickly become very large indeed. If we assume that the number of people that could fit in a stadium reflects the number of visitors to a major sanctuary during a festival, then we should expect that humans alone used hundreds of thousands of litres per day only for drinking. For example, at Nemea it has been estimated that the stadium could hold between 30.000 and 70.000 spectators (*Nemea* 2, 28–29, n. 57).

Exactly how much water animals consume depend on species, time of year, and other factors such as if the animal was to be sacrificed immediately, but in general it can be assumed that they required between 5 and 10 times as much water as humans. This, of course, includes not only sacrificial animals, but also beasts of burden, horses and donkeys for transportation etc. that would be needed also after the activities that brought them to the sanctuary. Animal victims are especially interesting in terms of water consumption. It is unclear if it was deemed unnecessary to water them as they were to be sacrifices shortly anyways, or, perhaps especially important in order to keep the offering in good shape. But regardless of how much water a victim consumed in life, the need for water would often increase with its death as sacrificial meat was usually boiled (Ekroth 2007; 2010; 2017, 21). Consequently, depending on how soup-like such sacrificial meals would have been, we should envision that a considerable volume of water was used for cooking.

Cooking would in turn have required the washing of implements used unless they were discarded after a specific sacrifice. Possibly, regulations forbidding washing or dumping of objects in fountains or springs in or around sanctuaries are a reaction to such issues (e.g. Delos, *SEG* 56, 950 = Siard 2006; Keos, *IG XII* 5, 569; Kos, *IG XII* 4, 285; Pergamon, *OGIS* 483

= *SEG* 13, 521). However, washing and cleaning must also have been part of the regular maintenance of sanctuaries. A 3rd c. BCE inscription from Kalaureia (*CGRN* 106 = *IG* IV, 840) regulates the annual cleaning of a statue of a woman who had donated money to the cult. Similarly, cleaning of altars (*CGRN* 99 = *IGCyr* 016700) and stoas are also attested (Decourt & Tziafalias 2015; Parker & Scullion 2016).

Finally, the vegetation in sanctuaries would also need water in order to survive, not to mention flourish. In fact, Plato specifies in the *Laws* that spring water should be transported using water pipes in order to beautify *alae* and *temene* (Pl. *Leg.* 6.761c). There is also plenty of evidence for planting new trees in sanctuaries or taking care of existing ones (e.g. *IG* II<sup>2</sup> 2499; *IG* I<sup>3</sup>, 84). Prohibitions against cutting wood in sanctuaries (e.g. *LSCG* 37 [*IG* II<sup>2</sup>, 1362], 65, 84) as well as against animals grazing there (e.g. *LSCG* 91, 104 = *IG* XII 9, 90), further supports that the vegetation was looked after.

We see clearly how an expanding sanctuary would create a need for new wells, cisterns and water distribution systems. In turn, these structures would facilitate new activities. Examples like these further raise the question of how the uses of water intermingled. Such as if the water for ritual and utilitarian use were drawn from the same sources, or made available from the same installations or waterworks at the sanctuary? From the above-mentioned examples of ritual and utilitarian water usage at Greek sanctuaries, we may for now only conclude that the subject is vast, still mostly unexplored, and that a study of water in Greek sanctuaries as a commodity may help us understand sanctuaries not only as a religious entity, but also administrative, legal, and above all, social phenomena.

## PHYSICALITY AND SPATIALITY OF WATER

Once the various uses of water at sanctuaries have been explored through literature and epigraphy, the project will turn towards where water resources existed in and around sanctuaries, as well as how this affected the activities at these places. Due to the large number of excavated sites, it is not possible to perform a comprehensive study of the water management at all Greek sanctuaries. Consequently, this study focuses on fully exploring the water management at five representative sanctuaries, while also using evidence from other sanctuaries as comparative material in the interpretative process. The data will be integrated into a Geographical Information System (GIS), which can be used as an analytical tool and database for the development of water features at each sanctuary. The sanctuaries to be studied comprehensively are 1. The Asklepieion at Messene, 2. The sanctuary of Demeter and Kore at Corinth, 3. The sanctuary of Apollo and Athena at Argos, 4. The Argive Heraion and 5. The sanctuary of Poseidon at Isthmia.

A primary concern when selecting case studies was to identify sites where large areas had been excavated in order to explore movement patterns and spatiality. This led to the choice of sites where excavations started relatively early, and that consequently have a long, and in many cases challenging, history of archaeological work. The excavations of such sites have almost always been shaped by traditional, often art historical, agendas

while everyday material has either been discarded or eluded publication. Yet, turning to more recently excavated sites would offer other difficulties. Modern fieldwork is considerably more careful, and consequently both excavation and publication is a lengthy process. Because of this, the spatial extent of the investigations is often limited. Therefore, despite the problems posed by using large early excavations, for our purposes, these, overall, provide more material to work with for the spatial aspects of interest here.

The five sanctuaries have been chosen because they compose a representative sample of different layouts and sizes, locations in the landscape, as well as different divinities, each with their specific cultic needs. Furthermore, they have been thoroughly explored and are published, although some of the publications are by now admittedly old (see e.g. Waldstein 1902; 1905; Vollgraf 1956; *Isthmia* 2; *Corinth* 18:3; Themelis 2003; Sioumpara 2011). Three are situated in, or very close to cities (nos. 1–3), while two are situated in rural areas (nos. 4, 5). Three are of considerable size (nos. 1, 4, 5) and two are smaller (nos. 2, 3). In addition, one is found among the sanctuaries visited in the Panhellenic festival cycle (no. 5). There is also a distinct difference in movement patterns for these sanctuaries. Two of the sanctuaries (nos. 2, 4) represent places without other obvious attractions than the cult itself, thus visitors would be moving to and from the sanctuaries primarily because of the cult. Two sanctuaries (nos. 3, 5) were situated along roads, thus likely attracting passers-by. In contrast to this, sanctuary no. 1 in Messene was located at the heart of the city, thus drawing people into the urban sphere. Finally, the Panhellenic sanctuary at Isthmia (no. 5) attracted very large crowds at regular intervals, producing a particular rhythm of ritual activity.

The deities at these sanctuaries also had different ritual needs and practices. The cults to Athena, Hera and Poseidon, although specific as to their individual geographical context, represent deities who were not highly specialized as concerns their preferred cultic approach or range of prayers they would grant. Apollo displays a variation of this pattern, giving oracles, and having ritually prepared media to communicate with the god. In contrast, the cult of Demeter and Kore was characterised by mysteries and ritual dining, and the cult of Asklepios was closely associated with healing and miracles. Within this framework, his cult was characterised by unusually extensive water management and use. Springs and fountains, rare at other sanctuaries, are a common feature at Asklepieia, as are baths (Ginouvé 1962; Glaser 1983; Yegül 1992). Similarly, the ritual dining at sanctuaries to Demeter and Kore in Corinth required specific installations, including water supply structures. The water supply of the sanctuary at Corinth comprises a series of cisterns, all denoting different activity zones by their spatial relation to other structures. Two cisterns by the hestiatorion (Klingborg 2017, nos. 251 & 252) were clearly used in connection with cooking and cleaning while another (no. 253) may have served similar functions. A fourth cistern (no. 250) was located by the propylon, suggesting different uses such as ritual purification and the watering of animals and humans who had just climbed the steep slope (Klingborg 2017, 97, 110).

Isthmia can be used to exemplify the array of water features that could exist at Greek sanctuaries, how these have been treated in earlier scholarship, and a brief look into how using post-humanism affects our interpretation. At the site, water features have been noted both at, and further away from the temenos. The earliest water supply structure is an impressively large well just south of the temenos, approximately 5 meters in diameter and almost 20 meters deep (Fig. 1, green) (*Isthmia* 2, 22–24). The date of construction is uncertain. If using the framework of needs created through human–water interaction at the site, we may hypothesize that an older water sources had created a demand for water, which grew until it was necessary to expand the supply.

The large well appears to have been backfilled during the mid-5th century BCE. However, the need for water did not disappear, the earlier source (the well) had affected activities at the sanctuary, and with its disappearance, the activities would now dictate the need for a new source. The source and the activities formed by the access to water were now part of the same meshwork, to use the words of Ingold (2010), or entangled, if following Hodder (2012). Therefore, instead of the large well, water channels were drawn in from the west of the temenos to the entrance of it in the north, to the earlier stadion, to the location of the large backfilled well, and to the so-called ‘West Waterworks’ (Fig. 1, blue and red). This last installation, presumably the primary replacement of the earlier well, consisted of three shaft shaped cisterns connected by almost 45 m of tunnels. The result was that water could be accessed just a few meters from the former well, and at two other locations closer to the temple (*Isthmia* 2, 27–29; Klingborg 2017, nos. 261–263). Moreover, the northernmost cistern was connected through a pipe with a small basin in an unusually shaped, and at least partly subterranean, structure, featuring water proofed staircases and a bench. Unfortunately, the upper levels of the whole Waterworks have been destroyed, which makes it difficult to ascertain how it functioned.

These difficulties were noted by the excavator, but it was still concluded that the system could not have been of purely utilitarian use. Based on a slight inclination of the pipe connecting the system to the basement (Fig. 1, purple), and thereby the expected direction of water flow that would consequently have resulted in a very limited amount of usable water, it was suggested that this part of the West Waterworks played a role in religious rites, while the system as such was intended for common use during the festivals (*Isthmia* 2, 28–29). While this interpretation is understandable, in practice the water was probably pushed in the opposite direction, up the pipe. Presumably, water was collected on the roof of the partly subterranean structure and channelled to the basin which functioned as a settling basin. After this, the water was channelled up the pipe into the cistern system, as an additional cleaning measure. Such arrangements are known from other Greek sites, and reduced the volume of pollutants entering the system (Klingborg 2017, 38–40). The connection to ritual activity can therefore reasonably be questioned in this case. Other more utilitarian explanations could likely be sought among the set of activities

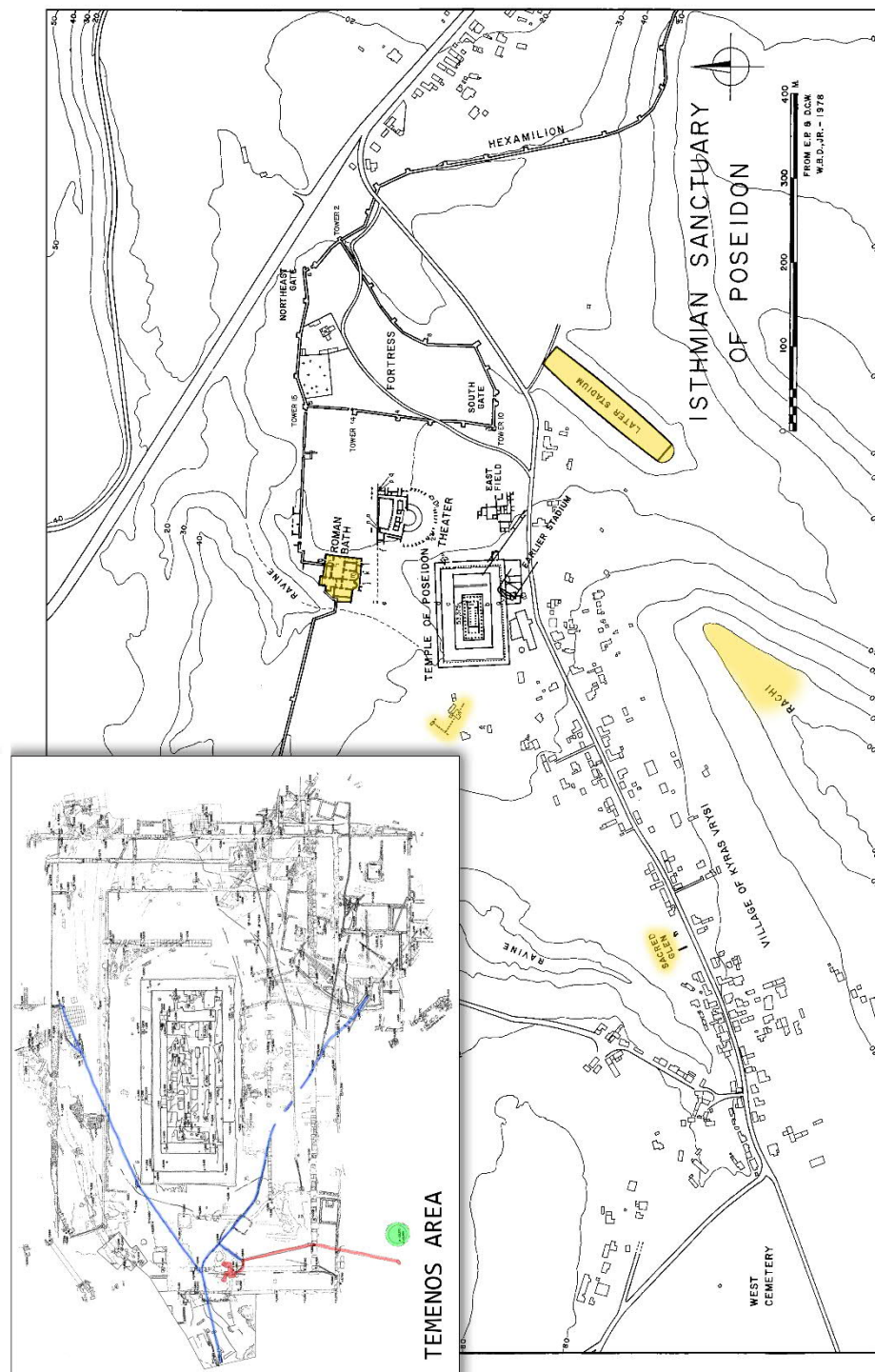


Fig. 1. Map of the surroundings of Isthmia. The temenos is in the centre, marked "Temple of Poseidon". Detailed plan of the temenos area in the upper left corner. Features discussed in the text marked with colour as follows: Green, large well. Blue, pre-Roman water channels. Red, the so-called "West water works". Purple, lined basement. Yellow, areas where water features have been found in the surroundings of the temenos. After *Isthmia 2*, plan 2; X, plan 1. <http://files.webb.uu.se/uploader/1338/Fig-1.jpg>



created and shaped within the framework of the relationship between the water sources and humans in the sanctuary. The earlier interpretation of the West Waterworks also conforms to a common occurrence in previous scholarship on water at sanctuaries, namely the likelihood of water features receiving cultic interpretations on questionable grounds (Broneer 1955, 122: *Isthmia* 2, 28–29).

In addition to more permanent water infrastructure, evidence for birdbath-like basins are commonly found in sanctuaries, including several at Isthmia. These are usually interpreted as περιρραντήρια, a type of basin used to hold water for ritual purifications. As such, they would have formed important nodes of water usage in these contexts because individuals often had to approach them when in need of purification. In essence, they can exemplify how the interaction between water sources and humans shaped movement patterns. Commonly it is assumed that most of these perirrhanteria were located by the entrances of the sanctuaries (Fullerton 1986, 207), but they are also found in other areas within temene. For instance, in the sanctuary of Asclepius at Epidauros, 34 dedicatory inscriptions of perirrhanteria from the Classical to Hellenistic period are attested (Melfi 2005, 148–174). This suggests that there could be a large number of places in a sanctuary where water was used for ritual purification, and a systematic investigation of the number and placement of these vessels might reveal activity zones at the sanctuaries. Yet, as with other aspects of water usage at Greek sanctuaries, basins of this type must not always have been used for ritual purposes. A very similar type of basin for more profane use was denoted by the term λουτήριον (Pimpl 1997). These louteria could be used for washing of the hands before a meal (although Pimpl 1997 argues that such washing was as ritual as the sprinkling of χέρνιψ) and depictions on black and red figure vases suggest that women used them when washing dishes or clothes, grinding grains and cooking (Lewis 2002, 75–79). Notably, all of these activities took place in sanctuaries.

Many water installations have also been noted in the surroundings of Isthmia (Fig. 1, yellow). Bathing facilities from the Greek period have been found both in the Rachi settlement (Anderson-Stojanović 1996, 67, 71), and below the remains of a Roman bath north of the temenos (Gregory 1995, 303–312). At Rachi, cisterns and a well have been excavated (Anderson-Stojanović & Reese 1993; Anderson-Stojanović 1996). Furthermore, roughly 400 metres southwest of the temple, in the so-called sacred glen, a structure with waterproof basins has been interpreted as some form of commercial establishment. Close to this, an elongated toilet with adjacent well has been found (*Isthmia* 2, 113–116). As lavatories are rare in Greek sanctuaries this water installation offers a unique opportunity to explore how such basic human needs affected activities and movements. The later stadion was equipped with channels and basins at the edges of the racecourse, and an extensive drainage system to divert the stream previously flowing in its location, as well as a fountain (*Isthmia* 2, 55–63). There are long tunnels just northwest of the temenos, functioning as a cistern, labelled

the Northwest Reservoir in the publications (*Isthmia* 2, 29–31; Klingborg 2017, nos. 257–260). This cistern could have served the camp for the festival visitors, as is it placed wholly outside the temenos.

The use of GIS when studying the spatial aspects of water features enables detailed spatial questions to be asked to the material, as well as integration of topographical and other geographical data. The location of water sources can for example be analysed in relation to each other, producing heat maps indicating either the presence of water in the ground, or in the case of man-made features, the desired location of water at the sanctuary. Expected runoff paths, or possible channel connections between water features can also be analysed utilizing digital elevation models. The GIS will function as a database for known water features at the five sites included in the study.

#### **“WHETHER SACRED OR SECULAR”: WATER AND THE SHAPING OF ACTIVITY**

The third part of our project turns from the empirical, practical, aspects of water usage in Greek sanctuaries in order to focus on ideas, thoughts, and unspoken practices of ancient water use at sanctuaries. This incorporates a number of questions central for our understanding of these sites. What did it mean that a water source was sacred? Did it simply belong to the god or was it sacred by its own right in the sense of a xoanon? And what about water? Was the water produced by a sacred spring also sacred? Could sacred water be produced from non-sacred sources? Was water used for ritual purification sacred per default? Or was water simply a medium in the rituals, for which it was irrelevant to specify if it was sacred or not?

As this final part of the project builds upon the results of the previous two parts, we cannot offer any definite outline as of yet. However, we may exemplify with one of our case studies: whether springs and fountains (and their water) were viewed as sacred or not within the framework of Greek cults and sanctuaries (for the difference between springs and fountains, see Wycherley 1937; Tölle-Kastenbein 1985). As a point of departure, it is notable that these installations were considerably rarer in Greek sanctuaries than often assumed – Franz Glaser in his work on known fountains (*krenai*) in Greece only knew of 36 *Brunnenbauten* in such contexts (Glaser 1983, 176). Those that are known have, however, almost always been labelled as sacred in modern scholarship (Elderkin 1940, 51; Papadimitriou 1963, 115; Steinsapir 1999, 187; Nielsen 2009, 94, 96–97, 102; Håland 2009; Longfellow 2012, 143). One such example is a fountain close to temple of Athena Alea at Tegea (Glaser 1983, no. 7). No ancient text labels it sacred, but modern scholarship does (*Tegea* 2, 8, 15; Vila 2000, 198–199; it is not designated as sacred in Paus. 8.47.4, cf. Mendel 1901, 246). Often a ritual use of a spring’s water is envisioned, perhaps due to contemporary Orthodox uses of the water (cf. Håland 2009). In many cases, there is a continuity in usage between a spring sacred to the nymphs, and its later Christian history, but the cultic uses and perceptions of its water need not have been the same. To denote springs as specifically sacred in modern scholarship suggests a separate status, as other structures in the sanctuary,

such as altars, temples or stoas are not treated in the same way. A cursory identification of springs in sanctuaries as sacred is problematic, as it masks the complexity of how water was viewed in ancient contexts.

There were in fact several ways in which the water in springs and fountains at sanctuaries may have been perceived. However, contrary to general perceptions these structures are rarely specifically denoted as *hieros* in textual sources before Roman times. This is in contrast to rivers, which are commonly called *hieros* from an early period (e.g. Hom. *Od.* 10.351; Hes. *Op.* 788; Eur. *Med.* 410). In one rare early case, the Telphousa spring (πηγή) in the *Homeric Hymn to Apollo* (3.263) was labelled *hieros*. Furthermore, later in the poem after founding Delphi, Apollo took the opportunity to declare the fountain (now called a κρήνη) of sacred Telphousa (Τελφούσης ἱερῆς) his own – the nymph and the spring being one and the same (Hom. *Hymn. Ap.* 3.375–378). In later authors, particularly Pausanias, sacred springs occur considerably more frequently, for example at the oracle of Pasiphaë at Thalamis on the Peloponnesos (3.26.1), springs sacred to Hermes (8.16.1) and Dionysos (8.32.3) in Arcadia, as well as a spring sacred to Ares in Thebes (9.10.5). Possibly, the more frequent mention of sacred springs in Pausanias has encouraged modern scholars to label them as such since the author was often used as a guide during early excavations. Further examples are found in Diodorus Siculus (*Hist.* 17.50.3) and Dionysius of Halicarnassus (6.13.4).

Literary sources also attest to a strong connection between water sources and nymphs – in Plato's *Phaedrus* (230b) a place is called sacred, or belonging to the nymphs and Achelous, due to the presence of a spring and small dedications surrounding it. The spring itself, or its water, is not explicitly stated to be sacred, the word is merely denoting ownership: “And it seems to be a sacred place of some nymphs and of Achelous, judging by the figurines and statues.” (Trans. Fowler 1914, 423).<sup>5</sup>

Notably divine ownership did not necessarily mean that water was sacred or used for sacred purposes. A sacred law, dated to c. 400 BCE, from a sanctuary of the nymphs in Attica preserves rules regulating the drawing of water (*LSCG* 178; *IG* I<sup>3</sup> 256; Meyer 2004; Koerner 1974, 173). Individuals who wanted to drink (πίνω) from the Halycos, presumably a fountain or spring, had to deposit (καταθήκη) an obol. Doing so would allow the person to keep on drinking from the source throughout the year. But it was also possible to draw an amphora of water at one time for the cost of one drachma. Failure to follow the rules was punished with a fine of 50 drachma. While there is no indication of how the water was used it is difficult to imagine that drinking from it constituted a religious act. In fact, in most cases there is no indication that a specific spring or its water had a special quality to it. In a miracle from the Asklepion at Lebena (*IC* I, XVII, 21), a father and a son in turn are directed towards running water to

---

<sup>5</sup> “Νυμφῶν τε τινῶν καὶ Ἀχελώου ἱερὸν ἀπὸ τῶν κορῶν τε καὶ ἀγαλμάτων ἔοικεν εἶναι”.

supply the sanctuary. It is instructive, as it mentions nothing of the water being used in lustrations, or even being sacred, for that matter. That it is plentiful is the important matter, and one can well understand that there would have been no sanctuary at Lebena, where worshippers would stay the night, without a water supply.

On the other side of the spectrum, some water sources were marked only for ritual use. During the Peloponnesian war, the Boiotians complained that the Athenians had drawn “for common use the water [ῥῶδωρ] which was untouched by themselves except for use in lustrations [ἱερὴ χέρνυψ] connected with the sacrifices.” (Thuc. 4.97.3, translation by Smith 1920). In a quite different case of limiting the use of a water source an inscription from Delphi records a spring or fountain called the Kerameia outside of the sanctuary where only sacred beasts (i.e. belonging to the sanctuary) were allowed to drink (*LSCG* 79, 25–26 = *CID* 4, 108). Clearly, water resources could be reserved for specific, and sometimes ritual, purposes.

Moving on, there is also the question whether there was anything special about the nature or quality of the water used in cult making it suitable for ritual tasks. In a passage in the *Iliad* (6.266), where Hector offers a libation, he stresses the importance of approaching the gods with clean hands. This is the essence of purifications performed before entering a god’s sanctuary or temenos: to approach the gods respectfully. But nothing is said of what the purificatory water was to consist of: just any water? For the most cases, and as many sanctuaries were well-visited, this may not have mattered. The perirrhanteria were filled from whatever source the sanctuary drew its water. But a few notable testimonia show that some types of water did matter more. Water from springs and seawater appear to be such types.

If we look at offerings of water libations, in Sophocles’ *Oedipus Coloneus* (469–470) the water is fetched from a fountain (krene). In a similar example, a wish is expressed in Euripides’ *Hysipyle* (752H) that the water used for libations should come from running water, not a still, or stagnant source. It is easy to envisage how muddy water was not an acceptable medium for purification in the eyes of the gods. Of course, spring water at a sanctuary would have been less stagnant than water from a still source, but it needs not have been that water from a well or a covered cistern at a sanctuary must have been dirty or perceived as of inferior quality (Klingborg 2017, 83–86).

Turning to seawater in the context of sanctuaries and cults it appears above all as purificatory, and at a higher level than just the step taken before entering a sanctuary. In an example, from *Iphigenia in Tauris* (Eur. *IT* 1039, 1193), Orestes is to be purified in seawater, described as more potent for purifications than spring water. Similarly, in a later testimonium, Circe, washes her head, hair and clothing in the sea in order to dispel bad dreams, (Ap. Rhod. *Arg.* 4.659–687). A sacred law from Ceos of the 5th century BCE states that funeral is to be cleansed with sea water, affirming this perception (*LSCG* 97 = *IG* XII 5, 593). In a later 3rd c. BCE text, concerning Herakles’ childhood, his mother is to cleanse the palace, and she does this with a mixture of salt and “non-profane water”, “ἄβλαβὲς ῥῶδωρ”

(Theocr. 24.97). Thus, if you did not have the sea at hand, the same purificatory effect might be had by mixing in salt. What “non-profane water” is, is not explained.

Some sacred laws indeed speak of purifications at a higher level of a sanctuary (from e.g. a death inside the temenos), but seawater is not mentioned as such for these types of purifications (e.g. *LSAM* 14 = *IvP* 264). In other words, the type of water could matter for ritual purposes. Seawater was normally not at hand upon entering a sanctuary, but when present, it could be used for high level cleansings (Ar. *Plut.* 660, where Ploutos, who is about to incubate in the Asklepieion, is cleansed in seawater before entering the sanctuary).

Overall, the material testifies to heterogeneous practices in regards to use and status of water and water sources in connection to Greek sanctuaries. As the first examples of springs show, a good and clean water source at a sanctuary might be used both for drinking, watering animals, as well as for ritual purposes. In other words, as seen already by these few examples, on a cognitive level, the quality of the water did matter in ritual, but a source sacred to the god need not have been limited to ritual use. The mapping out of existing water sources at a sanctuary and their spatial relationship to ritual activity zones and utilitarian ones will no doubt shed further light on cognitive dimensions of water usage at Greek sanctuaries. Our investigation will therefore illuminate the interplay between practicalities and the shaping of ritual at Greek sanctuaries, or in other words, the interplay between actors and things, and the settings where these interact.

## Summary and future directions

The above presented project will document and analyse textual, epigraphic and iconographical evidence for ritual and utilitarian water usage at Greek sanctuaries in Archaic to Hellenistic times. These uses may involve purifications before entering the sanctuary or before a sacrifice, or the washing of statues of the gods. It could further involve cooking, dining, as well as cleaning and gardening, not to speak of the great needs of water for drinking at festivals and games.

Water-installations at a selection of five sanctuaries will be documented, through a GIS model, and analysed according to activity zones. The sanctuaries we have chosen for such an in-depth study are the Asklepieion at Messene, the sanctuary of Demeter and Kore at Corinth, the sanctuary of Apollo and Athena at Argos, The Argive Heraion, and the sanctuary of Poseidon at Isthmia. These sanctuaries will provide a sample of variations in layout, size, locations in the landscape/cityscape, as well as different divinities with, presumably, different cultic needs as concerns the use of water. We hope thus to establish a methodology, which through a GIS mapping of water sources and water supply systems may be successful in identifying activity zones and which different water sources were vital for profane or ritual usages of water.

Finally, an overarching analysis, combining the first two parts, will hopefully expand our knowledge of perceptions of human activities in the god's dwelling: how did ritual and utilitarian uses of water differ at a perceptual level? How did the presence of water at a sanctuary shape ritual as well as utilitarian activities? Was water, when present in a god's sanctuary, considered to be belonging to the god (or even to some measure part of the divine sphere?), and to be used primarily in ritual activities? Did the quality itself of water matter for ritual or utilitarian uses, or were practical considerations what shaped the activities? We hope to be able to answer questions such as these, and by so doing, cast light on ideas and unspoken practices in Greek cult concerned with a range of activities tied to water, from purifications to games, fairs and festivals.

## Bibliography

Anderson-Stojanović, V.R. 1996. 'The University of Chicago excavations in the Rachi settlement at Isthmia, 1989', *Hesperia* 65, 57–98.

Anderson-Stojanović, V.R. & D. Reese 1993. 'A well in the Rachi settlement at Isthmia', *Hesperia* 62, 257–302.

Androvitsanea, A. 2014. 'The role of water in ancient sanctuaries. The sanctuary of Amphiaraos', in *Cura Aquarum in Isreal II – Water in antiquity – in memory of Mr. Yehuda Peleg, Prof. Ehud Netzer and Dr. David Amit. Proceedings of the 15th international conference on the history of water management and hydraulic engineering in the Mediterranean region, Israel 14–20 October 2012* (Schriften der Deutschen Wasserhistorischen Gesellschaft, 21), eds. C. Ohlig & T. Tsuk, Siegburg, 247–256.

Barad, K. 2007. *Meeting the universe halfway. Quantum physics and the entanglement of matter and meaning*, Durham, N.C.

Bendlin, A. 2000. s.v. Reinheit/Unreinheit, *HrwG* 4, 412–416.

Bonnechere, P. 2018. 'Pureté, justice, <<piété>> et leurs contraires : l'apport des sources oraculaires', in *Purity and purification in the ancient Greek world. Texts, rituals, and norms* (Kernos Supplément, 32), eds. J.-M. Varbon & S. Peels-Matthey, Liège, 49–91.

Boudon, V. 1994. 'Le rôle de l'eau dans les prescriptions médicales d'Asclépios chez Galien et Aelius Aristide', in *Ancient medicine in its socio-cultural context. Papers read at the congress held at Leiden University 13–15 April 1992, vol. 2*, eds. P.J. van der Eijk, H.F.J. Hortsmanhoff & P.H. Schrijvers, Amsterdam, 157–168.

- Broneer, O. 1955. 'Excavations at Isthmia, 1954', *Hesperia* 24, 110–141.
- Burkert, W. 1985. *Greek religion*, Cambridge. Mass.
- Camp, J. 1977. *The water supply of ancient Athens from 3000 to 86 B.C.* (PhD thesis, Princeton University).
- Caskey, J.L. 1960. 'Objects from a well at Isthmia', *Hesperia* 29, 168–176.
- de Cazanove, O. 2015. 'Water', in *A companion to the archaeology of religion in the ancient world*, eds. R. Raja & J. Rüpke, Chichester, 182–193.
- Cole, S.G. 1988. 'The uses of water in Greek sanctuaries', in *Early Greek cult practice. Proceedings of the Fifth International Symposium at the Swedish Institute at Athens, 26–29 June, 1986* (ActaAth-4o, 38), eds. R. Hägg, N. Marinatos & G.C. Nordquist, Stockholm, 161–165.
- Comparetti, D. 1926. 'Nuova iscrizione di Gortyna bistrofedica e di scrittura ionica contenente leggi e provvedimenti contro la peste', *Atti della R. Accademia dei Lincei. Memorie della classe di scienze morali, storiche e filologiche*, 6th series, 258–265.
- Corinth 1:6 = B.H. Hill, *Corinth 1:VI. The springs. Peirene, Sacred Spring and Glauke*, Princeton, N.J. 1964.
- Corinth 14 = C. Roebuck, *Corinth XIV. The Asclepieion*, Princeton 1951.
- Corinth 18:3 = N. Bookidis & R.S. Stroud, *Corinth XVIII:3. The Sanctuary of Demeter and Kore. Topography and architecture*, Princeton, N.J. 1997.
- Decourt, J.-C. & A. Tziafalias 2015. 'Un règlement religieux de la région de Larissa. Cultes grecs et « orientaux »', *Kernos* 28, 13–51.
- Dillon, M. 1997. *Pilgrims and pilgrimage in ancient Greece*, London & New York.
- Dillon, M. 2002. *Girls and women in Classical Greek religion*, London & New York.
- Dunbabin, T.J. 1951. 'The oracle of Hera Akraia at Perachora', *BSA* 46, 61–71.
- Ehrenheim, H. 2009. 'Identifying incubation areas in Pagan and Early Christian times', *Proceedings of the Danish Institute at Athens* 6, 237–276.
- Ehrenheim, H. 2015. *Greek incubation rituals* (Kernos Supplément, 29), Liège.

- Ehrenheim, H. *forthcoming*. 'From exclusive dream oracles to ubiquitous incubation dreams: a change in the perception of a divine healer?', in *Aspects of ancient Greek cult II: sacred architecture - sacred space - sacred objects. An international colloquium in honor of Erik Hansen*, eds. J. Tae Jensen, G. Hinge, P. Schutz & K. Winther-Jacobsen, Copenhagen.
- Eitrem, S. 1915. *Opferritus und Voropfer der Griechen und Römer*, Oslo.
- Ekroth, G. 2007. 'Meat in ancient Greece: sacrificial, sacred or secular?' *Food & History* 5, 249–272.
- Ekroth, G. 2010. "'En Grillad, Tack!' Varför homeriska hjältar inte kokade sin mat', in *Tankemönster. En festskrift till Eva Rystedt*, eds. by F. Faegersten, J. Wallensten & I. Östenberg, Lund, 53–60.
- Ekroth, G. 2017. 'Bare bones: zooarchaeology and Greek sacrifice', in *Animal sacrifice in the ancient Greek world*, eds. S. Hitch & I. Rutherford, Cambridge, 15–47.
- Ekroth, G. *forthcoming*. 'A room of one's own? Exploring the temenos concept as divine property', in *Stuff of the gods. The material aspects of religion in ancient Greece*, eds. J. Wallensten, M. Haysom & M. Mili.
- Elderkin, G.W. 1940. 'The sacred doves of Delphi', *Classical Philology* 35, 49–52.
- Frejman, A. *forthcoming*. *With gods as neighbours: extra-temenal activity at Greek rural sanctuaries, 700–200 BCE* (PhD thesis, Uppsala University).
- Fontenrose, J. 1988. *Didyma. Apollo's oracle, cult, and companions*, Berkley, Los Angeles & London.
- Fournet *et al.* 2013 = T. Fournet, S. Lucore, B. Redon & M. Trümper 2013. 'Catalog', in *Greek baths and bathing culture. New discoveries and approaches*, eds. S. Lucore & M. Trümper, Leuven, Paris & Walpole, MA, 265–333.
- Fowler, H.N., 1914. Plato. *Euthyphro. Apology. Crito. Phaedo. Phaedrus*. Translated by Harold North Fowler (Loeb Classical Library, 36), Cambridge, MA.
- Fullerton, M.D. 1986. 'The archaistic perirrhanteria of Attica', *Hesperia* 55, 207–217.
- Furtwängler, A. 1906. *Aegina. Das Heiligtum der Aphaia*, München.



- Gebhard, E. 1993. 'The evolution of a pan-Hellenic sanctuary: from archaeology towards history at Isthmia', in *Greek sanctuaries. New approaches*, eds. Marinatos, N. & Hägg, R., London.
- Ginouvé, R. 1959. *L'établissement thermal de Gortys d'Arcadie* (Études Péloponésiennes, 2), Paris.
- Ginouvé, R. 1962. *Balaneutikè. Recherches sur le bain dans l'antiquité grecque* (BÉFAR, 200), Paris.
- Glaser, F. 1983. *Antike Brunnenbauten (κρηναι) in Griechenland* (Österreichische Akademie der Wissenschaften. Philosophisch-historische Klasse. Denkschriften, 161), Vienna.
- Goffman, E. 1956. 'The nature of deference and demeanor', *American Anthropologist* 58, 473–502.
- Goffman, E. 1972. *Interaction ritual. Essays in face-to face behaviour*, Harmondsworth.
- Gregory, T.E. 1995. 'The Roman bath at Isthmia: preliminary report 1972–1992', *Hesperia* 64, 279–313.
- Hägg, R., N. Marinatos & G.C. Nordquist (eds.) 1988. *Early Greek cult practice. Proceedings of the Fifth International Symposium at the Swedish Institute at Athens, 26–29 June, 1986* (ActaAth–4o, 38), Stockholm.
- Håland, E.J. 2009. 'Water sources and the sacred in modern and ancient Greece and beyond', *Water History* 1, 83–108.
- Halliday, W.R. 1913. *Greek divination. A study of its methods and principles*, London.
- Herbillon, J. 1929. *Les cultes de Patras, avec une prosopographie patréenne*, Baltimore.
- Herington, C.J. 1955. *Athena Parthenos and Athena Polias. A study in the religion of Periclean Athens* (Publications of the Faculty of Arts of the University of Manchester, 7), Manchester.
- Hodder, I. 2003. 'The "social" in archaeological theory: an historical and contemporary perspective', in *A Companion to social archaeology*, eds. L. Meskell & R. Pruce, Malden, 23–42.
- Hodder, I. 2012. *Entangled. An archaeology of the relationships between humans and things*, Malden, MA.

- Hoessly, F. 2001. *Katharsis: Reinigung als Heilverfahren. Studien zum Ritual der archaischen und klassischen Zeit sowie zum Corpus Hippocraticum* (Hypomnemata. Untersuchungen zur Antike und zu ihrem Nachleben, 135), Göttingen.
- Ingold, T. 1993. 'The temporality of the landscape', *World Archaeology* 25, 152–174.
- Ingold, T. 2000. *The perception of the environment. Essays on livelihood, dwelling and skill*, London.
- Ingold, T. 2007. 'Materials against materiality', *Archaeological Dialogues* 14, 1–16.
- Ingold, T. 2008. 'When ANT meets SPIDER: Social theory for arthropods', in *Material agency, towards a non-anthropocentric approach*, eds. C. Knappett & L. Malafouris, New York, 209–215.
- Ingold, T. 2010. 'Bringing things to life: Creative entanglements in a world of materials', *NCRM Working Paper Series* 5:10, 1–14.
- Isthmia 1* = O. Broneer, *Isthmia I. Temple of Poseidon*, Princeton, N.J. 1971.
- Isthmia 2* = O. Broneer, *Isthmia II. Topography and architecture*, Princeton, N.J. 1973.
- Jones, W.H.S., 1923. *Hippocrates. Volume 3*, with and English translation by W.H.S. Jones (Loeb Classical Library, 148), Cambridge, Mass., & London.
- Jordan, B. 1979. *Servants of the gods. A study in the religion, history and literature of fifth-century Athens* (Hypomnemata. Untersuchungen zur Antike und zu ihrem Nachleben, 55), Göttingen.
- Kimmey, S. 2017. *The Nemean wells: sanctuary context and ritual activity in the Northeast Peloponnese* (PhD thesis, University of Missouri-Columbia).
- Klingborg, P. 2017. *Greek cisterns. Water and risk in ancient Greece, 600–50 BC* (PhD thesis, Uppsala University).
- Klingborg, P. *forthcoming*. 'Utilitarian water usages at Greek Sanctuaries'.
- Klingborg, P. & M. Finné 2018. 'Modeling the freshwater supply of cisterns in ancient Greece', *Water History* 10, 113–131.

- Koerner, R. 1974. 'Zu Recht und Verwaltung der griechischen Wasserversorgung nach den Inschriften', *ArchPF* 22–23, 155–202.
- Lambrinoudakis, V. 1994. 'L'eau médical à Épidaure', in *L'Eau, la santé et la maladie dans le monde grec* (BCH suppl., 28), eds. R. Ginouvès, A.-M. Guimier-Sorbets & J. Jouanna, Paris, 225–236.
- Larson, J. 2001. *Greek nymphs. Myth, cult, lore*, Oxford.
- Latour, B. 1999. *Pandora's hope. Essays on the reality of science studies*, Cambridge, Mass & London.
- Latour, B. 2005. *Reassembling the social. An introduction to Actor-Network-Theory*, Oxford & New York.
- Lewis S. 2002. *The Athenian woman. An iconographic handbook*, London.
- LiDonnici, R.L. 1995. *The Epidaurian miracle inscriptions. Text, translation and commentary*, Atlanta.
- de Ligt, L. & P.W. de Neeve 1988. 'Ancient periodic markets: festivals and fairs', *Athenaeum* 66, 391–416.
- Longfellow, B. 2012. 'Roman fountains in Greek sanctuaries', *AJA* 116, 133–155.
- Mallwitz, A. 1972. *Olympia und seine Bauten*, München.
- Mallwitz, A. 1999. *Bericht über die Ausgrabungen in Olympia XI. Frühjahr 1977 bis Herbst 1981*, Berlin.
- Melfi, M. 2007. *I santuari di Asclepio in Grecia I* (Studia archaeologica, 157), Rome.
- Mendel, G. 1901. 'Fouilles de Tégée. Rapport sommaire sur la campagne de 1900–1901', *BCH* 25, 241–281.
- Meyer, G. 2004. 'Le prix de l'eau et le tarif du sanctuaire des Nymphes : IG, I<sup>3</sup>, 256', *REG* 117, 321–325.
- Morgan, C. 1990. *Athletes and oracles. The transformation of Olympia and Delphi in the eighth century*, Cambridge.
- Müller, H. 2003. 'Pergamenische Parerga, III. Die Athenapriesterin Brimo und die pergamenischen Nikephorien', *Chiron* 33, 433–445.
- Müller, H. 2010. 'Ein Kultverein von Asklepiasten bei einem attalidischen Phrourion im Yüntdağ', *Chiron* 40, 427–457.

Muthmann, F. 1975. *Mutter und Quelle. Studien zur Quellenverehrung im Altertum und im Mittelalter*, Basel.

Nemea 1 = S.G. Miller, *Nemea I. Excavations at Nemea. Topographical and architectural studies: the Sacred Square, the Xenon, and the Bath*, eds. D.E. Birge, L.H. Kraynak & S.G. Miller, Berkeley 1992.

Nemea 2 = S.G. Miller, *Nemea II. The early Hellenistic stadium*, Berkeley, Los Angeles, London 2001.

Neumann, G. 1992. 'καθαρός "rein" und seine Sippe in den ältesten griechischen Texten', in *Kotinos. Festschrift für E. Simon*, ed. H. Froning, 71–75.

Nielsen, I. 2009. 'The sanctuary of Artemis Brauronia. Can architecture and iconography help to locate the settings of the rituals?', in *From Artemis to Diana* (Acta Hypoborea, 12), 77–109.

Ninck, M. 1921. *Die Bedeutung des Wasser im Kult und Leben der Alten*, Darmstadt.

Pakkanen, P. 2008. 'From polis to borders: demarcation of social and ritual space in the Sanctuary of Poseidon at Kalaureia, Greece', *Temenos* 44, 233–262.

Panessa, G. 1983. 'Le risorse idriche dei santuari greci', *Annali della Scuola Normale Superiore di Pisa, Classe di Lettere e Filosofia* 13, 359–387.

Papadimitrou, I. 1963. 'The sanctuary of Artemis at Brauron', *Scientific American* 208, 110–122.

Parke, H.W. 1978. 'Castalia', *BCH* 102, 199–219.

Parker, R. 1983. *Miasma. Pollution and purification in early Greek religion*, Oxford 1983.

Parker, R. 2011. *On Greek religion*, Ithaka & London.

Parker, R. 2018. 'Miasma: old and new problems', in *Purity and purification in the ancient Greek world. Texts, rituals, and norms* (Kernos Supplément, 32), eds. J.-M Varbon & S. Peels-Matthey, Liège, 23–33.

Parker, R. & S. Scullion 2016. 'The mysteries of the goddess of Marmarini', *Kernos* 29, 209–266.

Pimpl, H. 1997. *Perirrhanteria und Louteria. Entwicklung und Verwendung grosser Marmor- und Kalksteinbecken auf figürlichem und säulenartigem Untersatz in Griechenland*, Berlin.

Reed, B. & B. Reed 2013. 'How much water is needed in emergencies', in *Technical notes on drinking-water, sanitation and hygiene in emergencies. World Health Organization (WHO)*, eds. B. Reed, R. Shaw & K. Chatterton, Loughborough, 9.1–4.

Romano, I.B. 1988. 'Early Greek cult images and cult practices', in *Early Greek cult practice. Proceedings of the Fifth International Symposium at the Swedish Institute at Athens, 26–29 June, 1986* (ActaAth-4o, 38), eds. R. Hägg, N. Marinatos & G.C. Nordquist, Stockholm, 127–133.

Schauer, C. 1997. 'Ein hellenistischer Brunnen in Olympia', *IIAE*, 24–31.

Scott, M. 2010. *Delphi and Olympia. The spatial politics of panhellenism in the archaic and classical periods*, Cambridge.

Siard, H. 2006. 'Un règlement trouvé dans le réservoir de l'Inopos à Délos', *BCH* 130, 329–348.

Sinn, U. 1992. 'Sunion. Das befestigte Heiligtum der Athenas und des Poseidon an der Heiligen Landspitze Attikas', *Antike Welt* 23, 175–190.

Sinn, U. 1993. 'Greek sanctuaries as places of refuge', in *Greek sanctuaries. New approaches*, eds. N. Marinatos & R. Hägg, London.

Sinn, U. 2003. 'Das Poseidonheiligtum auf Kalaureia: ein archäologischer Befund zum antike Asylwesen', in *Das antike Asyl. Kultische Grundlagen, rechtliche Ausgestaltung und politische Funktion* (Akten der gesellschaft für Griechische und Hellenistische rechtsgeschichte, 15), Cologne, 107–126.

Sinn, U., C. Leypold & C. Shauer 2003. 'Olympia – eine Spitzenstellung nicht nur im Sport. Eine neu entdeckte Badeanlage der hellenistischen Zeit', *Antike Welt* 34, 617–623.

Sioumpara, E.P. 2011. *Der Asklepios-Tempel von Messene auf der Peloponnes. Untersuchungen zur hellenistischen Tempelarchitektur*, München.

Smith, C.F. 1920. *History of the Peloponnesian War, vol. II: books 3-4*. (Loeb Classical Library, 109), Cambridge, MA.

Sourvinou-Inwood, C. 2005. *Hylas, the nymphs, Dionysos and others. Myth, ritual, ethnicity. Martin P. Nilsson Lecture on Greek religion, delivered 1997 at the Swedish Institute at Athens* (ActaAth-8o, 19), Stockholm.

Steinsapir, A.I. 1999. 'Landscape and the sacred: the sanctuary dedicated to holy, heavenly Zeus', *Near Eastern Archaeology* 62, 182–194.

Stroszeck, J. 2016. 'Kerameikos. Forschungen und Arbeit', in *DAI Athenaeum*, eds. I. Marathaki, U. Schultze, J. Stroszek, U. Thaler & T.-P. Wermter, Athens, 28–49.

*Tegea 2* = E. Østby (ed.), *Tegea II. Investigations in the sanctuary of Athena Alea 1990–94 and 2004* (Papers and monographs from the Norwegian institute at Athens 4), Athens 2014.

Themelis, P. 2003. *Ancient Messene*, Athens.

Tölle-Kastenbein, R. 1985. 'Der Begriff Krene', *AA*, 451–470.

Trümper, M. 2014. 'Bathing in the sanctuary of Asklepios and Apollo Maleatas at Epidauros', in eds. A. Avramidou & D. Demetriou, *Approaching the ancient artifact: representation, narrative and function*, Berlin, 211–231.

Vila, E. 2000. 'Bone remains from sacrificial places: the temples of Athena Alea at Tegea and of Asea on Agios Elias (The Peloponnese, Greece)', in *Archaeozoology of the Near East IV B. Proceedings of the fourth international symposium on the archaeozoology of Southwestern Asia and adjacent areas* (ARC 32), eds. M. Mashkour, A.M. Choyke, H. Buitenhuis & F. Poplin, Groningen.

Vollgraff, W. 1956. *Le sanctuaire d'Apollon Pythéen à Argos, avec la collaboration de W. van der Pluym & A. Roes* (Études Péloponnésiennes, 1), Paris.

Waldstein, C. 1902. *The Argive Heraeum. Volume I*, Boston.

Waldstein, C. 1905. *The Argive Heraeum. Volume II*, Boston.

Wells, B., A. Penttinen, J. Hjohlman & E. Savini 2005. 'The Kalaureia Excavation Project: the 2003 season. With an appendix by K. Göransson', *OpAth* 30, 127–215.

Wells, B., A. Penttinen & J. Hjohlman 2008. 'The Kalaureia Excavation Project: the 2004 and 2005 seasons, with contributions by K. Göransson, A. Karivieri & M.D. Trifirò', *OpAth* 31–32, 31–129.

Wickkiser, B. *forthcoming*. 'Water is cold and wet: reflections on properties and potencies of water in the cult of Asklepios', *Ancient Waterlands*.

Wide, S. & L. Kjellberg 1895. 'Ausgrabungen auf Kalaureia', *AM* 20, 267–326.

Witmore, C.L. 2007. 'Symmetrical archaeology. Excerpts of a manifesto', *World archaeology* 39, 546–562.

Wycherley, R.E. 1937. 'ΠΗΓΗ and ΚΡΗΝΗ', *CR* 51, 2–3.

Yegül, F. 1992. *Baths and bathing in classical antiquity*, Cambridge.

Yegül, F., 2015. 'Roman baths at Isthmia and sanctuary baths in Greece', in *Bridge of the untiring sea: The Corinthian Isthmus from Prehistory to late Antiquity* (Hesperia Suppl., 48), 247-269.