Protean Caves and Cyrenean Grottos: The Subterranean World of Vergil's Fourth Georgic

Kirby Schoephoerster

Washington University in St. Louis

Follow this and additional works at: https://openscholarship.wustl.edu/art_sci_etds

Part of the Classical Archaeology and Art History Commons, Classical Literature and Philology Commons, Geology Commons, Hydrology Commons, and the Speleology Commons

Recommended Citation


This Thesis is brought to you for free and open access by the Arts & Sciences at Washington University Open Scholarship. It has been accepted for inclusion in Arts & Sciences Electronic Theses and Dissertations by an authorized administrator of Washington University Open Scholarship. For more information, please contact digital@wumail.wustl.edu.
Protean Caves and Cyrenean Grottos

*The Subterranean World of Vergil’s Fourth Georgic*

By Kirby L. Schoephoerster

A thesis presented to
The Graduate School
of Washington University in
partial fulfillment of the
requirements for the degree
of Masters of Arts

May 2020
St. Louis, Missouri
# Table of Contents

ACKNOWLEDGEMENTS ................................................................................................. III

CHAPTER 1 – INTRODUCTION ...................................................................................... 1

CHAPTER 2 – CAVES AND THEIR SIGNIFICANCE IN GREECE AND ROME ............. 12
   A. MEDITERRANEAN KARST: THEN AND NOW ......................................................... 12
   B. ANCIENT CAVES IN GRECO-ROMAN MYTH, POETRY, AND ARCHITECTURE .......... 20
   C. ANCIENT KARST AND CAVES IN GRECO-ROMAN SCIENTIFIC DISCOURSE ............ 27

CHAPTER 3 – THE GEORGICS AND THE SUBTERRANEAN WORLD ......................... 43
   A. THE GEORGICS AND THE EPYLLION OF ARISTAEUS ...................................... 43
   B. EVIDENCE OF VERGILIAN CAVES AND KARST .................................................. 52

CHAPTER 4 – CYRENE’S SPELUNCA ........................................................................... 67
   A. A HYDROGEOLOGICAL READING OF GEORGICS 4.315-386 .............................. 67
   B. THE GEORGIC SPELUNCA AND THE IMPERIAL GROTTO .................................... 93

CHAPTER 5 – PROTEUS’ SPECUS ............................................................................... 101
   A. A HYDROGEOLOGICAL READING OF GEORGICS 4.387-452, 528-30 .................. 101
   B. EROSIve INTERACTIONS IN THE GEORGIC SPECUS ......................................... 122

CHAPTER 6 – ORPHEUS’ ANTRA ............................................................................... 127
   A. A HYDROGEOLOGICAL READING OF GEORGICS 4.453-527 .............................. 127
   B. THE GEORGIC UNDERWORLD AND ITS LINKING ANTRA .................................... 144

CHAPTER 7 – CONCLUSIONS ..................................................................................... 148
   A. IN MEDIO GURGITE: THE SIGNIFICANCE OF KARST IN THE EPYLLION OF ARISTAEUS .......... 148
   B. CAVA MIRABILIA: THE SIGNIFICANCE OF CAVES IN THE EPYLLION OF ARISTAEUS .......... 151

APPENDIX OF FIGURES ............................................................................................ 156

BIBLIOGRAPHY ........................................................................................................... 162
Acknowledgements

First and foremost, I need to express my profound gratitude to Dr. Nicola Aravecchia, who eagerly agreed to advise my thesis. Thank you, Nicola, for all of your hard work, patience, and willingness to help at every stage of the (lengthy) research process. It was refreshing to work with a scholar who shares my approach to conceptualizing ideas and organizing arguments, and I enjoyed every moment of our productive meetings. Thank you for your enthusiasm, and thank you for burgeoning my passion to freely explore the ancient world. I would also like to thank my committee members, Dr. Kathryn Wilson and Dr. Jennifer Smith, for their invaluable help during the writing and defense stages of this thesis; their knowledge of ancient scholarship and modern geology respectively and their thought-provoking questions were indispensable to my research. Furthermore, I would like to thank Dr. Zoe Stamatopoulou for her unwavering support throughout my graduate school experience; her devotion to her students has been, and will continue to be, unbreakable. I would also like to acknowledge the profound support of Dr. Catherine Keane and Dr. Thomas Keeline for their open arms, warm smiles, and passion for learning that made me feel at home immediately upon my entry to the graduate program; those feelings will never leave me.

To my family, thank you for all of your love and neverending encouragement, and to my partner Elizabeth Bews for your ability to keep me focused, sane, and happy not only through every stage of my thesis, but also through every stage of life that has transpired since my time at WashU. Finally, to my WashU friends, thank you for the cheerful comradery and stimulating, (mostly) scholarly discussions that I could expect on a daily basis. You made my time at WashU feel like home.

Kirby Schoephoerster

Washington University in St. Louis

May 2020
For my father and mother

Quod me vatibus eruditis inservistis,
sublimi feriam sidera vertice
Si quis specus saxis penitus exesis montem suspenderit, 
non manu factus, sed naturalibus causis in tantam laxitatem 
excavatus, animum tuum quadam religionis suspicione percutiet. (Sen. Epist. 41.3)

“If any cave, made by the deep hollowness of the rocks, holds up a mountain, 
a cave not built by hand but hollowed out into such spaciousness by natural causes, 
that cave will pierce your soul with a certain intimation of the existence of God.”

Caves held a certain mystical, if not divine, significance among ancient peoples throughout the Mediterranean. William White says it best when he describes caves as essentially anthropomorphic spaces; earth’s void is interesting to humankind if it can be entered and explored.¹ The Roman philosopher and natural historian Seneca (4 BCE – 65 CE) expresses a similar sentiment as he paints an interesting picture of how a Roman might perceive such a geological feature, which is quoted and translated above; caves and cave systems could exist as either man-made or natural spaces, though both are worth pondering. Seneca frames the beauty of the natural type as far superior to the marvelous abilities of the Roman engineers of his time and the aristocratic elite who commissioned caves to be built on their properties. But more importantly, the sheer sight of seeing such “openness” (laxitas) beneath a mountain, a geological phenomenon that is magnificent in and of itself, has the potential to create a sense of awe within one’s soul – a sort of proof that God exists in nature.

Seneca’s statement above implies a sympathy towards nature that was quite prevalent among scholars during the early Imperial Period. The cave, much like the rivers, groves, and springs that helped the ancient Romans gain a foothold in Italy and eventually broaden their reach across the Mediterranean, held a special significance in the ancient psyche; the cave functioned not only as a place of refuge or source of life-giving waters, but it was also a place of spectacle that retained its divinity when left untouched, though the artificial embellishment of caves seems to have held a special place in ancient Roman society.

¹ White 1988, 60.
A certain aura of mystery surrounds the nature of earth’s inner machinations. Just as in antiquity, scientists today know far less information about the insides of the earth than what lies on its surface. The simple fact that first-hand observation is blocked by soils and stone is foundational to the mystery of the subterranean world. Yet, we know, as did the ancients, that certain geological processes (e.g. volcanism, earthquakes, sinkholes, etc.) can allow humans to investigate these subterranean phenomena first-hand. The process of karstification, or the destruction of rock by means of highly soluble water, displays the earth’s hollowness, which, like the seismic processes of volcanos and earthquakes, offers humans the opportunity to explore and observe geological phenomena far below the surface by means of caves. These speleological observations are generally carried out in darkness and quietness, thus the nature of the cave as a dark, silent, and confined space has only strengthened its mystical qualities.²

In Greco-Roman antiquity, people made sense of their natural surroundings and local topographies in many ways, one of which was storytelling. Myths, as W. B. Masse defines it, offer “cultural accounts of major events that typically happened in the remote past of that culture.”³ Certain experiences and observations were shared among members of a community over a long period of time. These once observed phenomena would eventually become memories as time went on, and changing narrative techniques and communal agendas often obscured the myth’s factual basis. Yet, in every story exists grains of truth – a specific relatability in which the receivers of the myth can extract some sort of meaningful information; what is pertinent remains, and what was pertinent to ancient Greeks and Romans was the complexity of the natural world, its geology, and its creation.

In 1968, Dorothy Vitaliano coined the term ‘geomythology,’ which is the study of etiological traditions created by ancient cultures to describe and explain geological phenomena. Myth can offer us a glimpse into ancient perspectives of the natural world and its conspicuous geological mechanisms.⁴ These sorts of myths that are concerned with the geological mechanisms of the world are known as ‘geomyths.’

² Cf. Ustinova (2009) and her seminal work on subterranean spaces and their hallucinogenic effects on the human psyche, particular the mental states of ancient Greeks. The effects of caves will be discussed further in chapter 2b. Cf. also Lewis-Williams 2002.
³ Masse et al. 2007, 9.
These myths often contain accurate insight into what happens within and on top of the earth, usually in the form of narrative tales of catastrophic geological events like volcanic eruptions, earthquakes, and floods, but also in the form of folk etiologies of localized geological features like conspicuous crags, flooded lakes, and narrow valleys. The creation and destruction of Atlantis, the impassability of the Stymphalian Swamp, the killing of the Hydra by Herakles at Lake Lerna, and the habitation of Mt. Aetna by the race of the Cyclops are common, well-researched examples of geomyths.\(^5\)

In every geomyth, rational observation and creative speculation ultimately yields accurate proto-scientific truths about the geology of Earth, which continue to be shared long after the myth-inspiring event occurred. The environmental knowledge within geomyths, like myths about certain cultural phenomena (e.g. the creation of democracy), are oftentimes influenced by the location of the story, the storyteller’s role in society, and the cultural and cosmological ideas associated with the given landscape.\(^6\) Thus, a geomyth of a given landscape can actually provide reliable data about that particular landscape which was witnessed, remembered, and re-examined over time by numerous attestors.

Although the term “geomythology” was coined relatively recently, the investigation of myth in the context of geology and geological truth is actually ancient: Euhemerus (fl. 310-280 BCE) was the father of rationalizing myth. In his works, he described the utopian life of people on the island of Panchaea and how the mythic founders Uranus, Cronus, and Zeus were worshipped there as gods alongside their mortal rulers. The accounts of divinities were understood by Euhemerus as poetic embellishments of actual people. The study of Euhemerism grew immensely after his death, and his followers continued to analyze mythic narratives as containing scraps of truth. Palaephatus (fl. 300s BCE) was a Euhemerist and mythographer who wrote a treatise “On Incredible Things,” which aimed to solely rationalize mythical

---

\(^5\) Modern geologists consider two major theories when identifying the creation of natural phenomena. ‘Catastrophism’ involves the creation of natural features as a result of some major, geological catalyst that initiates the creation of new geological processes in a relatively short amount of time. ‘Gradualism,’ on the other hand, involves the gradual formation of natural phenomena without any massive geological change acting as an immediate catalyst. A geomyth can describe either process. The destruction of Atlantis was commonly thought to have occurred as a result of the cataclysmic eruption of Thera, which eradicated the Minoan civilization. Cf. Plato Cri. 108e, 113e ff; Ti. 25a-d and Vitaliano 2007. Cf. Strabo 8.6.8, Paus. 8.22.4, and Hyg. 30 for the Stymphalian Swamp; cf. Apollod. Bibl. 2.5. Cf. Vitaliano 2007 and Connors 2016 for Lerna; cf. also Thuc. 3.88, 6.2.1, Callim. Hymn 3.8-10, Verg. Aen. 8.416-422, and Ov. Fast. 4.287-288 for the Cyclops. Cf. Plin. HN 3 and 7 in particular.

\(^6\) Walsh 2013, 109-110.
content.7 Plato (c. 429 – 347 BCE) could be considered one of the first geomythologists in his accurate descriptions of the ancient Aegean coastline and his well-informed discussions on the destruction of Atlantis. Ovid (43 BCE – 17 CE) accurately describes the processes of petrification in his Metamorphoses,8 while Strabo and Pausanias (1st cent. BCE – 1st cent. CE) not only accurately describe most of their geographies, but also consider traditional geomyths as historical records enshrouded in literary embellishment. Pliny the Elder (c. 23 – 79 CE), moreover, describes how the race of Cyclops actually personify the active volcanoes throughout the Mediterranean world.

The study of geology in the context of myth has been well-researched despite its relatively recent beginnings.9 An even more recent and burgeoning study of this relationship between myth and geology has arisen in the context of hydrology, or the study of the movements of water throughout the earth. Hydromythology, or the study of water in the context of myth, is a subspecialty of geomythology that was first coined by William Back in 1978.10 Like any other geological process, hydrogeological processes and the natural structures created as a result of water’s movement were continuously observed and accurately recorded by ancient proto-scientific peoples.11 The movement of waters and the creation/destruction of geological features as a result of said movement is the defining feature of what is called karst terrain. This process of ‘karstification’ is an extremely long process; the dissolution of stone through either chemical or mechanical action occurs over the span of 10,000 to 100,000 years, wherein around 0.5 to 1 millimeter of stone is dissolved per year.12 The morphological and hydrological features created by this process of karstification can be quite complex, yet discernible, both above and below ground.

---

7 Cf. Incredibilia 28 for his rationalization of Bellerophon’s destruction of the “Chimera” (i.e. a snake and lion that lived on Mount Chimera in Lycia) by setting the forest on fire. Palaeaphatus was a popular figure among Byzantine scholars.
8 Cf. in particular the myth of Lethe (10.68-71).
9 Both Robert Hooke (late 17th century) and George Cuvier (late 18th century) believed that empirical evidence of fossils can be extracted from Greco-Roman myths and proved by the existence of petrified remains in mountaintops (fish bones) and valleys (elephant bones) throughout the Mediterranean. Edward Burnet Tylor (mid-19th century) considered legends of natural history as “Myths of Observation.”
10 Clendenon 2009b, 294.
11 Connors 2016, 152. Chapter 2a will discuss this topic in detail.
Karst landscapes, which are usually found in areas dominated by limestone (a highly soluble rock), are typically comprised of hydrological systems that exist both above and below the earth’s surface.\textsuperscript{13} Caves are one of the most prevalent features of a karstic environment that exists out of sight, yet their entrances can often reach the surface and are accessible to humans.\textsuperscript{14} Caves in karstic environments are created by groundwater’s dissolution of rock along cracks and fissures. This prolonged, variable process of dissolution can thus create a variety of interesting speleological features such as single-channel conduits, speleothems (e.g. stalagmites, stalactites, etc.), and branching, subterranean river-ways.

Ancient Greeks and Romans were not unaware of these processes; the pre-Socratic philosopher Thales (early 6\textsuperscript{th} cent. BCE) was the earliest to describe the hydrological cycle in detail outside of the context of the epic tradition; water begins in the seas, and its salinity is made fresh through the upwards filtration into earth’s rocks. Water eventually rises up onto the earth’s surface in the form of rivers.\textsuperscript{15} Plato builds on this approach when he describes the spherical earth as containing a subterranean network of interconnected conduits which transport all elements up to the surface.\textsuperscript{16} Empedocles (490 – 430 BCE) theorized a more modern depiction of the earth’s water cycle, while Eratosthenes (276 – 194 BCE) analyzed the features of karst terrain (e.g. ponors, poljes, and spring heads) as intimately connected to this water cycle.\textsuperscript{17} Plato’s student Aristotle (384 – 322 BCE) explains the water cycle in terms of springs which originate from subterranean condensation,\textsuperscript{18} and Vitruvius contemplates the movements of subterranean river channels and the high filtration-rate of mountaintops.\textsuperscript{19} Strabo (c. 64 BCE – c. 24 CE) dedicates much of book eight of his \textit{Geography} to specific karstic features, namely underground streams and disappearing rivers. Ovid too describes the dissolution process and disappearing rivers in his \textit{Metamorphoses},\textsuperscript{20} as does Seneca (c. 4 BCE – 65 CE) in book three of his \textit{Naturales Quaestiones}.\textsuperscript{21}

\textsuperscript{13} Walsh 2013, 78-79. \\
\textsuperscript{14} Cf. White 1988, 116. \\
\textsuperscript{15} Cf. also White 2007, 13. \\
\textsuperscript{16} \textit{Phid.} 111d-112a. Cf. also Clarendon 2009, 122 and Connors 2016, 170. \\
\textsuperscript{17} Cf. Strabo 8.8.4. \\
\textsuperscript{18} Cf. \textit{Metec.} 1.13. \\
\textsuperscript{19} Cf. \textit{De arch.} 8.1.2, 8.1.7. \\
\textsuperscript{20} Cf. \textit{Met.} 15.273-6, and below in chapter 2c for a description of the Erasinus river. \\
\textsuperscript{21} These ancient hydrologists/karstologists and their views will be dealt with more in detail in chapter 2.
It is thus surprising that these ancient hydrogeological perspectives have been investigated by modern classicists and archaeologists only slightly. Instead, most scholarly work regarding caves and cave systems in the ancient world tackles the subject of ‘caves’ as solely metaphorical fields of experience and not as physical spaces understood by ancient authors as possessing observable, meaningful features that are true to geological reality. This metaphorical perspective is most apparent in the discussion of caves in regards to poetry and myth;²² caves were often seen as entranceways into the underworld and functioned as resting places for the dead and refuges for various divinities, monsters, and heroes.²³ The earliest Mediterranean peoples saw caves as “repositories for visual culture” and used them as ritual spaces.²⁴ This symbolic appreciation of subterranean space was strengthened by the creation of the imperial garden grottos of Rome’s upper classes, and the cave (and its intimate connection to life-giving water) became inextricably linked to poetic inspiration.²⁵ All in all, there has been much research, relatively speaking, on the ‘cave’ as an important facet of ancient Mediterranean architecture, poetry, and culture. Yet, very few scholars have investigated the cave in the context of Roman mythology, much less geology, and even less so the intersection of mythology and geology.

The scholarship done by Clendenon and Connors offers the most recent and comprehensive study pertaining to the connection of hydrology and karstology in the ancient world. Both authors offer enlightening, philological approaches to the understanding of Roman perceptions of the geological world, both real and mythological; the connection between karst features, the hydrological cycle, and the underworld is the focal point of their research. The ‘cave’ as a feature of this now clearly defined, ancient, and karstic environment, however, is left only alluded to. This thesis thus aims to fill in that gap. The study of geomythology, and its subset of hydromythology, has grown rapidly in recent decades, yet scholars of geomythology have only scratched the surface when it comes to truly understanding how

²²Weinberg (1986) was the first to offer a comprehensive view of caves and their metaphorical “meanings” in Western literature starting from Greco-Roman antiquity up until the Renaissance. Scientific discourses of any kind regarding cave systems is set aside while poetry and “literary” sources are prioritized. The following brief discussion of interpretations of caves will be described more thoroughly in chapter 2 and throughout the rest of the thesis where appropriate.


Greco-Roman scholars perceived of the karstification process, that is, the gradual creation of subterranean cave systems through the dissolution of rock. Karst systems, moreover, are more observable throughout the Mediterranean than anywhere else in the world, and it is evident in the primary sources that the ancient Greeks and Romans both pondered and utilized their features quite often.

Using the studies and methodologies spearheaded by the field of geomythology, this project aims to reevaluate one of the most famous works of ancient literature, the *Georgics* of Vergil, within the context of karst geology. More specifically, this thesis will critically investigate the famous epyllion of Aristaeus as a geomyth. By doing so, I hope to shed new light on an age-old and thoroughly-researched story by highlighting how Vergil’s epyllion of Aristaeus contains hydrogeologically accurate insight into the conspicuous processes, or the results of the processes, of karstification. Karstification and karstic features are evident in Vergil’s detailed descriptions of, allusions to, and general treatment of the subterranean world and its relationship to mythic individuals, events, and spaces. Furthermore, Vergil’s vocabulary within the epyllion suggests a certain karstic awareness. This proto-scientific knowledge may very well have been appropriated from his sources, yet this fact of Roman poetic composition does not detract any purposeful meaning that could be gathered from viewing the epyllion as a geomyth; the story highlights an awareness of the poetic and scientific discourse regarding subterranean, geological processes first observed either by Vergil’s poetic predecessors or by Vergil himself. The mythic narrative, which ends the *Georgics* as a whole, is the continuation, or even culmination, of all knowledge of the natural world, both above and below Earth’s surface, that solidified Vergil’s place among Augustus’ literary elite.

What separates Vergil’s myth of Aristaeus from his Homeric and Alexandrian sources, however, is Vergil’s constant infatuation with the natural world. This may very well be a result of the *Georgics*’ combined function as a didactic guide on farming and a poetic, quasi-bucolic discourse on Man’s relationship to Nature. Yet, the poem as a whole is deeply concerned with Earth’s inner machinations, and

---

26 Connors 2016 will be my primary source of information regarding this aspect of Vergil’s karstic awareness. This topic will be elaborated in chapters 2a, 4a, 5a, and 6a.

27 The discussion of Vergil’s sources as pertaining to geology and karstology will be explained in chapter 3a.
book four, in particular, contains an overwhelming number of caves. In fact, caves form the backdrop for virtually all of the characters and virtually all of the narrative events in his myth, which, to my knowledge, is not evident anywhere else in the entire Roman mythos.

Vergil’s bee-generation ritual (*bugonia*), which introduces and concludes book four and couches the entire epyllion of Aristaeus, begins and ends in a cave; Vergil’s bees are created and gifted their attributes by Dictean Zeus, who is described solely in the context of his birth in a famous cave on mount Psychro, and their rebirth through the *bugonia* comes to fruition in the cavities of a dead bull. The process of their demise and the creation of the *bugonia* ritual is described through the telling of Vergil’s epyllion of Aristaeus, which involves a hero descending into the subterranean kingdom of his nymph mother at the Vale of Tempi only to be transported to a seaside cave on the coast of Pallene to wrestle the shapeshifting seer Proteus. The seer takes Aristaeus even deeper underground to the realm of Hades in an embedded narrative of the journey of Orpheus. After losing Eurydice for the second time, Orpheus consoles himself among wild animals in caves along the Strymon River. The bard ultimately meets his demise at the hands of angered maenads on the banks of the eddying Hebrus. Proteus then departs his coastal cave, and by following his mother’s instructions, Aristaeus succeeds in the renewal of his hive.

The narrative extends across geographical space of epic proportions (cf. Fig. 1), but every location, regardless of mythic time or space, is connected via a cave that has karstic significance. Moreover, every notable *event* and necessary revelation in the myth takes place in the context of caves, groves, and/or enclosed spaces. These revelations require Aristaeus to overcome multiple trials and experience multiple transitions in order to achieve the knowledge needed to restore his beloved bees. These transitions involve the physical movement from the surface world to the Underworld and back again, from life to death and death to life, and from ignorance to knowledge; these transitions occur all throughout the myth and always in the context of subterranean spaces.

---

28 The specifics of this statement, which is the most important part of this thesis, will be argued in chapters 4, 5, and 6. The following list of examples will also be individually detailed in chapters 4, 5, and 6: G. 4.333, 364, 374, 403, 418-22, 467, 468, 478-80, 509, 533, 543, 546, 553, and 555.
This observation is not a new one, but its significance poetically and geologically has yet to be investigated thoroughly. Vergil’s artistic move to structure his climactic epyllion almost exclusively in the context of caves is significant. I shall argue that Vergil’s choice to place the ‘cave’ as the setting for nearly all of his Georgic heroes and epic events highlights an observational awareness of the hydrogeological processes that, in reality, surrounded not only himself but nearly everyone living in the Mediterranean – the processes, and resulting features, of karstification; as I will argue below, the most notable example of this observational awareness on Vergil’s part is the dichotomy between the fresh, fluvial cave of Cyrene and the salty, coastal cave of Proteus, both of which not only accurately reflect the types of caves that any Roman could observe and ponder in situ, but are also suggestive of the connective hydrological system popularized in the scientific discourse of Vergil’s precursors and contemporaries. This dual approach makes Vergil’s epyllion much more accessible to a wider Roman audience.

There are numerous questions that arise from this approach, all of which will be addressed using a combination of literary, geological, and archaeological sources. How accurate is Vergil’s understanding of karst terrain? To what extent do Vergil’s sources influence the geological framework/rendering of the epyllion? And how does the mythic backdrop of caves, and the subterranean world in general, function within book four of the Georgics as a whole? To answer these questions, I will do a close reading of the epyllion using modern geological data and analyses of Mediterranean karst terrain, and I will situate Vergil’s narrative within the context of the scientific discourse of geology, the hydrological cycle, and speleology that was prevalent before and during Vergil’s own time. Vergil drew inspiration from numerous sources who themselves had a specific understanding of the natural world; thus, an investigation of these sources will highlight how Vergil interacts with the scientific tradition.

In chapter two, the nature and features of Mediterranean karst geology will be explained in general. By doing so, I will lay out the necessary terminology (both modern and ancient) that I will use in my close, geological readings of the epyllion. I will simultaneously discuss how ancients perceived of caves.

---

29 Cf. in particular Weinberg 1986, 128.
before and during Vergil’s time, and how ancient authors, poets, and scientists engaged with the karstic world. It will become evident that ancient authors were keen observers of their geological surroundings, and as a result understood caves in numerous ways.

I will discuss the significance of the *Georgics* as intimately connected with the geological world in chapter three, and I will introduce a brief, yet comprehensive, history of Vergil’s speleological awareness as it pertains to the poem as a whole; here I will introduce the fact that Vergil was well aware of, and quite rational in his description of certain geological processes. I will also investigate the poetic and scientific sources for the epyllion in terms of their impact on Vergil’s geology, most notably the works of Homer and the Hellenistic poet Callimachus. This section will frame Vergil, his georgic epyllion, and his geological descriptions within necessary poetic and cultural context. I aim to highlight that the *Georgics*, which pertains almost exclusively to nature and mankind’s interactions with it, provides the perfect opportunity for Vergil to contemplate the nature of earth’s inner machinations.

Chapter four will begin the close reading of the geomyth, starting with the first subterranean experience of Aristaeus in the story – his descent into the watery realm of his mother Cyrene. The scene as a whole illustrates how Vergil masterfully paints a captivating, mythic picture that nevertheless holds, at its core, a logical framework of proto-scientific observation of the karstic landscape of Tempi and the Peneus River. This section will include both an investigation into the complex hydrological cycle that is introduced during this section of the story as well as a metaphoric interpretation of the scene as a whole.

Chapter five will expand on the observations made above through another close reading of the text as pertaining to Aristaeus’ second encounter with karst terrain – the coastal cave of the shapeshifter Proteus. Here, too, it becomes obvious that Vergil was quite familiar with a wide range of natural phenomena as pertaining to Mediterranean karst. The following subsection, as in chapter four, will take a metaphoric approach and argue that it is by no means an arbitrary choice that Vergil chose to have Proteus – a monster of elemental proportions – reside within a wild, coastal cave on the shores of Pallene.

Chapter six will continue this train of critical investigation by delving into the embedded tale of Orpheus and Eurydice as told by Proteus. Here we move deeper underground as we follow Orpheus on
his famous journey into the cavernous realm of Hades and back again through the gates of Taenarum. Vergil’s description of the underworld and Orpheus’ interactions with it provide a foil to Aristaeus’ own subterranean journey and revelations; although both journeys end quite differently, both stories offer rationally consistent descriptions and conceptions of karst terrain, which themselves act as artistic foils.

In chapter seven I will revisit the myth of Aristaeus with a combined perspective of philology, archaeology, and geology to come to some conclusions about Vergil’s interaction with the subterranean world within *Georgics* 4. By critically examining the presence of caves within the geomyth of Aristaeus, we can both better contextualize the rich symbolism and allusions that Vergil aims to showcase in his didactic poem on farming as well as better understand how Romans engaged with the natural world. Vergil’s ‘cave,’ as illustrated in the *Georgics*, I argue, is not only accurate to the actual karst terrains of the named locations (Tempi, Pallene, Taenarum, and the Strymon/Hebrus river valleys), but it also encompasses all aspects the ‘cave’ in the Roman psyche; the georgic cave is a distinct space of liminality where humans can meet the divine and attain knowledge. Vergil’s ‘cave’ is not only metaphorically elaborate in both its connections and divergences from Homeric and Alexandrian traditions, but it is also geologically accurate in (1) its reflection of caves that all Romans could access and (2) in its adherence to contemporary scientific discourse on karst systems. These two aspects of the ‘cave’ allow for broader contemplation of the subterranean world as described in the *Georgics*. 
Chapter 2 – Caves and their Significance in Greece and Rome

a. Mediterranean Karst: Then and Now

Although it is nothing revolutionary to assert that ancient Greek and Roman vocabulary contains within it specific scientific nuances, the relatively recent work of Connors and Clendenon has brought to light the significance of ancient vocabulary in describing karstic phenomena as we know it today. Such ancient terms are used consistently and nearly always denote karstic features within a dynamic terrain typically involving water.\(^3^0\) I will describe said terminology below in tandem with modern research on Mediterranean karstlands.

The term ‘karst’ has many meanings among the modern scientific community.\(^3^1\) On the one hand, karst is a distinct topography that is characterized by both surface and subsurface features produced through the dissolution of rock by means of circulating water.\(^3^2\) Under this definition, karst is a geographical term that describes a particular area affected by the hydrogeological process of dissolution. On the other hand, the term ‘karst’ simply defines this dissolution process, which includes the crystallization of rock.\(^3^3\) The rocks that make up a karstland are typically carbonate (i.e. contain elemental carbon in their composition) and thus contain an abundant supply of soluble minerals, oils, and gases within them. The most common carbonate rocks are sedimentary limestone, dolomite, and marble. The dissolution process is a long one, but it can vary depending on how soluble the rock is or how acidic the water is.\(^3^4\) The chemical composition of the soils through which rainwater passes, as well as the presence

\(^{30}\) Connors 2016, 154.

\(^{31}\) The word karst comes from the Indo-european kar( )-, meaning “rock,” but the specific geomorphology which the term implies comes from the German karst originally used to label the Dinaric Alps.

\(^{32}\) Clendenon 2009a, 251.


\(^{34}\) In most karstlands, approximately 500 millimeters of stone is dissolved over the course of 500 years, which is a ratio of 1 mm to every year. Cf. Crouch 1993, 67.
of organic materials, can greatly affect water’s acidity, which is why the more forested a region is, the more active the karst system is below it.\textsuperscript{35} The boundaries of a particular karstland, therefore, may be defined geographically (through the outcropping line of karstic rocks which is visible on the surface), physiographically (through the chemical/physiological makeup of the carbonate rocks above and below the surface), or even hydrologically (through the presence of a restrictive drainage basin).\textsuperscript{36}

As rain and ground water trickles through the earth and dissolves rock, a number of features can form, some of which are visible on the surface landscape, others are hidden far beneath our feet. The most prevalent surface features of this dissolution process are poljes and dolines. Poljes are extensive, flat valleys caused by the result of post-glacial sea-level rise. They are comprised of limestones that were once underwater but have been exposed, many of which experience seasonal flooding and dry spells. It is quite common to find swamps and meadows dotting such a topography.

The ancient Greek $\lambda \iota \mu \nu \eta$, in Classical and Hellenistic times, could either mean “marsh” or “lake,” but more regularly, argues Connors, it is used to describe a flooded karstic polje. The verb $\lambda \iota \mu \nu \nu \acute{\alpha} \zeta \xi \upsilon$ (“lakeify”) emphasizes the word’s dynamic, karstic connotations. Strabo uses the word to describe the land near Pheneus,\textsuperscript{37} Diodorus Siculus uses it to describe the plain of Tempe,\textsuperscript{38} and Eudoxus uses it to describe a swamp in Zakynthos which ejects anything thrown into it out to the sea four stades away.\textsuperscript{39} The Stymphalian marsh sacred to Artemis is the most famous example of a flooded polje in myth.\textsuperscript{40} The dynamism of $\lambda \iota \mu \nu \eta$ is not limited to just the surface world, but also evident in the Underworld.\textsuperscript{41} The Latin palus is equivalent to $\lambda \iota \mu \nu \eta$ in both definition and karstic connotations. Palus refers to an area

\textsuperscript{37} Cf. Strabo 8.8.4. Even in Homer does $\lambda \iota \mu \nu \eta$ possess a dynamic, geological awareness as a descriptor of lakes that continuously flood or dry, but also as places or portals through which divinities can move throughout the earth and arise from its depths; Cf. the Boile (Il. 2.711), Cephus (Il. 5.709), and the Phanias (Callim. Fr. 407 103–4 Pf.) Cf. the disappearance of the Scamander (Il. 21.317), the escape of Poseidon to Aegae (Il. 13.21), the journey of Isis to Thetis (Il. 24.70), and the rise of Helios (Od. 3.1).
\textsuperscript{38} Diod. Sic. 4.18.6. This will be discussed further in chapter 4a.
\textsuperscript{39} Cf. fr. 407 96–99 Pf.
\textsuperscript{40} Cf. Paus. 8.22.8–9. In the story, a hunter chased a deer into a marshland ($\lambda \iota \mu \nu \eta$) that had been newly formed after a pit ($\beta \alpha \rho \alpha \theta \rho \omicron \nu$) which continuously swallowed up water was blocked by a log. The log was dislodged by the frantic deer (or hunter) and the pit reopened and swallowed up the deer, the hunter, and all of the lake’s water.
\textsuperscript{41} Tantalus stands in a $\lambda \iota \mu \nu \eta$ as his punishment (Od. 11.583).
usually covered with pools or standing water as a result of flooding.\textsuperscript{42} \textit{Palus} is also applied quite often to Underworld waters that possess a certain gloomy “marshiness.”\textsuperscript{43} The Latin \textit{stagnum} is similar to \textit{palus} in the sense of ‘standing water.’ Whereas \textit{palus} usually refers to a specific topography, \textit{stagnum} can be applied to numerous waterbodies as long as the water in them is not moving.\textsuperscript{44} It is interesting, moreover, that \textit{stagnum} is the choice word for describing rivers in the Underworld, though it does not seem to be as indicative of karstic waters or poljes in general as \textit{palus}.\textsuperscript{45}

Dolines (also called sinkholes) are surface features of karst where the drainage of surface water has found an accessible fissure that leads directly to carbonate rock. Overtime the drainage has enlarged this fissure, and if this enlarging continues to a point where the surface matter can no longer be supported by the now vacuous ground beneath it, it will often collapse and swallow up what is immediately above it.\textsuperscript{46} When a doline exists in the bed of a waterbody (e.g. the seafloor, a lakebed, or a riverbed) it is called a swallowhole and usually indicates the place where a surface stream starts its flow underground.\textsuperscript{47} Swallowholes are usually identified by whirlpools on the surface of a waterbody.

The ancient Greek word \textit{δίνη} can refer to the draining process of karstic waters and the creation of swallowholes. Among Greek authors, the term can simply connote “circular motion” of water or wind, but it is usually limited to describe waterbodies (i.e. springs, lakes, rivers, coastal waters) that possess observable, circularly flowing currents such as whirlpools or eddies.\textsuperscript{48} The ancient Greco-Roman concept of primeval Ocean is not only described as possessing \textit{δίνει}, but was also understood to be the source of all karstic whirlpools.\textsuperscript{49} The Latin \textit{gurges} would be equivalent to \textit{δίνη} in this context. In a more general sense, \textit{gurges} can simply mean “water” almost exclusively in the context of streams or the sea.\textsuperscript{50} The

\textsuperscript{43} Cf. Verg. \textit{Aen.} 6.323, Tib. 3.3.37, Prop. 4.11.15, and Ov. \textit{Met.} 2.46. Cf. also chapter 6a.
\textsuperscript{44} A \textit{stagnum} could be a natural or artificial pool or lagoon (cf. Catull. 31.2, Sall. \textit{Hist.} 3.75, Hor. \textit{Carm.} 2.15.4, and Verg. \textit{Aen.} 8.88), or even a bath or pool for swimming (cf. Sen. \textit{Ep.} 122.8 and Tac. \textit{Ann.} 15.64)
\textsuperscript{45} Cf. the river Lethe (cf. Prop. 4.7.91, Sen. \textit{Her. O.} 1162) and the Cocytus (Verg. \textit{Aen.} 6.323) for example. Cf. also chapter 6a.
\textsuperscript{46} Cf. Crouch 1993, 72, Connors 2016, 150.
\textsuperscript{47} White 1988, 18.
\textsuperscript{50} Cf. Catull. 65.5, Hor. \textit{Carm.} 2.1.33, and Ov. \textit{Met.} 5.469.
stronger, elevated sense implies swirling water in the form of a whirlpool, and this meaning is almost exclusive to prose. 51 Both meanings have similar frequency in the Latin corpus, but the stronger meaning usually rests nearby other karstic-connotative words like vorago or barathrum. The Latin unda possesses far less karstically connotative strength than gurges as ‘whirlpool,’ though undae could connote a more violent, circular movement of sea or river water. 52

A swallowhole can vary in both shape and size depending on the aforementioned dissolution process. The change in shape and size can create various pits and cave entrances. A stream whose surface flow is drained or diverted underground through a swallowhole is called a ‘disappearing stream’ (or sinking stream), and it is often the case in karst environments that the water which disappears from one stream can resurface elsewhere, usually a few kilometers away, and sometimes in a completely different type of waterbody. 53 This resurfacing is known as ‘resurgence,’ and the water that arises usually takes the form of a spring. Thus, the presence of numerous springs in a landscape often indicate a complex karstic system below (cf. Fig. 2). 54 The Greek term βάραθρον, and its Latin equivalent barathrum, means “pit” in a general sense, but it can also be suggestive of a karstic pit formed by a sinkhole/swallowhole that may or may not have continuing caves or streams beneath it. 55 Like λίμνη/palus above, βάραθρα can exist in the Underworld, 56 but they can also describe subterranean passages that allow for the outflow of surface waters. In other words, a βάραθρον is the space in which disappearing streams and λίμναι deposit their water. 57 The Latin vorago is another karstic equivalent to barathrum, and describes a ‘chasm’ in the earth that may or may not be filled with water. 58 The sheer emptiness implied by vorago is strengthened by the word’s metaphorical use to describe a person or thing with an insatiable appetite. 59

54 It should be noted that springs, like whirlpools, can occur in landscapes that are not karstic.
55 The Timavus falls into a βάραθρον (Strabo 5.1.8) and the land of Pelusium is full of pits (16.2.33). Cf. Also Vergil’s barathrum of Cacus (Aen. 8.245-46).
59 Cf. especially Cic. Ver. 3.23, Pis. 41, and Ov. Met. 8.843.
Springs that exist in karstlands often have their sources along the boundary between limestone or dolomite and insoluble material, like sandstone or clay, restricts the subterranean water’s movement, and as a result collects overtime. If impermeable material exists above permeable limestone, for example, vertical shafts (like pipes) can form through which spring water can make a more pressurized resurgence. It is more common, however, that cave that karst springs flow from open cave mouths that have been created by the dissolution of swallowholes and disappearing springs. Some springs are shallow and trickle upward through the shallow depths of a streambed, while others form in the channel of a river or around the river’s banks.

Another surface feature of karst landscapes are limestone outcroppings, which occur most often along coastlines. Such coastal karst outcroppings are sought-after topographies because they give geologists observable data of what usually occurs hidden from view. Karstic coastlines themselves provide many other interesting features that are distinct from inland karst systems. Firstly, erosion is virtually incessant along the sea coast, as waves continuously strike exposed rock both above and below the surface of the sea. The continuous abrasion of wave action often creates rock arches or littoral caves. Thus, the enlargement of fissures and cracks in the soluble rock can often be caused by both acidic groundwater as well as the mechanical action of brackish water. Swallowholes can also appear off of the coast in karstic bays or harbors, and are observable where seawater disappears into the seabed. Freshwater springs can also debouche offshore into the salty sea; it is quite unusual, though common in the Mediterranean, that one can find strong upwellings of fresh water kilometers beyond the shore as a submarine spring. The fresh water of the spring descends underground inland through either a swallowhole or prolonged dissolution, and the subterranean channel that is created runs below the shore and out into the sea under the sea bed. When saltwater and freshwater begin to mix, a large amount of hydrostatic pressure is

---

60 Cf. Crouch 1993, 75.
61 These springs are called Vauclusian springs; cf. White 1988, 19 and Walsh 2013, 78.
62 These types of springs are called alluvial springs since they arise from the softer alluvium that makes up most of a river’s channel-bed and banks; cf. White 1988, 18 and Higgins and Higgins 1996, 14.
63 Sometimes when seawater smashes into a hole in the host rock of a coastline which is open to the air, the rush creates a forceful release of pressurized air, water, and sound. This feature is called a blowhole; cf. Clendenon 2009, 286.
64 Clendedon 2009b, 298.
created, which forces the mixture to rise up out at sea. According to early modern reports, these submarine conduits can extend up to 60 kilometers offshore, where in noncoastal regions, these subterranean fresh water conduits have been shown to travel as far as up to 120 kilometers.\textsuperscript{65}

Caves are one of if not the most prevalent results of karstification. Caves are created through the enlargement of cracks and fissures in limestone, dolomite, or marble from flowing groundwater. These fissures can be preexisting and are mostly composed of highly soluble rock that speeds up their dissolution. The path of dissolution for caves can happen vertically or horizontally, but the size of a cave and its length depend very much on the water’s flow speed and the time allowed for the process of dissolution.\textsuperscript{66} A cave’s entrance(s) can form as a result of numerous hydrologic processes.\textsuperscript{67} Many caves are often ‘single-conduit,’ meaning that they have no side passages, and are thus analogous to the main channel of the surface stream that disappeared into it. Single conduit caves are thus often compared to natural pipelines.\textsuperscript{68} Other caves can have numerous branching pathways, which are formed by the gradual horizontal dissolution of carbonate rock. The entrances of caves are exposed to the air generally after the karst landscape has been cut down in some way and has exposed the cave, drained it, and filled it with air.\textsuperscript{69} Caves can occur either inland (through karstification) or by the sea (through either karstification, wave action, or both).\textsuperscript{70} Coastal caves can be located either high up on coastal cliffs, or they can be found down by the beach. Coastal karst cliffs are usually the result of continuous erosion and destruction through weathering and/or dissolution.\textsuperscript{71}

\textsuperscript{65} Cf. Clendenon 2009, 293, 298, 300; Bakalowicz (2018, 1-2) notes that more than 90% of the world’s karst submarine springs occur along Mediterranean coasts, which aided in ancient expansion across the Mediterranean.

\textsuperscript{66} Cf. Crouch 1993, 68, Clendenon 2009, 255. It is more often the case that dissolution happens horizontally when the penetrating water meets a less soluble (or insoluble) rock and is forced to change direction. Cf. also White 1988, 60-61. In fissured rocks, water flow is typically characterized by slower velocities; cf. Migiros et al. 2010, 252.

\textsuperscript{67} White 1988, 18 and Higgins and Higgins 1996, 14; swallowholes often create pits that lead to cave entrances, and springs can flow from open cave entrances.

\textsuperscript{68} White 1988, 78 and Crouch 1993, 74.

\textsuperscript{69} Earthquakes and sinkholes can expose previously inaccessible cave systems by splitting apart large karst landscapes. In most other instances, the sinking of the water table and sea level over time exposes previously submerged caves to the open air. Cf. White 1988, 61.

\textsuperscript{70} Coastal caves are called “pseudo-karst” caves if they are created by wave action alone, and they are typically one single chamber; Culver and White 2005, 223. Caves that are formed by the dissolution/erosion of rock by both freshwater and seawater are called “flank margin caves.”

\textsuperscript{71} Three types of coastal cliff caves are prominent throughout the Mediterranean: Tafoni caves, which are subaerial weathering pockets, Talus caves, which are large deposit holes of eroded boulders and rubble, and Fissure caves, which are exposed when
Probably the most attractive features of caves to the human eye is the presence of speleothems, or the clastic sediments created by the slow depositing of calcite from moving carbonate water. The most popular speleothems are stalactites and stalagmites, which extend in cone-formation from the slow precipitation of water on the cave ceiling or rise from the cave floor through evaporation.\textsuperscript{72} Two other speleothems that are common throughout the Mediterranean are helictites and flowstone. Helictites are classified as ‘elongated speleothems’ that can grow in any direction, but typically twist erratically. One of the most common helictites is called ‘filiform’ because it resembles unkempt human hair.\textsuperscript{73} Helictites are composed mostly of calcite and are created when a central pore deposits calcite along its channel, creating an uncanny \textit{fibrous} look when the outflowing moisture evaporates or loses carbon dioxide (cf. Fig. 3). Flowstone are sheets of calcite that are formed by the constant flow of highly carbonized water; as the water flows over the rock, it continues to deposit more and more calcite, and depending on the exact solution of stone and water, the flowstone can be deposited in many different colors (cf. Fig. 4).\textsuperscript{74}

Out of all of the karstlands studied across the globe, the Mediterranean and the limestone beds that crop out throughout its basin are considered to be the model for bare karst landscapes.\textsuperscript{75} The upper bedrock of around two-thirds of mainland Greece, in particular, is dominated by limestone, dolomite, and marble, and the majority of the islands consist of limestone or other soluble rock.\textsuperscript{76} The fact that so much karst is exposed is mainly the result of the particular climate of the Mediterranean. The Mediterranean climate is considered to be one of the most aggressive climates in terms of erosion: the variability of annual precipitation is high, the summer droughts are quite frequent and oftentimes quite severe, and when it does rain, it downpours irregularly with concentrated intensity.\textsuperscript{77} This type of climate is harsh on the cliff side gives way. Similar to the “blowholes” of coastal (pseudo)karst caves, the “wind holes” of caves near the shoreline refer to the conduits that emit strong winds due to subterranean wave action.

\textsuperscript{72} Stalactites and stalagmites are made of calcite, which is a mineral that cave water gathers through its dissolution of the rock. This highly calcified water slowly deposits its calcite as it moves from one place to another within a cave system and thus loses carbon dioxide.

\textsuperscript{73} Other common helictites are “vermiform” (worm-like) and “antler” (forking) helictites, cf. Culver and White 2005, 493.

\textsuperscript{74} Crouch 1993, 69.

\textsuperscript{75} Cf. Fagan 2011, 160 and Bowe 2013, 128.


\textsuperscript{77} Crouch 1993, 79, Bowe 2013, 128.
plants, especially since most areas surrounding the Mediterranean, and especially Greece, have rather steep and sloping topographies. As a result of all of these factors, the denudation of soil and slope materials is nearly constant and not limited to particular seasons. This process of erosion is what exposes the underlying karst rock and its features.

In Greece alone, more than 10,000 karst caves have been identified, and most continue to evolve due to the erosive nature of the climate and coastlines. The formation of caves in Greece, moreover, is not limited to karstic processes; many caves are the result of volcanic activity. These types of caves are created from the bottom up as magma and a mixture of water and heat clears out the rock and cools overtime, allowing for excavation. Most Mediterranean caves are relatively short, not exceeding 20 kilometers in length, and are created by karstification. Mediterranean caves also contain large chambered caverns and an abundance of speleothems. Both poljes and dolines are present across the Mediterranean basin, and the water that flows within each landscape can vary tremendously, creating a variety of physiographically complex cave systems that often guarantee a source of fresh water.

In short, the Mediterranean abounds in karstlands. These landscapes are dominated by every classic feature of karst terrain: poljes extend across inland valleys, dolines rest within countless rivers, springs dot the topography, and caves form an extensive network under the surface of nearly every region. The climate of the Mediterranean, mixed with its topography of steep mountains, winding rivers, and extensive, violent coastlines, has created a landscape that visibly showcases the complex karst systems below it. To an ancient Roman like Vergil, these geological features were unavoidable, so it should come to no surprise that an elite Roman like Vergil, who prioritizes the topography and natural world of Italy in all of his works, would find inspiration in such dynamic, grandiose, and accessible places.

---

78 Clendenon 2009, 282; Crete alone possesses more than 1,400 caves.
79 Cf. Kostof 1995, 21 Bowe 2013, 128, 132-3. Coastal caves in particular were, and continue to be, favored basking and breeding grounds for seals, especially if the caves are isolated from any human contact; cf. O’Nolan 1960, 131 and Culver and White 2005, 224.
b. Ancient Caves in Greco-Roman Myth, Poetry, and Architecture

Caves offered early peoples a reliable place of shelter and, if a spring was present nearby, a constant source of fresh water. As early communities began to settle, caves, especially those along cliff sides, could act as vantage points or landmarks, and as communities began to expand beyond the confines of a cave system, that cave began to take on a more important cultural function than just a practical one; as evidenced from Neolithic artifacts, preserved foodstuffs, and artistic renderings of everyday life on cave walls and ceilings, caves began to function as sacred spaces that could express and stimulate visual culture. Caves, therefore, were considered a malleable resource that could be embellished by human hands. As ritual spaces, it was often the case that the deeper one traversed into a cave system, the more sacred and secretive the ritual became. Early on in humankind’s presence throughout the Mediterranean, caves took up the function as a liminal space where humans could come into reciprocal contact with otherworldly spirits, and the presence of water as a life-giving resource within them, coupled with the numerous burial rituals in which the dead were deposited deep within caves, strengthened the connection between the ‘underground’ and the cultural concepts of birth, death, and fertility in general.

The ritual and religious significance of cave systems only increased as time went on. As communities spread across the Mediterranean, and as complex mythologies developed across different cultural groups, certain gods and spirits became associated with particular natural landscapes in which the communities saw a certain importance: mountaintops became the homes of celestial, airy deities, the dark crags and gorges, shrouded in obscurity and often dangerous to mortal kind, became the abodes of chthonic spirits, and the valleys, groves, and springs became homes of nymphs and satyrs, who are more akin to human kind. Caves became sacred spaces to a number of deities and spirits. Since the cave was considered a

---

80 Johnson 2012, 29, 37.
81 Ibid. 27, 31, 33.
82 Ibid. 30, 34, 39, 41.
liminal space early on in humankind’s history in the Mediterranean, it comes as no surprise that these spirits too possessed liminal qualities of both the surface and the subterranean world.

Many caves became places of worship of Gaia, the primordial Earth, whose extensive network of caves were understood to be her numerous wombs that spawned the early races of monsters. As people died, their souls would pass through Gaia, in order to settle in the afterlife or be reborn again from her subterranean womb. Caves were thus considered doorways, or as conduits in which souls could find their resting place, in the underworld. As spirits of fertility, nymphs were often honored in naturally beautiful caves. The presence of springs, groves, and vegetation in or around these spaces held sacred significance to neighboring communities as symbols of life and creation. Pan, too, was worshipped at particular caves often in accordance with the worship of nymphs. It was believed that his presence alongside nymphs at particular cave-spaces could cause individuals who dwelled within them to be possessed by the spirits. The Muses too, as goddesses of musical creation and inspiration, dwelled in natural caves.

Caves in Greco-Roman mythology also functioned as birthplaces and/or childhood homes of several gods; this function reflects the ancient understanding that caves were associated with fertility and a time long before the presence of civilization. According to Apollodorus, Zeus was born and raised in a cave on Mount Dikte in eastern Crete, now known as Psychro Cave. According to Hesiod, however, Zeus was born in a cave near Lyctus on Mount Aegeum at the behest of Gaia herself. Dionysus, according to Nonnus, was born in a cave by Persephone who was in hiding from her divine suitors, while the

84 Caves that were considered “gateways” to the underworld, where one could contact the deceased or spirits associated with death, were called Plutonia. Cf. Ustinova 2009, 272 and Connors 2016. It should thus come to no surprise that caves and cave entrances were considered appropriate places for necromancy; Cf. Luck 1957, 176-77. This feature of caves will be elaborated in chapter 6a.
86 Pausanias describes a cave of Pan at Marathon (1.32.7).
87 The story of Archedamus’ possession by the nymphs at Vari is one of the most famous examples of this possession. He was instructed by the nymphs to “work out” a natural cave with embellishments, a garden, and a self-portrait in their honor. Cf. IG 13.977-80 and Ustinova 271. 2009.
88 Cf. Scioli 2012, 152-162; the most famous cave associated with the Muses is on mount Parnassus and known as the Corycian Cave, and that cave, like most caves related to the Muses, were shared with nymphs.
89 Buxton 2004, 185.
90 Apollod. Bibl. 1.1.5-7. Zeus has also been situated in a cave on Mount Ida in Crete and raised by nymphs; cf. Diod. Sic. 5.70.
91 Hes. Theog. 477-484.
92 Nonnus, Dion. 5.
Homeric Hymn to Dionysus, Diodorus Siculus, and Hyginus say that Dionysus was carried away as an infant either by Ammon, Silenus, or Semele to a cave on Mount Nysa to be raised by nymphs.\textsuperscript{93} Hermes was also born and raised by his mother in a cave on Mount Cyllene near Corinth.\textsuperscript{94}

The ‘wildness’ of caves in Greco-Roman mythology is not solely evident in their function as domiciles of some of the most ancient divinities in the Greco-Roman pantheon, but also as haunts for monsters and beasts. The cyclops Polyphemus resided in a cave on an idyllic sland where he tended sheep and, eventually, slaughtered many of Odysseus’ men.\textsuperscript{95} So too did Calypso, and it was her overtly feminine cave that initially kept Odysseus from fulfilling his \textit{nostos}.\textsuperscript{96} The savage Scylla lived in a cave and, like Polyphemus, devoured many of Odysseus’ men. Her subterranean abode, however, held no façade of a \textit{locus amoenus}.\textsuperscript{97} Outside of Homer, the cave as ‘monster lair’ is evident in the myth of the Minotaur in which king Minos of Knossos built a subterranean prison for his monstrous progeny,\textsuperscript{98} as well as in the myth of Hercules’ slaying of Cacus. The monster hybrid Cacus resided in a gloomy cavern devoid of light and filled with human remains.\textsuperscript{99} The Nemean lion also resided in a bloody, two-mouthed cave, as did Zeus’ strongest challenger Typhoeus, who was nurtured in a cave in Cilicia.\textsuperscript{100}

Oftentimes the natural, geological processes of certain cave complexes brought about erratic behavior in humans. Such behavior was interpreted by ancient peoples as a result of coming into contact with some kind of divinity. These geological features could include the emission of noxious or psychotropic gases, the upwelling of water with hallucinogenic qualities, and/or the deprivation of sensory experience. These types of caves alter human consciousness and were thus sought-after places (or identifiable by later

\textsuperscript{93} Cf. \textit{Hom. Hymn} 26, Diod. Sic. 3.67, and Hyg. 182. Cf. also Paus. 5.19.6; Pausanias also says that Dionysus owned his own cave as a cult leader (2.23.1).
\textsuperscript{95} Hom. \textit{Od.} 9.132-141, 9.181-183
\textsuperscript{97} Apollod. \textit{Bibl.} 3.1.3-4. Weinberg (1986, 91-2) tells us that the Minotaur, in Platonic terms, symbolizes the lowest part of the soul, the irrational appetite, that forces souls deeper underground. Thus the labyrinth symbolizes the \textit{locus} of the lowest soul that is furthest from the highest place of reason.
\textsuperscript{100} Cf. Apollod. 2.5.1, Aesch. \textit{PV} 353-356, and Pind. \textit{Pyth.} 1.15-17. According to Nonnus, Typhoeus was raised in a cave and the begetter of poisonous vipers who now reside in subterranean dwellings; \textit{Diony.} 1.140, 2.141-142.
authors as homes) for oracles. Ancient peoples considered this warped consciousness as a sort of divination, and the places in which this experience could occur as spaces sacred to oracular spirits. There were eleven oracles in antiquity that resided in caves. These caves were either natural, that is, were not embellished to bring about some sort of altered state of consciousness, or artificially created in places where no natural caves nearby could supply stimulus hunger. Caves that were manmade oftentimes were designed to strengthen the psychological displacement or the oracle and/or inquirer, and the oracle, once his/her state of consciousness was altered, was understood to utter the words of the divine; the oracle him/herself was the source of the utterance and the cave was considered a reflector of that utterance.

The experience of liminality which caves were believed to possess made them sought-after locations for oracles, heroes, and mythical figures who exist between mortality and immortality. Heroes who vanished into caves were considered to be in extreme liminality, neither existing as part of the surface (mortal) world nor existing as part of the chthonic (immortal) world. In mythology, it is often the case that the locations where death or disgrace become imminent are places where heroes ultimately receive divine blessing. These places are typically subterranean dwellings where both surface and subsurface qualities are present.

The combination of all the above features of the cave as a liminal space of life, death, fertility, divinity, and mortality, would eventually culminate in an entirely poetic understanding of caves, which

---

101 Cf. Ustinova 2009, 266. The combination of sensory deprivation, isolation, and either the inhalation or imbibing of psychotropic materials causes what Ustinova calls “stimulus hunger,” which is a state where the human mind craves any attainable kind of stimulus to process (267-70). When there is nothing to process, the consciousness begins to supply its own stimulus, which usually takes the form of hallucinations.

102 The oracles of Ptoion, Oropus, Aegira, Bura, Olympia, Lycosoura, Delos, and Hierapolis were placed in natural caves. The caves at Delphi, Lebadeia, and Claros were (almost) entirely manmade. Cf. Ustinova 2009, 277-8.

103 The oracular sanctuary at Claros was designed as a labyrinth of dark corridors no higher than 1.3 meters under the temple of Apollo; cf. Parke 1985, 138 and Ustinova 2009, 111. Cf. also Monti 1994, 31-33. Apollo, as the god of prophecy, was oftentimes the patron divinity of cave oracles, as was Dionysus, who was considered to be an alter-ego of Apollo in terms of prophetic power; Cf. Hardie 1969, 19, 23, Ustinova 2009, 275, and Scioli 2012, 149. The cave oracles at Delphi, Delos, and Claros were considered to be shared by both Apollo and Dionysus who would alternate their management seasonally.

104 Cf. Ustinova 2009, 274. The most famous cultic heroes that ultimately achieve their immortality in cave complexes, and in turn a cult following that too was stationed in caves, are Amphiaros, Trophonios, Asclepius, Kaineus, Aristaeus, Zalmoxis, Rhesus, Acharaca, and Althaimes of Rhodes, most of whom are positioned in the northern or central Balkans; Cf. Ustinova 2002 for a comprehensive discussion on the significance of each of these figures and their connection(s) to the subterranean world. The significance of Aristaeus as a cult hero intimately connected with caves will be discussed more extensively in chapter six. The cult of Mithras at Rome too had its first sanctuaries in caves; cf. Elderkin 1941, 132.

105 Ustinova 2002, 286.
still retained a certain truthfulness to the reality of cave experiences. Greek and Roman poets considered caves a places of poetic inspiration; much like the disorienting experiences of oracles and humans who came into contact subterranean spirits, the experiences of poets in caves, whether real or fictional, were composed in terms of disorientation. Propertius, in particular, describes his initiation into the world of elegy as happening at a cave sacred to both Apollo and the Muses located on mount Helicon. Propertius’ cave possesses natural beauty, but he describes its interior as artificially decorated with mosaic work. A juxtaposition is formed between the visual imagery he illustrates: rustic elements (agrestitas) are in constant contrast with metropolitan elements (urbanitas) – images of nature (vivida) are in constant contrast with human artificiality (artificis). This juxtaposition reminds the reader that the poet is so skilled that he can make the artificial seem natural. Poets like Propertius thus saw caves as a combination of human and divine space where the poet could himself act as a mediator between the divine and human realms and promote his own poetic prowess. The delineation between human and divine is seen in the embellishment of the cave space; the natural aspects of the cave reflected divine influence, while the artificial embellishments reflected human influence. To the Roman poet, the cave had the potential to both elicit poetic creativity and, as a result of framing the process of initiation in terms of embellishing a cave, offer poetic immortality.

Caves over time transitioned from mere places of practicality and worship to spaces where aesthetics and beauty were made prominent. No architectural innovation is more emblematic of this transitory mindset than the imperial grotto. Rome’s elite constructed their own artificial and artistically elaborate

---

108 Luck 1957, 177 and Scioli 2012, 150.
109 Scioli 2012, 155, 171. Cf. also the cave initiation of Vergil (Ecl. 6) and Ovid (Am. 3.1.3).
110 The cave of Demosthenes functioned similarly to the cave of Propertius as a place for inspiration. According to Plutarch, Demosthenes would isolate himself in an artificial cave he himself designed in order to practice his singing without interruption; cf. Plut. Vit. Dem. 7.2-8.3. Demosthenes would remain in utter seclusion for months at a time. Later Roman writers found inspiration in the cave of Demosthenes, especially Pliny, who considered silence and isolation, as well as the resulting state of pure concentration, the ideal state to write well; cf. Plin. Ep. 9.36, Quint. Inst. 10.3.25. Cf. also Luck 1957, 117 and Johnson 2013, 667, who views Pliny’s reference to Demosthenes’ cave as reflecting an elite anxiety towards a change in the prioritization of literary studies as the result of hard work to that of natural talent. Cf. also the ‘writing-caves’ of early Roman law makers and Epicurus (Cic. Fin. 2.94.17 and Flacc. 39.2).
grottos to accompany their lavish gardens.111 The open cavern of the grotto (cavea) was carved out by hand and adorned with mosaics and/or sculptures. Early cavea were modelled on the ancient theatre, but the more popular layout of the grotto was a rectangular room with an apse.112 Seneca criticizes how Roman aristocrat Vatia had constructed two artificial grottos on his already idyllic villa, both of which “cost a great deal of labor” (magni operis) and were “as big as the most spacious hall” (cuius laxo atrio pares).113 Aristocrats would also place fountains in or around their artificial grottos, which were often consecrated to the nymphs. Many of these nymphaea had intricate hydraulic installations that served a practical purpose of transporting water from remote locations for public and private use.114 The fountains, however, refocused attention to water not as just a source of life, but as aesthetically spectacular. These fountains could possess some religious associations, but they usually functioned as objects of artistic reflection. Regardless of their function, the ‘fountain,’ or artificial spring, was made monumental, and its placement within an artificial cave setting made nature much more engaging and its owner much more cultured.115 Artistically speaking, the garden grotto was designed to be a miniature metaphor for the cosmos; the grotto could have a variety of forms and a variety of functions “with nature versus art as the leitmotif.”116 Artificial elements were utilized in these caves in such a way as to create a ‘false naturalism,’ a combined evocation of rustic and numinous qualities distinctly connected with material wealth and the prioritization of exhibition, which promoted the idea that the owner of the cave was an artist par excellence worthy of their elite status.117

The most famous artificial grottos were created under the early emperors. The cave at Sperlonga was constructed under the reign of Tiberius (c. 4 – 26CE). It was a natural cave that was greatly embellished

111 Cf. Luck 1957, 177 and Scioli 2012, 153-154. The popularity of artificial garden grotoes began in the late first century BCE, but they came to be commonplace in the gardens of wealthy patricians during the Imperial Period.
112 The rectangular structure was popular from 200 BC to around 200 CE. Cf. Miller 1982, 19.
113 Ep. 55.6.
115 Cf. Longfellow 2012, 134.
117 Luck 1957, 177 and Scioli 2012 153-154. Caves thus became a popular subject of the visual arts in both sculpture and painting; cf. Scioli 2012 161, 164, 167-169. Sculpture began to appear in imperial caves and nymphaea throughout the first and second centuries CE. The sculptures, mosaics, and paintings were added to give meaning to the natural/artificial space in which it was displayed; Cf. also Carey 2002, 45, 56.
by the installation of seats for spectators, tables for dining, and sculptures for viewing.\(^{118}\) The emperor Claudius had a villa at Baiae (modern Punta dell’ Epitaffio) which contained an artificial cave (built c. 40s CE) with a nymphaeum and dining room designed to emulate Tiberius’ grotto at Sperlonga.\(^{119}\) Nero’s Domus Aurea had multiple rooms that were designed to look like natural caves,\(^{120}\) and Domitian’s villa at Castelgandolfo contained a natural cave that was designed to emulate the seashore cave at Sperlonga but in the setting of a lake.\(^{121}\)

In summary, caves among the Romans and Roman elite, in the context of their practicality and mythological resonances, were understood in many different ways and possessed many different functions; caves were doorways to the underworld and thus symbolized birth, death, and resurrection. As intimately connected with Gaia, nymphs, Pan, and other divinities, caves were seen as places of worship, sacrifice, and even as emblematic of fertility and creation.\(^{122}\) They were distinctly liminal spaces where mortals could come into contact with the divine, and where heroes could become godlike themselves. The cultural importance of caves in Greco-Roman society would inevitably cause more critical individuals to reconsider the importance of caves in their scientific treatises. The ‘cave’ of the ancient scientist did not undermine the cave’s cultural or mythological importance, but would instead come to reflect an accurate observational awareness of the geological karst landscapes of the Mediterranean world through the re-visitation and reconsideration of myth in particular.

---

\(^{118}\) Cf. Carey 2002, 47. According to legend, the ceiling of the cave almost collapsed on top of the emperor during a dinner, but Tiberius’ general Sejanus rushed him out of the way before the rocks reached him; Cf. Suet. Tib. 30.


\(^{120}\) Cf. Carey 2002 52 and Scioli 2012, 169.

\(^{121}\) Cf. Carey 2002 58; the grottos at Sperlonga, at the Domus Aurea, and at Baiae all contained sculpture groups of the Epic Cycle, particularly the pairing of Odysseus and Polyphemus (56). In fact, this subject (Odysseus and Polyphemus) is portrayed only in nymphaea or grottos attached to an imperial villa, which suggests a particular decorum that imperial grottos were expected to follow.

\(^{122}\) Cf. Steward 2012, 421.
According to the Roman philosopher and natural historian Seneca, the world contains deep down all the laws of nature that will soon come to transform its surface and all life on it, much like a human baby, whose inner self possesses the laws governing the growth of a “beard and grey hair” that will come to define him later in life.\textsuperscript{123} Within the greater context of geology, Seneca is trying to make sense of the sheer potentiality and seemingly random nature of geological change (e.g. earthquakes, floods, volcanic eruptions, sinkholes, etc.). Although his description of what constitutes ‘natural law’ is rather vague, what is most striking, especially for the modern reader, is the interesting parallel he makes between the anatomy of the earth and that of humankind, a parallel that is almost exclusively illustrated in the context of subterranean waters by almost every ancient physiologist.\textsuperscript{124}

The simple fact that water possesses life-giving qualities and that both the earth and the human body consists of liquid-bearing conduits attracted early critical thinkers to question how humans come into contact with water in its various forms all across the earth. Thus springs, disappearing streams, underground rivers, and cave systems (and thus karst in general) were subjects of great significance to numerous scholars, philosophers, and engineers, all of whom sought to understand the ‘reality’ hidden within famous, watery myths and religiously significant sites across the Mediterranean.\textsuperscript{125} The karst that extends across the Mediterranean, as described above, was exposed enough and accessible enough to set the stage for early argumentation on the earth’s hydrological cycle. One of the earliest proto-scientists to

\textsuperscript{123} a siue animal est mundus, siue corpus natura gubernabile, ut arbores, ut sata, ab initio eius usque ad exitum quicquid facere quicquid pati debeat, inclusum est (QNat. 3.29.2.4-7): “Whether the world is an animal, or a body, such as trees and plants, governed by nature, from its beginning till its end, all that it must do and all that it must undergo is contained within it.”

\textsuperscript{124} in terra quoque sunt alia itinera per quae aqua, alia per quae spiritus currit; adeoque ad similitudinem ill\textless a\textgreater humanorum corporum natura formavit ut maiiores quoque nostri aquarum appellauerint venas (Sen. QNat. 3.15.1.5-9): “In the earth too there are some passages through which water runs, others through which breath does; and nature has created such a resemblance to the human body that our ancestors too spoke of “veins” of water.” Cf. also 3.19.4.1; Seneca’s \textit{maiores} include both Roman and Greek authors, some of which lived just a generation before him, who shared a commonly accepted view that inside the earth, just as in man, there existed caves, or \textit{venae}, which allowed for the transportation of liquids. According to Vitruvius, \textit{non est mirandum si tam in magnitudine terrae innumerabilis sucorum reperientur varietates, per aquarum venas aquae vis percurrens}: “we should not be surprised to find in the great earth itself countless varieties of juices, through the veins of which the water runs” (\textit{De arch.} 8.3.26). Cf. also 8.1.7, 8.2.9, and Strabo 8.8.4 on the “veins” (\textit{φλεβες}) of Ladon Spring. Cf. also Plin \textit{HN} 2.166.

investigate the hydrogeological cycle critically was the pre-Socratic philosopher Thales of Miletus (early 6th century BCE). According to Thales, who was one of the Seven Sages, the earth floated on water, and everything in the universe was derived from water, which he considered to be the most powerful and earliest elemental form. Unfortunately Thales never wrote down any of his work, but the fact that later scholars consistently cited his thoughts on water as the principle element of all of nature highlights his impact on the ancient scientific community, as well as latter conceptions of the hydrological cycle.

The philosopher Empedocles (c. 490 – 430 BCE) was the second major contributor to the scientific discourse on water and its movements in and around the world. Empedocles, like Thales, argued for an elemental composition of the world, but unlike Thales, Empedocles believed that the earth is comprised of four elements (earth, air, water, and fire). He considered water as a principle element, and its movements above and around the earth as intimately related to the water cycle, though it was a mixture of the four elements that made up the universe, including the subterranean world.

Plato (c. 429 – 347 BCE) envisioned the subterranean world as a much more complex system than that of Thales and Empedocles. Plato’s ‘underground’ is a vast network of interconnected channels that transport all four elements. Socrates explains to Phaedo that these channels vary in size and transport waters, fires, and gases up to the surface. The movement of water in particular is forced upwards (and in turn creates surface springs) as a result of the oscillations of Tartarus, which is the deepest, darkest space within the earth. Although Plato deals with the subject of hydrogeology relatively briefly in the Phaedo, his conception of the inner machinations of the earth remained prominent among intellectuals, and their observations of volcanism and disappearing streams led many to understand Plato’s network of caverns under their feet as ‘conduits’ of fire and water and as true to nature.

Plato’s student Aristotle (c. 384 – 322 BCE) fills in the gaps left open by his mentor in his own treatise on the natural processes of the earth. His Meteorologica (1.13) better defines the hydrological

---

129 Phaed. 111e.
130 Cf. Clendenon 2009b, 294.
cycle and argues that surface springs originate from the condensation of waters that exist in subterranean caves; water “descends from rainfall and is gathered below the earth and becomes a reservoir for the [earth’s] rivers.”\textsuperscript{131} The water, now underground, becomes a subterranean “reservoir” (κοιλία) similarly to how water becomes a lake or a stream on the surface: “the water at first trickles together little by little, and out of the earth forms sources of the rivers which drip out of the earth.”\textsuperscript{132} In other words, the process of condensation occurs above and below the earth, which aids in the continuing cycle of water’s descent and resurfacing throughout the world. Although these rivers prove the existence of subterranean caverns, Aristotle is hesitant to believe that these underground streams eventually unite into one location.\textsuperscript{133}

Aristotle is also one, if not the first, of the scientifically-induced philosophers to explicitly discuss one of the most prominent features of karst terrain: disappearing streams. Aristotle tells us that “swallowed streams” (οἱ καταπινόμενοι τῶν ποταμῶν) not only fall into “caverns and fissures in the earth” (φάραγγες καὶ διαστάσεις τῆς γῆς), but are also quite “observable” (δηλούσιν) throughout the Greek world, mainly in the Peloponnese, and in Arcadia in particular.\textsuperscript{134} He then goes on to accurately describe the cause of most of these disappearing rivers as being the mountainous terrain of Arcadia; the shafts and channels in karst caves and springs do, in fact, act as pipelines that transfer water from higher elevations, usually mountaintops, that have high infiltration and low runoff rates. Greek mountains, therefore, function as karstic ‘water towers’ of sorts.\textsuperscript{135} Although Aristotle is accurate in his observation that these mountains “store” water (πληρούμενοι γὰρ οἱ τόποι), he is incorrect in his statement that pressurization alone forces the water to the surface, though this could be the cause of resurgence in some places along preexisting fault lines.\textsuperscript{136}

\begin{thebibliography}{99}
\item \textsuperscript{131} τὸ γὰρ ἀναρθην ὑπὸ τοῦ ἥλιου ὄρου πάλιν ὀμολογοῦν ἀδρομοῦν ὑπὸ γῆν ὑπὲρ ἑκ κοιλίας μεγάλης. \textsuperscript{1.13.359b. 3-5.}
\item \textsuperscript{132} ὁμοίως ὑπὲρ καὶ ἐν τῷ ὄρῳ τῆς ἀκολουθίας καὶ πάλιν αὐτῷ ἔταξεν τῆς γῆς τὸν πόρον καὶ ἐπικαλεῖται τῷ ἐπὶ τῆς γῆς ὑπὲρ τῶν ποταμῶν. \textsuperscript{1.13.349b 30-35.}
\item \textsuperscript{133} Connors 2016, 163.
\item \textsuperscript{134} \textit{Mete.} 1.13.350b 36 – 351a 3.
\item \textsuperscript{135} Cf. Crouch 1993, 74 and Fagan 2011, 160. The Minoans used subterranean aqueducts to transport karstic waters from the limestone mountaintops of Crete to their cities in the valleys (cf. Fagan 2011, 156).
\item \textsuperscript{136} \textit{Mete.} 1.13.351a 2-7: οὐκ ἐξήντες ἐκχύοντες ἀυτοῖς εἰσἰσκέται τὴν διάδοσιν εἰς βάθος. ἀποβιαζομένου τὸν ὀνομίαν ἑπάνως ὅταν. \textsuperscript{1.13.351a 2-7: οὐκ ἐξήντες ἐκχύοντες ἀυτοῖς εἰσἰσκέται τὴν διάδοσιν εἰς βάθος. ἀποβιαζομένου τὸν ὀνομίαν ἑπάνως ὅταν.} Cf. n. 61 on Vauculusian springs.
\end{thebibliography}
A generation or two after Aristotle, the astronomer, geographer, and philosopher Eratosthenes of Cyrene (c. 276 – 194 BCE) discussed the hydrological connection of dolines in Pheneus to Ladon Spring in the Greek Peloponnesse. According to the geographer Strabo (c. 60 – 28 BCE), who is the only source of Eratosthenes’ geological wisdom, Eratosthenes says that the river Anias flows down into “sinkholes” (ἡθμοὶ) which are called ζέρεθρα by the locals. These ζέρεθρα eventually fill up and “resurge” (ὑπερχεῖσθαι) into the neighboring plains and valleys in and around Ladon Spring. Like Plato and Aristotle, Eratosthenes (or Strabo) mentions nothing about the hydrological cycle in general. Yet, as a geographer, his descriptions of specific karstic locations like the Pheneus and Ladon Spring are indispensable sources of information regarding early case studies of famous karstlands.

Callimachus, a contemporary of Eratosthenes and a prolific writer who flourished during the reign of Ptolemy I (285 – 246 BCE), gives us a similar glimpse of karstic processes as understood by an ancient scientist. Callimachus wrote two works, both of which survive to us only in fragments, which deal with particularly geological phenomena: the “On the Rivers of the Inhabited World” (Περὶ τῶν ἐν τῆ Οἰκουμένη Ποταμῶν) and the “Collection of Marvels throughout the World by Location” (Θαυμάτων τῶν εἰς ἀπασαν τήν Γῆν κατὰ Τόπους δύντων Συναγωγή). Most of the marvels pertain to specific qualities of the water and their effects on both the place in which it is located and on the person or thing which comes into contact with it. Among these interesting factoids are snippets of karstic awareness; the Himeras River in Sicily splits into two streams, one of which contains fresh (πότιμον) water and the other contains brackish (ἁλυκὸν) water, a possible result of seawater inclusion and/or resurgence in the riverbed of the brackish stream.

Callimachus cites Theophrastus when he describes a small rivulet (τι ῥευμάτιον) on the island of Kos which has its source underground and becomes visible only where its water “slips through the rocks” (διαρρεῖ λίθον). This river, Callimachus says, is the source for all other rivers on the island.

---

137 Strabo 8.8.4.13-16; ζέρεθρα is an archaic form for βάραθρον “pit” (LSJ s.v. “ζέρεθρα”).
138 The “On the Rivers,” which Krevans considers to be the most problematic treatise in terms of both what actually survives and how many genres it overlaps, is recorded in the Suda, and the “Collection of Marvels,” interestingly enough, is concerned mainly with water marvels that are natural (not man-made); cf. frs. 407-411 in Pfeiffer’s collection. Callimachus’ Collection of Wonders is preserved by a near contemporary of his, Antigonus of Carystus, in his own book of wonders, the “Collection of Historical Paradoxes” (Ἱστοριῶν Παραδεξών Συναγωγή).
139 Cf. fr. 407.5 Pf.
(πάντας τοὺς ὄχετοὺς...πεποίηκεν) (fr. 407.33 Pf.); the river Styx too shares a rocky source with the rivulet on Kos;\(^{140}\) the river, which is called the “Water of Styx” (Στυγὸς ἰδορ) is located in Pheneus in Arcadia and “falls from a little rock” at its source (στάζει δ’ ἐκ τινος πετριδίου). Callimachus goes on to describe the fatal quality of the Styx’s water: “those who desire to fetch water there bring sponges tied to sticks because the water cuts through every vessel except those of horn.”\(^{141}\) Also, the lake of Samartis and the Delloi rivers cause birds to die due to the water’s emission of noxious fumes.\(^{142}\) In the typical fashion of most karstic river emissions, the rivulets of Kos and the Styx have their “sources” within the rocky earth. As a result, these rivers, and those of Samartis and Delloi, appear to come from nowhere, and their interesting qualities have led spectators to associate them with the mysterious chthonic realm. Callimachus also notes the high absorption rate of a particular rivulet in Crete, “for those who sit above it, whenever it rains, the territory’s lack of water persists” (οἱ οἱ υπερκαθίζοντες, ὅταν ὑπὸς ἦ, διατελοῦσιν ἄβροχοι).\(^{143}\) Callimachus does not list what causes this quick absorption of water in the river bed, which could either be the result of seasonal droughts or even swallowholes, but is instead interested in the local myth associated with the river – it was from “that rivulet that Europa washed herself after having sex with Zeus” (ἀπ’ ἐκείνου λουσάσθαι τὴν Εὐρώπην ἀπὸ τῆς τοῦ Διὸς μίξεως).

Callimachus gives no critical or rational evaluation of the wonders, and he presents them briefly with little literary flair or rhetorical potency. Furthermore, all of his information about these geological phenomena comes from earlier written sources and not from personal observation. This fact, however, does not mean that Callimachus was ignorant of karstic features or processes. I would argue, rather, that he was quite aware of karst topography as a native of Cyrene on the coast of Libya, whose karstic springs

---

141 τοὺς δὲ βυσσιγίων αὐτοῦ ὄχετος ἄβροχοισι σπάσάγης πρὸς ἐξούς δεινόμενοι λαμβάνειν, διακόπτειν δὲ πάντα τὰ ἀγγεῖα πάν ὑπὸ τῶν κερατίων (fr. 407.30 Pf.). The Styx of course has Underworld significance; the lethal nature of the water (which could be the result of pollution or the mixture of hot sulfur as a result of geothermalism) could very well have caused ancient Greeks to label this river in Arcadia as one of many branches of the Styx, which flows both above and below the earth. The Styx will be discussed further in chapter six.
142 Cf. frr. 407.24 Pf., 407.31 Pf.
143 Fr. 407.35. Pf.
attracted colonization by the Greeks as early as 631 BCE. The entire headland, which rests east of Benghazi, is a large mass of limestone and, according to a 2003 speleological report by W.R. Halliday, is considered to be one of the world’s greatest karstic areas in terms of observable karstic features both above and below ground level. These dynamic features would have been a source of pride for any inhabitant of Cyrene, especially for a writer who dedicated himself to the study of natural anomalies organized geographically. Unfortunately, in the fragments of his prose treatises that survive to us, Callimachus never mentions his homeland.

In general, the hydrogeological phenomena Callimachus describes, regardless of whether he actually witnessed them or not, are offered only so as to attract the reader’s attention, whereas the works of Thales, Empedocles, Plato, Aristotle, and Eratosthenes prioritize more rational (and philosophical) discussions of natural history. Despite the varying agendas of each author, the early Greek observers of karst cemented a foundation for future scholarly discourse of karst terrain. Their descriptions of karstic features persisted throughout the Hellenistic period and were reevaluated by later Roman authors.

One of these Roman authors that appears to have been influenced by earlier Greek writers is Vitruvius (c. 75 – 15 BCE), the famous architect and military engineer. Vitruvius himself introduces his eighth book on industrial waters in his De architectura by citing Thales when he says that “water is the originator of the universe” (omnia rerum principium aquam). Unlike his predecessors, Vitruvius tackles the discussion of karst regions as an engineer who hopes to teach future engineers how to best locate and utilize Earth’s most precious resource; “if there are no springs that gush forth, we must search for them underground and we must conduct them together” (Sin autem non profluent, quaeenda sub terra sunt capita et colligenda). Like Aristotle, though, Vitruvius is aware of the distinct properties of

---

144 Cf. Plin. *HN* 5.31-38 for a brief history of Cyrenaica. The philosophers Eratosthenes, Aristippus, and Carneades were also from Cyrene.
145 Cf. Halliday 2003, 28-30 and Clendenon 2009, 298. Numerous pit caves along the limestone plateau (most are more than 50 meters deep) have been identified, including the famous Lethe Cave, which contains a lake of brackish water (the result of the salty water table infiltrating fresh groundwater), and the Cave of Apollo, which has a resurgence conduit more than 300 meters long.
146 *De arch.*, 8.0.1.
147 Ibid. 8.1.1.
mountains as ‘water towers’ in karstic regions. Moreover, Vitruvius does not pass over the spectacular attributes of disappearing karstic streams described in detail by his predecessors Aristotle, Eratosthenes, and Callimachus; Vitruvius mentions that some rivers “run underground” (sub terra submanantes) from mountains and “resurge” (erumpunt) further down in the valleys, while other rivers, which form spring heads, possess interesting properties as a result of their filtration through earth’s fissures. In fact, the soil properties of the earth are so various that springs themselves cannot help but vary as well depending on the “diversity of their situation” (locorum discrepantiam), which involves the “characteristics of the country” (regionum qualitates) in which the spring is located and the “differing properties of soils” (terrarumque dissimiles proprietates) in and around the spring. This observation implies an awareness of the karstic process of dissolution, which involves the saturation of soils and transference of the groundwater to springs. Vitruvius is not wrong in this observation, for it is quite common to find springs that have become undrinkable because of polluted soils around their sources or heads. According to Vitruvius, heat is not a property of water itself, which Callimachus seems to imply, but a result of the process of geothermalism. Vitruvius even recalls some specific rivers as examples of the wonders of rivers, which he obviously took from Callimachus and his sources: The Himeras River in Sicily “divides into two branches” (dividitur in duas partes) which possess different types of water, an Arcadian town named Clitor possesses a “cave with running water” (spelunca profluens aqua) which causes those who drink it to become abstemious, and the water of the River Styx in Arcadia, which “trickles from a rock in the mountains” (in montibus ex saxo stillantes), cannot be gathered by any vessel due to its extreme acidity. In general, Vitruvius is interested in every aspect of water as a necessary resource, an

---

148 Around mountainous valleys, the rain is most abundant, and the water, once it hits the earth, “filters though the fissures in the ground” (liquatae per terrae venas percolantur) and reaches “the foot of the mountain” (ad infimas montium radices) from which “gushing springs erupt” (profluentes fontium erumpunt fructus) (8.1.7).
149 Ibid. 8.1.2.
150 Ibid. 8.3.26.
151 Ibid. 8.2.9. According to Vitruvius, streams “heat up” (effervescit) when they pass over fissures that emit the heat. It is unclear, though, whether the heat “issued from the fissures” (percalefacta egreditur per venas) is hot air or hot water.
152 De arch. 8.3.7. Cf. Callim. fr. 407.5 Pf. above.
153 De arch. 8.3.21.
observable result of mysterious geological processes, and even as an element of wonder. At the end of book eight, Vitruvius lists his sources, all of which are prose writers,\textsuperscript{155} and some of which he shares with his predecessors Callimachus and Aristotle.\textsuperscript{156}

The geographer Strabo is the next Roman scholar to discuss the properties of water and karstic regions of the Mediterranean. Although Strabo is mostly interested in larger geographical issues of topography, local history, and ethnography, snippets of karstic awareness arise throughout his work that have undoubtedly been influenced and/or taken directly from his Greek (and Roman) predecessors.

Sinkholes, which Strabo calls \textit{βερέθρα}, are common throughout the Peloponnese, and that near Pheneus in Arcadia, a \textit{βερέθρον} was created at Ladon Spring “as a result of an earthquake” (ὑπὸ σεισμοῦ).\textsuperscript{157} The earthquake forced the stream created by the spring to sink “as far down into the depths of the earth as the veins which supplied its source” (μονὴν ἐποίησε τοῦ ρέιματος μέχρι τῶν κατὰ βάθους φλεβῶν τῆς πηγῆς).

Strabo understands that the source of Ladon Spring originates underground, and that the waters rise up through earth’s veins to the surface, which is a hydrogeologically accurate understanding of the creation of Vauclusian springs. Strabo cites Eratosthenes when he describes how the Anias River flows into a \textit{βερέθρον} and “resurfaces” (ὑπερχείσθαι) onto the surface and into Ladon Spring.\textsuperscript{158} Strabo, who is obviously interested in the concept of swallowholes, then describes how the river Erasinus “sinks and flows beneath a mountain” (ὑποδόντα ὑπὸ τὸ ὁρος) and later “reappears” (ἀναφανήναι) in Argos. Strabo ends his description of Arcadia with a reference to the “deadly water” (ὀλεθρίου δῶδατος) of the Styx, though he does not go into the mysterious, rocky origin of the water like Callimachus and Vitruvius.\textsuperscript{159}

A generation or two after Strabo, the philosopher Seneca revisits the karstic phenomena described above by previous Greek and Roman scientists. Unlike his predecessors, Seneca provides the most geological information and observational awareness of karstic processes, specifically how caves function within the overall processes of the hydrological cycle. Seneca, like Vitruvius and Strabo, does not hesitate

\textsuperscript{155} Cf. \textit{De arch.} 8.3.27. Vitruvius names Posidonius, Hegesias, Herodotus, Aristides, and Metrodorus.
\textsuperscript{156} These sources are Theophrastus and Timaeus.
\textsuperscript{157} Strabo 8.8.4.10-13.
\textsuperscript{158} Strabo 8.8.4.13-16.
\textsuperscript{159} Ibid. 8.8.4.27-29.
to pull information from those scholars who came before him, but he in particular makes the extra effort to explain the causes and effects of these geological phenomena. Book three of his *Naturales Quaestiones* is concerned mainly with water and how it can be observed throughout the world. In this book, Seneca describes the solution processes of karst regions, the development of large underground caves, and the disappearance and reappearance of streams. In terms of water itself, Seneca quotes Thales when he says that water is “the most powerful element” (valentissimum elementum), the “first element” (hoc primum) from which everything else arose. Seneca believes in the continual recycling of water (and all other elements) upon and within the earth, and he describes disappearing rivers, which is water that “passes below the earth in hidden channels” (occulto enim itinere subit terras), and resurgence, which is the “secret return” (secreto reuertitur) of water from the earth, as necessary in the process of keeping seas and lakes from overflowing. The earth contains numerous subterranean channels which transport waters “out of sight all the time” (semper in occulto cursus est) because surface waters are constantly “swallowed up by some hollow in the earth” (aliquot sinu terrae devorentur). Seneca then describes two ways in which a river can ‘disappear:’ either through a visible cave entrance (quaedam flumina palam in aliquem specum devidunt), or through gradual absorption into the ground (quaedam consumuntur paulatim et intercidunt). Seneca then goes on to describe the earliest, and most accurate, description of karstification among ancient authors: “as soon as some solid barrier is encountered, they [the subterranean rivers] break through at a point where there is less resistance to their escape and resume their original course.” Seneca here is quite accurate in the sense that dissolved water travels through the ground (sometimes horizontally) and carves out pathways that offer the least resistance in terms of solubility. In the process of the underground movement, caverns are extended and made more spacious through the process of dissolution. Seneca, however, does not mention this latter detail of the dissolution process.

---

161 Some rivers, according to Seneca, “emerge beneath lakes” (sub aliquo lacu emergunt), which is not an uncommon feature of karstic terrain; Cf. Sen. *QNAT.* 3.19.4.5.
162 Sen. *QNat.* 3.5.1.2-5.
163 Ibid. 3.19.4.1-5.
164 cum primum aliquid solidi quod obstarret occurrit, perrupta parte quae minus ad exitum repugnavit, repetiere cursum suum.
Caves, or subterranean caverns, according to Seneca, function as entryways for water to move underground and as conduits for water once it moves below the surface. As “hollow cavities” (recessus cauos) in most general sense, caves can contain both water and wind. And as a result of a cave’s “deep darkness” (umbra graui), “inert density” (inexercitata densitas), and “eternal chilliness” (frigidus aeternum), subterranean caverns have the potential to create their own water. In other words, the nature of caves in general (their chilliness, darkness, and density) facilitates the condensation of water and thus the creation of subterranean waterbodies. Seneca even describes the dangers of sinkholes as they relate to cave-spaces; caves oftentimes collapse as a result of their “vastness” (vastitas) and “emptiness” (laxitas) and in turn can “swallow up” (receperunt) entire cities that rest above them.

Caves also function as subterranean storage units for water that has collected underground. According to Seneca, “from large caverns and large reservoirs there emerge rivers, sometimes issuing gently… sometimes violently and noisily if wind is mixed with it and forces it out.” Seneca here describes an accurate feature of resurgence that is particularly prevalent among Mediterranean coastlines: windholes, which emit oftentimes violent and noisy air through the intermingling of water and air within the cave. Seneca also describes, albeit briefly and rhetorically, the violent nature of coastal waters, and in turn implies the highly erosive landscape of Mediterranean coastlines: “do you not see how the waves attack the shore as though they were going to break out?”

In short, Seneca provides an ample amount of accurate information about the karstic landscape of the Mediterranean. He describes how water both descends into and reemerges out of the subterranean world as well as how caves, which are a distinct and necessary feature of the subterranean world, not only allow for the continuation of the hydrological cycle but can also interfere with human civilization in disastrous ways.

---

165 Ibid. 3.9.1.1-3, 3.9.2.4-8. Caves do in fact allow for condensation and the creation of new waterbodies and speleothems by means of variable temperatures and moisture, yet their “darkness” and “density,” whatever Seneca means by this, hardly has any effect on this process.
166 Sen. QNat. 3.16.4.3-6.
167 ex magnis caveis magisque conceptibus excidunt amnes, nonnumquam leviter emissi…nonnumquam vehementer et cum sono, si illum spiritus intermixtus eiecit. Seneca understands that all liquid naturally descends to a lower point and to an empty space in which it can collect. Therefore caves, which are essentially “empty spaces” (sub terra uacat locus), offer the best places to collect groundwater; Cf. Sen. QNat. 3.26.3.6-7 and 3.15 8.2-6.
168 non vides ut fluctus in litora tamquam exiturus incurrat (QNat. 3.30.2.1-2).
ways. Caves are observable phenomena that possess and/or interact with distinct features emblematic of karstlands across the Mediterranean: swallets can lead into cave systems, thus forming subterranean rivers, caves create springs through condensation, subterranean water flows through the earth by means of caves which act as conduits, and subterranean water resurges through either surface springs or open cave entrances, which are often placed quite a distance away from the water’s source.

Pliny the Elder (c. 23 – 79 CE) also discusses caves, water, and karstic features at length in his own scientific treatise on the natural world. His *Historia Naturalis* restates and elaborates on most of the information described above by his Greek and Roman predecessors. Pliny’s sources and interests appear to be equally diverse, which is evident in his combined use of spectacle (like Callimachus and Strabo) and critical analysis (like Vitruvius and Seneca) to describe the features of subterranean waters and cave systems. Again, Earth’s subterranean channels are described as “veins which run in all directions like interconnected links” (*venis ut vinculis discurrentibus*); some of these channels resurge in peculiarly high places, which Pliny understands to be the result of the water’s pressurization due to forceful subterranean winds.169 Because of this, Pliny considers caves to be like “pipes” (*siphones/fistulae*) that can produce an enormous amount of water and wind. Pliny notes that there are certain caves on the coast of Dalmatia from which “a squall issues like a whirlwind” (*turbini similis emicat procella*).170 Here, like Seneca, Pliny appears to be describing a windhole. Pliny is also aware of the karstic peculiarity that freshwater springs (*aquae dulces*) can resurge nearby the sea.171

Pliny notes briefly that caves can act as a natural refuge for humans, especially during thunderstorms. Lightning, he states confidently, cannot descend more than five feet into the earth, thus “those who are timid consider the deepest caves as the safest” (*ideo pavidi altiores specus tutissimos putant*).172 Pliny tells us that the Hyperboreans reside in caves at night for a similar reason.173 Yet, caves, particularly their

169 *HN* 2.166.
170 *HN* 2.115.
171 *mirabilius id faciunt aquae dulces iuxta mare ut fistulis emicantes* (*HN* 2.224).
172 Ibid. 2.146.
173 Ibid. 4.90.
waters and vapors, can also be lethal to humans.¹⁷⁴ In sum, caves are places where many elements come into contact with one another and thus create specific geological phenomena both above and below the surface of the Earth. These phenomena, interestingly enough, are all common in karstic landscapes.

The continual re-visititation and analyses of specific rivers, springs, and caves by our ancient sources suggests a continuous, almost linear hydrogeological system that is almost exclusively indicative of Mediterranean karstlands; water was understood to fall from the sky and recycle itself within the earth, ultimately rising to the surface in the form of springs only to sink through earth’s fissures once again. Similar to today, ancient scientists saw this process as distinctly multifaceted in that water can descend into the earth either via swallowholes or gradual soil infiltration and reemerge via cave entrances or springs. The process of disappearance can happen either forcefully or gently, and the places in which these waters disappear and reemerge, as well as the quality of the water, can vary greatly depending on where they are located geographically or geologically; mountains cause groundwater to be absorbed quickly and resurface further down in valleys at a higher velocity, and coastlands can emit freshwater far beyond the salty coastline. Caves are a prevalent feature of the karstlands as evidenced by most of the ancient sources, and they are in essence multifunctional spaces that cause water to move and change in interesting ways; some caves act solely as entry points or exit ways through which water moves underground, while others are created by destructive geological phenomena like earthquakes or sinkholes, while others act as reservoirs under mountains, near coastlines, or within valleys that store water and wind and redirect them to other locations far away from their original sources.

Within this general discourse of karst terrain, Roman poets and scientists used a number of words to describe what they understood generally as ‘caves.’ Caves possessed many often interconnected meanings among the Romans, thus it should come to no surprise that the vocabulary used to describe them are equally as various and fluid, just like the karstic terrain in which they are usually located: cavum, caverna,

¹⁷⁴ Cf. 2.197 for a general discussion on the types of vapors that issue from caves. Some gases are lethal (to birds at 2.207) (cf. Callimachus above), while some cause intoxication (cf. 2.208 on the Oracle at Delphi). Cave water can also be lethal (cf. 2.231 on the Styx) and cause intoxication (cf. 2.232 on the Oracle at Claros).
antrum, specus, and spelunca are the most common words that simply mean “cave,” whereas others like fauces or venae are used more metaphorically to describe cave entrances and subterranean tunnels.

The Greek κοῖλος, and its Latin equivalent cavus, means “hollow” in the most general sense. Both words describe general things that can be filled, like cups or ships, but they can also be used to describe topographies that are either curved or receptive.\(^{175}\) Κοῖλος and cavus are often used to describe the sides of ravines, for example, or the space between mountains or rivers.\(^{176}\) They are also used to describe coastlines and even, especially in Strabo, underground caverns that extend to the sea.\(^{177}\) Connors is convinced that Strabo and other ancient authors understood the multiple geological implications of κοῖλος/cavus (e.g. “surrounded by mountains” and “having underground hollows”) as related geological features in a particular (karstic) landscape.\(^{178}\) Cavum is the substantive of cavus and literally means “a hollow thing” or generally “hole.” A cavum can connote a sense of pastoral wilderness often in tandem with silvae (“forests”), a sense of elemental power (e.g. as a source of winds), or a place of refuge.\(^{179}\) Among scientific authors, cava were subterranean hollows that could contain wind and/or water, but it does not seem to be the preferable word to describe the ‘subterranean cave’ among any author.\(^{180}\)

Caverna, like cavum, does not appear to be a favorite word among scientific authors to describe subterranean caves as a geological system. The term, also like cavum, can simply denote hollowness,\(^{181}\) though more often than not does the word describe a “hole in the earth” or the “rocky vaults” along mountains or cliff sides.\(^{182}\)

\(^{175}\) Connors 2016, 156.
\(^{177}\) Connors 2016, 156. Cf. Hom. Od. 22.385 Strabo 6.2.1, 8.3.2, 8.6.22, 9.2.25. Cf. Strabo’s sea caves at 5.4.9, 6.2.9, 9.3.5.
\(^{178}\) Connors 2016, 156. Aristotle uses κοῖλις in his description of subterranean reservoirs (Mete. 1.13.349b 30-35), which are commonly known today among geologists as karstic drainage basins.
\(^{179}\) Cf. Hor. Sat. 2.3.173, 2.6.106. Ep. 1.7.33, Lucr. 5.1382.
\(^{180}\) Cf. Sen. QNat. 3.9.1.2, 3.15.8.3.
\(^{181}\) Caverna could describe the hold of a ship (Cf. Cic. De Or. 3.46.180, Luc. 9.110) or even the “vault” of heaven (Lucr. 4.171, 6.252, Cic. Aret. 253).
\(^{182}\) Cf. Lucr. 6.597, Cic. N.D. 2.9.25, 2.60.151, Luc. 6.683, Verg. Aen. 3.674, and Ov. Met. 5.502, 6.698. Cf. also Heine 1971. Caverna is also used by Ovid to specifically describe the subterranean passageway of the nymph Arethusa deep below the sea off the coast of Sicily (Ov. Met. 5.639).
Antrum also translates to “cave” or “cavern,” but unlike cavum and caverna the word is almost entirely exclusive to poetry, which could very well be due to the fact that the word is pulled directly from the Greek ἄντρον. Latin antra often connote places of pastoral beauty that afford shelter and coolness, yet as is the case with most mysterious places in the wilderness, antra are often inhospitable or unpropitious to human beings, and are thus the homes of monsters or otherworldly beings.

Specus translates to “cave” quite generally, but it seems to encapsulate more culturally specific connotations than cavum, caverna, and antrum. A specus can be an either natural or artificial cavity that exists below or above earth’s surface, usually near cliff sides or deep in valleys. Like antrum, specus can connote a sense of pastoral beauty and refuge, but it seems to be used more often to designate the home of divine beings and monsters. The word specus also seems to be a favorite among Roman scientific writers to describe hollow caverns below the earth; Seneca understands specus to be empty, subterranean spaces made of rock (NQ 3.16.4.3 and Epist. 1.3) that function as the space into which disappearing rivers travel (NQ 3.26.3.2). To Pliny, a specus is a chasm in which winds can generate their force (HN 2.115) and a chasm in which people can seek refuge (HN 2.146).

Spelunca appears to be interchangeable with specus in terms of its function as an uncivilized home for beasts, but speluncae appear much more often as places of refuge, like antra in Roman poetry; the process of poetic initiation takes place for Propertius and Ovid within a spelunca, and Epicurus is said to have spent his time philosophizing in a spelunca. Speluncae are thus typically described in terms of

---

183 Cf. Verg. Ecl. 5.19 (a cave of Nymphs) and Aen. 6.11, Prop. 2.30.26, 3.3.14, 3.3.153 (the home of Calliope and place of poetic initiation), Hor. Carm. 1.5.3, Ov. Met. 13.47.
184 Cf. Ov. Met. 1.121 (the cold place of habitation for the first humans), Val. Fl. 8.315 (the marriage cave of Jason and Medea). For the home of divinities/monsters, cf. Verg. Aen. 6.42 (the home of the Sibyl/Apollo at Cumae), Pro. 5.1.103 (the home of Jupiter), Hor. Carm. 2.1.59 (a cave sacred to Dionysus), Ov. Fast. 1.550, 1.562 (the home of Cacus).
185 Cf. Enn. Ann. 17.429, Catull. 61.28, Caes. BCiv. 3.49.3.4.
186 Cf. Catull. 61.28 (a cave of the nymphs), Hor. Carm. 3.25.2, Verg. Aen. 9.700, Ov. Met. 3.29.
187 Cf. Cic. Nat. De. 2.89.15 (the home of the sea god Triton), Verg. Aen. 7.568 (the home of Dis), 8.241, 8.258 (the home of Cacus), 8.418 (the home of the Cyclops on Aetna), Ov. Met. 7.409 (the home of Cerberus), 11.235 (the home of Thetis), Fast. 4.495 (the home of Typhon).
188 Cf. Cic. De or. 7.7.1.6, 8.1.6.4, 8.6.3.3, and Sen. QNat. 2.115.5, 4.90.8, 8.127.1, 16.234.5, 31.79.9.
189 Cf. Cic. Ver. 4.107.8 (the cave of Pluto from which he kidnapped Persephone), Verg. Aen. 3.424 (the home of Scylla), Aen. 6.237 (the home of the Sibyl), Aen. 8.193, 8.304, and Ov. Fast. 1.555 (the home of Cacus), Met. 11.592 (the home of Sleep), and Phaed. Aes. 4.21.3 (the home of Dragon).
190 Cf. Cic. Fin. 2.94.17, Flacc. 39.2, Prop. 3.3.27, Ov. Am. 3.1.3. Speluncae often function as abodes of the Muses; Cf. Cic. Tusc. Dis. 1.37.5, Nat. De. 2.98.10, Verg. Aen. 5.213, Prop. 3.3.27, Ov. Am. 3.1.3, Met. 10.692.
their natural beauty (e.g. possessing vegetation, shade, and an abundance of water in the form of springs and rivulets) or their natural eminence (e.g. next to mountains or cliffs). Vergil chooses *spelunca* as the marriage abode for Dido and Aeneas, and he too focuses on the natural beauty of the area surrounding the cave.\footnote{191 Cf. Verg. *Aen.* 4.124, 4.165.}

Among Roman scientists, *spelunca* appears to be used interchangeably with *specus* and thus appears much more often than *cavum, caverna, and antrum*.\footnote{192 Cf. Lucr. 6.195, 6.545, 6.559, 6.581, 6.696 (caves formed by earthquakes and contain wind), Vitr. *De arch.* 2.1.2, 8.3.21 (a cave with magical running water), Sen. *Ep.* 55.6 (artificial, imperial grotto), Plin. *HN* 3.59.5, 7.148.4, 12.9.7.}

The Latin *faux* literally means “throat,” but the term is often used to describe geographical locations with a particularly rocky geology. Keeping the “throat” definition in mind, *fauces* often describe narrow inlets, defiles, or crags.\footnote{193 Cf. Cic. *Agr.* 2.32.87, Caes. *BCiv.* 1.25.5, Lucr. 6.630, 6.697, Plin. *HN* 5.9.10.}

*Fauces* can also describe subterranean tunnels that are either narrow or expansive.\footnote{194 Cf. *Aetna* 320 and Lucr. 8.1. *Fauces* is sometimes limited to specific cave entranceways that possess some sense of sharpness or roughness.\footnote{195 Cf. Lucr. 1.724, 3.1012, 6.639, Cic. *ND* 2.95, Verg. *Aen.* 6.273, and Livy 10.1.5.}

This latter sense of *fauces* as rough entranceways into the subterranean world is used to describe the entrances to the Underworld.\footnote{196 Cf. in particular Verg. *G.* 4.428 and *Aen.* 7.570.}

In short, cave words are usually interchangeable with one another in the most general sense, but the context in which the cave appears could warrant an author’s preference of one particular cave word over another. To Roman authors, this ‘context’ surrounding caves seems to be cultural, or how ‘civilized’ the author wants his landscape to be. Depending on whether the scene described is meant to promote an aura of remoteness, wildness, or natural beauty or imminence, the words *antrum, specus, or faux* might be more appropriate, whereas for caves that contain some variable sense of urbanity, such subterranean spaces might better be labeled as *speluncae*. The words *cavum, caverna, specus, and spelunca* are used interchangeably among scientific writers, whereas *specus, spelunca, and antrum* are preferable words for poets and scientists. All in all, the connotations of caves are much more fluid than they are rigid, but an author’s use of one word rather than another could be indicative of a specific agenda, whether it be an
emphasis on the poetic atmosphere of the scene, the aesthetics of the poem as a whole, or recalling Greek predecessors and their works.

In the words of Connors, “direct observational awareness of intermittent lakes and subterranean streams allows places designated by the [above] words to be understood as at least potentially connected to a dynamic system of disappearing and reappearing waters.”197 The ancients were keen observers of their geological surroundings, as is evident from their mythology, poetry, and scientific treatises. Although the term ‘karst’ is a modern one, ancient Greek and Roman authors developed, utilized, and cemented a particular vocabulary to describe caves and other karstic phenomena as accurately as they could.

---

197 Connors 2016, 160.
Chapter 3 – The *Georgics* and the Subterranean World

a. The *Georgics* and the Epyllion of Aristaeus

The *Georgics* as a whole is in essence a poem about Earth; in book one, Vergil describes the seasons and the celestial bodies that move about the heavens far above the earth’s surface. In book two, the proper care of trees and vines, which make Earth’s soils their home, takes precedent. Book three details how best to take care of livestock, which roams and feeds off the land, and book four is concerned mainly with apiculture and the race of land/sky hybrid creatures known as bees. Within each book, Vergil takes the utmost care to illustrate the most minute machinations of nature in an effort to showcase the beauty of nature upon, above, and below Earth’s soil; every aspect of the Earth is marvelous from the smallest insect, to the oldest tree, to the largest ocean.¹⁹⁸

When compared to Vergil’s other texts, the *Georgics* stands alone with regard to its models.¹⁹⁹ It is evident from the pastoral nature of the *Eclogues*, as well as the large number of allusions, similar styles, and pastoral settings that exist within the poems, that Vergil was looking to Theocritus and early Greek bucolic poetry for inspiration. In the *Aeneid*, we see clear references to the epics of Homer as well as later Greek authors, especially Apollonius of Rhodes, in its language, heroic characters and places, and overall style. The *Georgics*, however, has no clear, singular model, but rather claims allegiance to a variety of genres and particular pieces of literature from a variety of authors.

When it comes to the poetic corpus from which Vergil could draw inspiration for the *Georgics*, the Roman author with Hellenistic sympathies drew from a wide range of Greek sources. In true Alexandrian

¹⁹⁸ According to Parry (1972, 41), “no Latin poetry is more inventively and variously expressive of external phenomena than the *Georgics.*”
fashion, Vergil uproots the heroes and stories of Homer, Pindar, Bacchylides, Apollonius of Rhodes, and Callimachus in an effort to revive their traditions within an entirely Roman setting and context.\textsuperscript{200}

The more scientific information in the \textit{Georgics} comes from a variety of prose writers including Aristotle, Pseudo-Aristotle, Theophrastus, Nicander, and Empedocles.\textsuperscript{201} Hesiodic references appear throughout the entire poem, and they increase in potency especially in book four; Cyrene’s cave and the presence of Ocean recalls the \textit{Theogony}, as does Vergil’s list of subterranean rivers, notably the Phasis, Caicus, and Eridanus.\textsuperscript{202}

As a whole, the \textit{Georgics} illustrates Earth’s natural phenomena as distinct from the will of mankind. Vergil, however, is deeply concerned not only with how Nature functions as a part and parcel of Earth, but also (and one could argue more so) how mankind interacts with these natural phenomena. Vergil constantly keeps the plights of (Roman) man and the natural world bound together, including their ever-changing, cyclical connection in life, death, and sometimes rebirth. Vergil thus frames the endings of each book in contrast with the previous one, which creates a structural cycle of the alternating ‘bads’ and ‘goods’ that Nature offers mankind:\textsuperscript{203} Over the decades, scholars have identified many major themes that connect the seemingly disconnected books and tones of the \textit{Georgics}, yet two themes stand out that cogently encapsulate the \textit{Georgics} as a whole. Firstly, the \textit{Georgics} illustrates the relationship between Man and Nature by offering instructions on how to live one’s life as part of the cruel, and oftentimes absurd, realities created by both nature and civilization.\textsuperscript{204} The alternation between moments of creation

\textsuperscript{201} Horsefall 1999, 77.
\textsuperscript{202} Hesiod’s \textit{Theogony} and \textit{Works and Days} appear to be the largest contributors to the didactic agenda of Vergil’s poem, especially the classic themes of the ‘dignity of toil’ and the theological reasoning behind the necessity of labor; cf. Parry 1972, 37 and Horsefall 1999, 79. These themes are introduced in book one, and Gale (2008, 99) claims that Hesiod was the primary font of knowledge for this book for this particular reason. Cf. also Hes. \textit{Theog.} 337-370 and Llewelyn 1999, 37. The importance of Ocean will be discussed in depth in chapter four.
\textsuperscript{203} Cf. Segal 1966, 309. Book one ends with an excursus on the recent Civil War, which is prime evidence of mankind’s fall from its original ‘golden’ grace. Book two turns human gloom into celebration with an optimistic illustration of an achievable return to the Golden Age for the hardworking farmer. This age of happiness, Vergil underscores, is attainable only in the Italian countryside. The theme of imminent doom returns in book three when Vergil describes the tragic nature of man, who is akin to beast in his utter subjugation to material, and thus inconsequential, passions. These passions, which taint the idyllic countryside, always end in violence, or baneful love, or utter desolation. Vergil thus ends the book with a weighty description of winter and plague. Book four, like book two, ends in an orderly fashion with an overarching aura of optimism with a celebration of Caesar’s new world order. The bees, which act as metaphor for regeneration, harmony, and efficient (i.e. successful) governance, introduce the hopeful and bright situation Romans are looking ahead to at the time of Vergil’s writing of the \textit{Georgics}.
\textsuperscript{204} Cf. Segal 1966, 307 and Parry 1972, 36.
and destruction, gentleness and force, pessimism and hope, and toil and beauty throughout the books, Farrell argues, highlights mankind’s interconnectedness with the natural world as well as his need for instruction on how to live his best life among such polarizing phenomena.²⁰⁵ The only way for man to survive Nature’s cruelty is to work hard and strive to control nature. This, however, is not always successful, and it is quite obvious that in the Georgics we see a constant battle between mankind’s toilsome control of the natural world and the natural world’s independence from mankind.

Thus the second major theme of the Georgics is the necessity of labor that the earth requires of mankind. Mankind must labor on the earth to survive and thrive, and the earth gives no aid. At the outset of the Georgics, Jupiter himself ordains this burdensome reality to mankind, and thus introduces natura as essentially indifferent to man.²⁰⁶ Yet, through labor there is spes, namely the hope that the golden age of man could truly return if one puts in the effort to pull from the earth its wealth of resources.²⁰⁷ Moreover, it is through this application of effort, or ‘force’ (vis), upon the earth that humans obtain knowledge. Not only does the earth provide the resources needed to survive as a mortal human being, but it also provides humans an education in the praecepta of nature (e.g. agriculture and animal husbandry) that can only be understood through constant effort.²⁰⁸ Vergil makes clear throughout the Georgics that labor is shared by both man and animal as inhabitants of Earth, though it is man’s civilizing nature that causes him to constantly butt heads with the forces of nature.²⁰⁹ Moreover, it is mankind’s civilizing nature that makes it responsible for the ‘state’ of the world, and Vergil showcases this by keeping mankind constantly in the forefront of his poem among the gods and Nature itself.²¹⁰ Unfortunately for mankind, the alternating chapters of the Georgics describe a natural world that is gradually in decline and

²⁰⁸ Cf. Ross 1987, 224, who uses an analogy of a flowing river: water flows downstream, but this præceptum is not fully understood until the rower overcomes the river by rowing upstream without ceasing any effort.
ultimately heading towards death. Yet, the epyllion of Aristaeus, which ends the fourth book and thus the entirety of the *Georgics*, can been interpreted as bringing closure to these aforementioned anxieties.

Book four of the *Georgics* is rather complex stylistically, structurally, and didactically compared to the previous three chapters. The reason for this complexity for the most part has to do with the seemingly digressive epyllion that ends the book and thus the entire poem. Generally speaking, the fourth book can be summarized as a didactic poem concerning apiculture, which begins with apiary instruction and advice (e.g. where to situate one’s hive and prevent the spread of diseases) and ends with two lengthy digressions concerning the old gardener of Corycicus and the invention of the ritual of *bugonia*.

The old man of Corycicus functions as the ideal *Georgic* farmer, an Epicurean sage of sorts, who works in the fields in isolation and with just the bare necessities. He is a distinctly balanced character who lives at one with nature and defines the human individual in his most private state of being: the embodiment of the sage, or perhaps the poet. In this sense, the Corycian gardener functions similarly to Proteus, who appears later in the epyllion and who keeps to himself as a hermit and could, in turn, be interpreted as a sage or provider of wisdom. The Corycian gardener is also similar to Aristaeus in the fact that he is not only a beekeeper, but also the first successful beekeeper, who not only keeps his bees alive but also allows them to “thrive” (*abundare*). Vergil here seems to be prefacing the trials of the mortal Aristaeus to come by highlighting the gardener’s natural talent and (initial?) success with beekeeping.

After Vergil offers the tantalizing, complex image of the Corycian gardener, the *Georgics* transitions to a history of the *bugonia*, which itself introduces the epyllion of Aristaeus. Vergil considers the *bugonia* to be a Greek invention (4.283-284), yet an Egyptian version exists that Vergil uses to describe the Greek ritual. The reasoning behind this, it has been argued, is that Vergil aims to highlight the *bugonia*’s foreignness to the Greek and Roman world, which functions as perfectly unorthodox subject matter in a

---

211 Cf. Vergil’s theodicy at 1.121-59 and its references to Lucretius, namely 2.1150-1153 and 1.1157-1163.
214 Cf. *G.* 4.139-141.
What follows is a quick transition to the divine inventor of the ritual, Aristaeus, and an introduction to the story of how he came to successfully revive his dead hive.

Vergil’s myth of Aristaeus, by definition, is considered to be an ‘epyllion,’ which is a miniature mythological epic of sorts, usually concerned with unconventional topics, that digresses from the main narrative and possesses its own autonomy. Usually epyllia are in dactylic hexameter and tend to concentrate on the more ‘unheroic’ incidentals of a particular hero. As a whole, the epyllion of Aristaeus, unlike most traditional epyllia that largely maintain their epic language and style, is a combination of both epic and elegiac elements; the story’s dynamic, flowing form, its holistic framing of episodes, and its integration of both explicit and implicit allusions to traditionally epic themes, characters, events, and raw material make the myth essentially Homeric. As a result of the epyllion’s epic flavoring, the myth not only stands out to the reader as stylistically and tonally different from the rest of the notably didactic Georgics, but it has also caused numerous scholars to muddle over the question as to why Vergil chooses to focus on Homer at this particular point in the poem. Some suggest that Vergil’s Georgics, which has its start in the pastoral Eclogues, functions as a bridge that extends towards the epic Aeneid, and the epyllion of Aristaeus functions as the culmination of Homeric allusion solely to this end. Regardless, the brevity and technicality of the narrative, combined with the notable ‘unheroicness’ of Aristaeus, who has failed as a beekeeper (as evidenced by his dead hive) and who complains to, and

---

215 Some scholars argue that this Egyptian version of the bugonia is meant to recall Octavian and Egypt’s historical influence upon the Greco-Roman peoples living in Rome. Others understand Vergil’s story of the bugonia to reflect his engagement with the (proto)scientific bugonia tradition beginning(?) with Varro and his Rerum rusticarum, who cites a certain Archelaus.

216 Parry 1972, 45, Lyne 1978, 169, 172-3, and Llewelyn 1999, 17. Scholars continue to debate the significance and nature of epyllia as a genre; what is understood among scholars of Hellenistic literature is that much more than just ‘myth’ (i.e. major cultural events of the remote past) is at play within an epyllion. For the sake of my argument and consistency, from now on I will use ‘epyllion’ and ‘Vergil’s myth of Aristaeus’ interchangeably.

217 Cf. Farrell 1991, 265 and Marincic 2007, 21. The epyllion also contains a large amount of epic diction reminiscent of Homer: the conjunctive at is equivalent to the Homeric ἀτιπό and ἀτιπό ἔμετα, and the verb αφαίρει signals forthcoming epic narratives and/or precepts. The wanderings of Aristaeus, his descent to his mother’s realm, and his wrestling with Proteus fit the heroic tropes commonly found in the Iliad and Odyssey; Cf. Horsfall 1999, 85-86. Farrell (1991) argues that the allusions to Homer in the epyllion are not arbitrary nor exist solely to reference Homer. Rather, the allusions Vergil provides engage with the allegorical tradition that explained Homer as a poet of natural philosophy. As I will discuss further in chapter 5a, the Proteus episode has been pulled directly from book four of the Odyssey. Yet, there exist many differences between the two separate encounters with the shapeshifting seer, which reflects Vergil’s tendency to transform traditionally epic situations into elegy with a distinct Alexandrian flair; Cf. Gale 2008, 95.

218 Cf. Farrell 1991, 256, 272 for his list of scholars who support this idea.
requires assistance from, his mother constantly throughout the tale, and with the off-beat subject matter (i.e. reviving a beehive), qualifies the story more so as a neoteric epyllion rather than a Homeric epic.

The *Georgics* as a whole is profoundly Alexandrian. The learnedness of the author, the artificiality and artistry of describing relatively mundane things, the passion for allusion and obscure mythologies, the prioritization of invention, and the restructuring of scientific fact to fit neatly into verse are all evident throughout the four books of the didactic poem. The embedded narrative within the epyllion, moreover, takes a more elegiac turn from the main epic narrative. This transition becomes explicit when the seer Proteus begins to describe the love, loss, and painful mourning of the bereft hero Orpheus. The story is narrated with total sympathy and is utterly serious in its tone, although there is no change in the overall meter. When considering the greater narrative, the embedded tale functions as a didactic warning to Aristaeus who is at the threshold of either failing in his quest, like Orpheus, or succeeding in bringing his beloved bees back to life. As readers we are forced to see Aristaeus and Orpheus as mirrored characters and Proteus’ embedded tale as intimately connected to what surrounds it.

Vergil’s model for the *Georgics*’ Alexandrianism comes primarily from Callimachus. Callimachus, who is considered to be the inventor of bibliography and supposedly popularized the epyllion genre, produced both prose writings and poetry, both of which resonate within the *Georgics*. In regards to Callimachus’s prose, his famous paradoxographical style is best defined in terms of its brevity, erudition, organization, and simplicity. Regarding Callimachus’ poetry, the *Victoria Berenices*, the *Hymns*, and the *Coma Berenices* provided the most blatant inspiration for the *Georgics*’ erudition, literary polemic, and idiosyncratic mythos.

---

220 The intricacies of this embedded narrative will be discussed in more detail as pertaining to my topic in chapter 6a.
221 According to Krevans (2011, 130-3), this style was the direct result of a number of factors; Callimachus attempted to preserve a vanishing world in his writings while at the same time prioritize the location of his findings to reflect an awareness of the spatial discontinuity experienced by Hellenistic scholars living during a time of Egyptian rule and globalization. Most of these factors Vergil must have related to on some level as a Roman poet and polyglot living during a time of political transition and imperial expansion.
222 Horsfall 1999, 80. The *Victoria Berenices*, which is a poem celebrating the chariot victory of Berenices II at the Nemean games in 243 or 241 BCE, is considered to have influenced the structure of book one and three of the *Georgics*. At the beginning of book three, Vergil explicitly detail a new path to immortality while simultaneously rejecting the exhausted themes of his predecessors. What is left, then, is Italy as the new setting for the poetic future in which Octavian will rule. This structure, combined with the cosmic introduction in book one that sets the stage for Italian rule, reflects Callimachus’ call to novelty at the
Furthermore, the epyllion of Aristaeus could be interpreted as an *aetion* (“reason” narrative) in which the character Cyrene plays a major role. Cyrene, we must remember, was the eponymous patron of Callimachus’ hometown, and Callimachus provides an extensive narrative of Cyrene the divine huntress and mother to Aristaeus in his *Hymn to Apollo*.\(^{223}\) Connors suggests that Cyrene’s underwater realm was originally Callimachus’s idea, but the fragmented nature of his *On the Rivers of the Inhabited World* gives us no firm evidence for this idea.\(^{224}\) Furthermore, Vergil’s list of nymphae could be derived from two different Callimachean treatises, the lost *On Nymphs* and the heavily fragmented *On the Rivers of the Inhabited World*, and possibly his *Hymn to Artemis*.\(^{225}\) The Proteus episode of the epyllion also contains evidence of Callimachean inspiration. In the *Victoria Berenices*, Callimachus makes a passing reference to Proteus as a native of Pallene in Chalcidice rather than Pharos Island off the coast of Egypt as Homer does in his *Odyssey*.\(^{226}\) Vergil chooses to follow the Pallene, or non-Homeric, tradition in his own myth. Vergil also calls Proteus a *vates* (“seer”) twice in the epyllion (at 4.387 and 4.392), which recalls Callimachus’s use of μάντις to describe the seer at the beginning of the *Victoria Berenices*.\(^{227}\) Furthermore, the story of Proteus’ passage from Pallene to Pharos through an ‘undersea cave’ comes

\(^{223}\) Cf. Callim. *Hymn* 2.65-96. Cf. also Llewelyn 1999, 19 and Marincic 2007, 25. This epyllion of Cyrene will be discussed further in chapter 4a.

\(^{224}\) Cf. Callim. *Hymn* 2.65-96. Cf. also Llewelyn 1999, 19 and Marincic 2007, 25. This epyllion of Cyrene will be discussed further in chapter 4a.

\(^{225}\) Cf. Callim. *Aet.* fr. 254.5-6 Harder.

\(^{226}\) Cf. Thomas 1986, 319.
directly from Callimachus. Even the *bugonia* ritual which encapsulates the epyllion and most of book four of the *Georgics*, Marincic argues, can be interpreted as a Callimachean, poetological metaphor.

Thomas says it best when notes that Vergil, “more than any other Roman poet, knew and controlled his inherited tradition, both Greek and Latin, and the *Georgics* is the most eclectic and complex in its drawing from tradition.” By seamlessly combining aspects of didactic literature, scientific treatises, epic poetry, and elegiac verse, Vergil created a poem that engages with, and forces its readers to engage with, the natural world through the perspective of nearly every important literary and poetic genre available to the learned Roman. Vergil’s specific engagement with the subterranean world, as I will argue in the following chapters, seems to have been influenced at least in part by the aforementioned authors, especially Homer and Callimachus.

As an expert poet whose cultivated technique and engagement with a large swath of sources is apparent all throughout the *Georgics*, Vergil capitalized on the elements that bound Homer and Callimachus together to create a poem that aimed to surpass both; the poem, especially the epyllion, rises to Homeric *epos*, but that same *epos* is brought back down to the lavishly technical and delightfully intimate level of Alexandrian literature epitomized by Callimachus. The subject of the *Georgics* is the natural world, and the didactic epyllion never loses sight of the topic at hand. Vergil expertly combines the organized ornamentation promoted by the Alexandrians with the weightiness of Epic in his epyllion of Aristaeus. The overabundance of caves within this epyllion as well as their variable characteristics within Mediterranean karstlands, I shall argue in the next three chapters, not only reflects the works of these two authors, but also engages with more contemporary, scientific discourses on hydrology and geology.

The epyllion as a whole has its own autonomous unity apart from the rest of the *Georgics* as a tale of life versus death, loss versus restoration, trust versus doubt, mortality and divinity, and even farming

---

228 Cf. Callim. *Aet.* fr.54.1 Harder. Cf. Connors 2016, 153. The significance of this cave will be discussed further in chapter 5a.
229 Cf. Marincic 2007, 21, 23, who also argues that the coda of the *Georgics* was modelled on Callimachus’s *Hymn to Apollo* (2.105-113), and that Vergil’s bees are children of “Diktean Zeus” also yield a Callimachean connection (cf. 2.110-113).
231 Farrell 1991, 244-5.
versus poetry. The myth and its ‘moral’ has been interpreted politically,232 morally,233 and religiously.234 Yet, the epyllion possesses a strong internal unity that is thematically linked with almost everything that comes before it in the Georgics, mainly the themes of human labor and the cruelty of Nature.235 In nature there will always exist loss, but the epyllion gives hope to the idea that death is not final and that life can be restored through tenacity, hard labor, and faith by using the ritual of bugonia as the connecting, thematic thread.236 This reality of death that mortalkind is fated to meet, which is personified by Aristaeus’ contact with Ocean, Proteus, and Hades, lurks in every nook, corner, and cave.237

The omnipresence of labor and vis within and around these spaces forces Aristaeus, and in turn the individual reader, to constantly consider his/her mortality. The epyllion, however, provides some relief against these existential pressures by promising hope for a better future for the Roman people under the reign of Octavian.238 Furthermore, the omnipresence of nature and all of its cruelties, which require tenacitas from the laborious farmer, cannot be fully understood or appreciated without ars (“poetic skill”); by introducing the epyllion with extudit (4.315), Vergil forces us to consider the artist/poet who ‘hammers out’ nature’s precepts into understandable and relatable forms. Yet, unlike the durus agricola, the poet cannot survive in the cruel world of Nature, as evidenced by the demise of Orpheus, the world’s

232 The commentator Servius claims that Vergil had revised book four to account for the death and recent disgracing of Cornelius Gallus, Vergil’s close friend. The epyllion, according to Servius, is thus a simple substitution. Cf. Farrell 1991, 253-254 for a brief summary of the issue. Cf. also Parry 1972, Conte 2001, 45, and Peraki-Kyriakidou 2003, 152. The political moral involves comparing Aristaeus to either Gallus (i.e. if only Gallus had humbled himself and subordinated himself to Octavian, he never would have died in disgrace) or the Roman populace as a whole (i.e. Aristaeus, like the Roman, is self-destructive but is atoned for and is promised revival through Octavian’s reign; Cf. Griffin 2008, 226.
233 Orpheus represents the poet who turns away from the superior farmer-life that Aristaeus represents and thus meets his ultimate destruction.
234 Many scholars have interpreted the epyllion as a narrative of Roman religious practice. Cf. Campbell 1982, 107-8 and Nappa 2005, 212. Aristaeus experiences multiple divinations, and the consideration of causes, rituals, and expiations occurs throughout the story. According to Nappa (2005), precepts (which Cyrene represents) are futile when their causes (which Proteus represents) are not understood. Thus to be a successful farmer, one must be careful and pious in his constant, prideful laboring while at the same time being sympathetic to the (ir)regularities of the natural world.
235 Conte 2001, 46.
236 Cf. in particular Ross 1987, 214.
237 Aristaeus was one of nine (mostly Thracian) heroes that were celebrated by cave-cults; cf. Diod. Sic. 4.82. As a cult hero, he was considered to be a deity worshipped in Thessaly and Boeotia as the patron hero of animal husbandry, hunting, and apiculture; cf. Pind. Pyth. 9.63-67, Ov. Pont. 4.2.9, Athen. 14.643b, Robbins 1978, 100, and Weinberg 1986, 128. Born in Libya (modern Cyrene) to the nymph Cyrene and Apollo, he was brought back to Thessaly and nurtured in a cave on Mount Pelion and was taught hunting and divination by the Muses and the centaur Cheiron who lived with him in the cave; cf. Ap. Rhod. Argon. 2.510-20 and Stat. Achil. 106-18.
best artist. It is through Orpheus’ death and Aristaeus’ success that Vergil’s audience can fully understand Nature as a force outside of, yet always intricately linked to humanity.\textsuperscript{239}

The topographical space where Man and Nature come into contact with one another most often in the fourth book of the \textit{Georgics} and, more so, in the epyllion is the ‘cave.’ If we are to understand Aristaeus as either the idyllic georgic farmer, or as Vergil’s mortal reader, or even as Nature/Civilization in general, what are we as readers meant to take away from the fact that at every point of contact with other characters in the myth he is in or nearby a cave? And what does it mean that book four, which highlights the potential for restoration and the omnipresence of \textit{labor}, ends with a myth that constantly depicts, as well as functions like, subterranean cave systems? The epyllion contains a narrative that is equally dark and bright, scary and welcoming, mortal and divine, and disjointed and interconnected. To answer these questions, we need to approach the upcoming close reading of the epyllion of Aristaeus with a firm understanding of how Vergil treats caves and karst in literary context.

\textbf{b. Evidence of Vergilian Caves and Karst}

Vergil’s poetry as a whole has received relatively little attention from mythographers who are interested in how his poetry engages with the geological world and specific geological processes. The little attention that Vergil has been given in this regard has been solely directed towards his engagement with a particularly well-established tradition of mythologizing volcanoes as homes of Cyclops.\textsuperscript{240} Vergil does not mention Cyclops or their mountainous homes in his \textit{Eclogues}. The first time Vergil mentions this tradition is in book four of the \textit{Georgics} when he describes the Cyclops as denizens of mount Aetna in Sicily; the mountain “groans” (\textit{gemit}) and emits “lightning” (\textit{fulmina}) under the “hissing” (\textit{stridentia})

\textsuperscript{239} Cf. Parry (1972, especially at 51) who argues masterfully for this reading of the epyllion.
\textsuperscript{240} Cf. Pliny \textit{NH} 3 and 7 in particular. Cf. also Thuc. 3.88, 6.2.1, Call. 3.8-10, Verg. \textit{Aen.} 8.416-422, and Ovid \textit{Fasti} 4.287-288.
of their worked bronze. Vergil revisits this description in book eight of his Aeneid. Here, Vergil describes the “caves of Aetna” (antra Aetnae) as full of “groans” (gemitus) and “belching fire” (ignis anhelat) as a direct result of the Cyclops’ blacksmithing. Vergil, a neoteric poet of sorts, is obviously engaging with a geomythological tradition that has its origins in Greek literature; Homer is first to describe the sizzling bronze of the Cyclopean forge in the Odyssey, a topic which reemerges in Callimachus’ Hymn to Artemis and Valerius Flaccus’ Argonautica, who describe the Cyclops as living in caves below fiery Aetna (Aetnaeis...in anris).

What pertains to the present argument, however, is whether Vergil in his Georgics engages with the subterranean world in a geomythological way, possibly similar to how he engages with the subterranean homes of fiery Cyclops. It is clear from the primary focus of each book of the Georgics that the ‘Underground’ is not the focus of any chapter: book one pertains to the airy seasons and the celestial bodies, book two pertains to plants on the Earth’s surface, and books three and four are concerned with animal life, also existing upon the Earth’s surface. Yet, descriptions of subterranean Earth, as well as human and animalkind’s interactions with it, do in fact percolate throughout the four books.

All of the typical words used to describe ‘cave’ in the Latin language, except caverna, are employed in the Georgics, each of which are used in different ways in often largely different contexts. The adjective cavus is used almost exclusively to describe general ‘hollow spaces’ and not terrestrial cave-spaces. The instances where forms of cavus do in fact imply hollowed spaces in the earth, or ‘caves’ as we would call them today, occur in every book of the Georgics and usually function as dwelling spaces for nature’s more mysterious or unsightly creatures. The first use of this meaning of cavus in the Georgics appears in book one within the brief description of the toad (bufo). The toad is “found in hollows” (inventusque

---

241 G. 4.170-173.
242 Aen. 8.418-425, 440. Weinberg (1986, 94-5) argues that the monster Cacus, as Vergil describes him (Aen. 8.193-199, 241-258), is a son of Vulcan, lives in a mountainous cave, and breaths fire, all of which qualities are meant to reflect a volcanic crevice that once existed near Pallanteneum.
cavis) where “most of earth’s unsightly creatures dwell” (plurima terrae monstra ferunt).244 Here we can understand cavum as an abode traditionally befitting monsters and thus as an undomesticated space.

Along the same lines, cava also function as homes for bees.245 We learn in book two that when left to their own devices, bees tend to congregate in vacant spaces, oftentimes in the “hollow bark” (corticibusque cavis) or the “empty belly” (aluo) of certain trees. Vergil returns to this observation in book four when he offers a little more elaboration regarding the best place to place a beehive: the beekeeper should dig and open up “hiding places underneath the earth” (effossis...latebris / sub terra fovere) where the bees can stay warm, for they have been found to live “deep down inside hollowed pumice stone” (penitusque repertae / pumicibusque cavis). Like the bufo, the bees seek isolated places far from human activity, and thus tend to congregate in hollow, contained, and undomesticated spaces in the earth. These spaces, however, can become domesticated, yet still keep the bees alive, through human effort, or vis: the creation of artificial cava by beekeepers.

Vergil also uses cavus to describe cave-spaces that explicitly lack monstrous inhabitants.246 During mating season, horses are unable to be calmed either by the bridle or the whip, and Vergil uses a geological metaphor to underline this ‘erosive’ wildness by describing how rocky cliffs and hollowed crags (scopuli rupesque cavae) do not slow in their being battered by rivers and whirling waters. Even though the horses do not explicitly live in these cava, the wildness and uncontrollable energy of horses is equated with littoral caves. The metaphor of crashing waters against rocky cliffs and hollowed precipices emphasize the intensity of erosion, or the wearing-down, experienced by all living and non-living things on Earth. This depiction adds to common perception that caves can contain large amounts of kinetic energy, especially when they are situated in highly erosive landscapes such as coastlines. Interestingly enough, the untamed implications of cava remains consistent throughout its usage in the Georgics.

244 G. 1.184-185.
245 Ibid. 2.452-3 and 4.44.
246 Ibid. 3.252-254.
The word *antrum* occurs four times in the *Georgics* and strictly within book four. Similar to *cava*, *antra* can function as the home of bees, but it seems more often the case that Vergil restricts *antrum* to powerful, divine figures. Jupiter, who apportioned specific, divine attributes to the kingdom of bees, is introduced solely in the context of the *antrum* on mount Dikte in which he was raised as a child. The home of Proteus the shapeshifter is described as *consueta antra* (“accustomed caves”) where he retreats from the sea, and Orpheus resides *sub antris gelidis* among wild tigers and trees while he laments after losing Eurydice for the second time. Every instance of *antrum* in the *Georgics* connotes a sense of wildness or latent danger in the fact that the ‘divine’ is somewhere present. The word’s restriction to poetry befits the combined epic/elegiac nature of the epyllion.

Interestingly enough, the word *specus* occurs only once in the *Georgics* to describe the abode of Proteus. It seems to be used interchangeably with *antrum* in this context as a dangerous space where powerful, divine energy lies dormant, as is suggested by Proteus’s advancing to the *specus* in order to sleep. Book two contains the first instance of *spelunca*, which typically connotes a grotto, sometimes welcoming, sometimes dangerous, yet typically situated in or around a distinctly pastoral settings like shady trees, vines, groves, streams, or springs. Here, Vergil depicts an idyllic setting in which life’s greatest pleasures (leisure [*otium*], ease [*quies*], and wealthy estates [*dives opum variorum*]) are found “in caves and living lakes” (*speluncae vivique lacus*). Here among the grottos does the estate owner witness oxen mooing and sleeping softly under the neighboring trees. The setting of these *speluncae* could not be more pastoral; all possible elite pleasures are present as well as pristine lakes, “cool pastoral spots” (*frigida tempe*), and sleeping, bellowing cows. The *speluncae* mentioned here must have recalled the ‘imperial grotto’ that had become exceedingly popular among wealthy elites during Vergil’s lifetime.

---

247 G. 4.44.
248 Ibid. 4.152.
249 Ibid. 4.429. This location will be discussed further in chapter 5a.
250 Ibid. 4.509-510. This location will be discussed further in chapter 6a.
251 Ibid. 4.418.
252 Ibid. 2.469.
The second instance of *spelunca* appears later in book three. After mating season, pregnant mares are left to peacefully roam the countryside and take shelter in caves (*speluncaeque tegant*), which offer them “falling shade from the cave’s stones” (*saxea procubet umbra*). Like the imperial grottos described immediately above, the *speluncae* here offer solace to anything or anyone who needs it. The “rocky shade” highlights the grotto’s combined function as a naturally rough space that still provides safety and comfort. However, the ‘wildness’ of caves, which is greatly emphasized by Vergil’s *cavum* metaphor for wild stallions later in book three, is implied here by the simple presence of wild animals, particularly horses. Yet, the ‘wildness’ of the cave is significantly diminished by pastoral and feminine context; these horses, which are pregnant, graze in the forests and rivers where “moss and grass are most lush on the banks” (*muscus ubi et viridissima gramine ripa*). Then they take their deserved rest in the comfort of a shady, cool cave. *Speluncae* can be seen as a womb, which itself contains the type of latent, sexual energy traditionally associated with female horses, and thus functions as the ideal spot for animals to give birth.

The use of *spelunca* in this particular pastoral context suggests Vergil’s desire to focus on the feminine, rather than the masculine, function of caves.

The word *faux* or plural *fauces* appears in three different books and is used in three different ways that encompass all of its possible meanings. In book one, Vergil uses *faux* and its primary definition as “inlet” to describe the topography of Abydus, which is full of delicious oysters. In book three, Vergil uses *fauces* to describe the literal “jaws” of livestock that has been attacked by disease. A distinctly negative connotation of *fauces* is apparent here. This gloomier meaning, I would argue, continues into book four, where *fauces* no longer means the “jaws” or “maw” of beasts, but rather the black “throat” or metaphorical “cave entrance” of Taenarum in which Orpheus travels to rescue Eurydice. The fact that Taenarum was a well-known entranceway to the Underworld and that the temple complex actually contained two caves near the coastline gives *faux* its gloomy, speleological implications.

---

253 G. 3.145.
254 Ibid. 1.207.
255 Ibid. 3.508.
256 I will discuss this interpretation more in detail in chapter 6a.
It is evident that Vergil is interested in the subterranean world and how living beings, primarily animals, interact with them in nature. Yet, is Vergil interested in the particular hydrogeological processes that form these cave-spaces? In other words, is Vergil as attuned to the observable hydrogeological processes that occur upon and beneath the earth’s surface as he is to the agricultural techniques practiced across the Italian countryside? Upon closer examination of the poem, it seems so. Firstly, Vergil makes clear throughout the _Georgics_ his awareness of the erosive harshness of the Mediterranean climate. In book one, Vergil describes how in spring “torrential downpours” (*immensum...agmen aquarum*) cause ditches to become pools and previously “hollow” riverbeds (*cava flumina*) to overflow with raging waters.\(^{257}\) High velocity waters can cause an extensive amount of erosion in often dramatic ways. Later in book three, Vergil utilizes pathetic fallacy to describe how the earth, like heated horses, becomes discordant and violent during the springtime; no human contraption can calm the raging horses, nor can they calm the high rocks and hollowed cliff sides “exposed” (*obiecta*) when rivers and “whirling waters” (*unda torquentia*) rush against “attacked mountains” (*correptos...montis*).\(^{258}\) Underlying Vergil’s poetic description of the violently eroded coastline is an accurate account of the creation of pseudo-karst, which is a common, observable surface feature of Mediterranean coastlines during the end of winter.

During summer, however, the opposite happens, yet with equally violent effects; when summer arrives, swamps “burn up” (*exusta*) and lands “split open” (*dehiscunt*) from the heat, which modern geologists identify as ‘pronounced desiccation cracks.’ Previously aquatic animals, like the snake, leap onto dry land and rage throughout the fields in terror of the sun’s burning rays.\(^{259}\) The combination of *dehiscunt*, the relentless usage of heat words (e.g. *exusta, siccum,flammantia, torquens, siti, and aestu*) within only three lines, and the fact that this extreme immediately follows another climatic extreme, suggests that Vergil is describing the dramatic creation of sinkholes. Earlier in book one, the auspicious nature of catastrophic geological processes, like sinkholes, becomes evident in a description of the

\(^{257}\) G 1.332-337.

\(^{258}\) Ibid. 3.252-254.

\(^{259}\) Ibid. 3.432-434.
aftermath of a solar eclipse in 44 BCE; not only do the sacred images of gods grow pale and the ivory and bronze sweat within the temples, but the rivers of the world “cease flowing” (sistunt) and the lands “split open” (dehiscunt). It is evident from these two visually gripping examples that the earth does not split open for no reason; Vergil rationalizes the catastrophic nature of sinkhole creation via desiccation cracks as the direct result of either climatic or divine factors, which is reminiscent of the scientific approaches of Aristotle, Strabo, and especially Seneca, who uses hiatus to describe the violent swallowing of newly formed dolines. The word order of the eclipse sinkhole (sistunt amnes terraeque dehiscunt) is nearly identical to the word order found later in the summer sinkhole description in book three (exusta palus terraeque ardore dehiscunt). The simple chiasmus here, I would argue, not only succeeds in highlighting neatly the symmetry of earth’s reaction to the eclipse or to the excessive heat of summer, but it also, geologically speaking, creates a figurative ‘sinkhole’ within the phrase, which could be illustrated as thus:

Aside from the similar vocabulary and syntax, both chiasmi are nearly identical in their meter and characterized by a heavy sluggishness of their feet, which is reminiscent of the summer’s draining effect on living beings or the grave collapse of Earth’s surface soils.

Vergil utilizes karstic vocabulary in his Georgics, but some suggestive words, like vorago and barathrum do not appear in the poem at all. Cavum appears quite often, and its presence throughout the Georgics usually signals hollowed spaces, sometimes in rocks, sometimes in the earth or fauna.

---

260 G. 1.476-480.
261 Cf. G. 3.253: scopuli rupeisque cavae: Here “caves” and rivers and ocean waves give no delay in breaking away chunks of mountains during springtime.
262 Cf. G. 1.117: cavae...lacunae. These are hollows in the earth within marshlands during dry seasons. Cf. G. 4.44: pumicibusque cavis. Vergil describes the best places to build a beehive, one of which is deep in hollowed pumice stone. Cf. also G. 2.453: corticibus cavis. Here, Vergil describes how bees conceal their hives in oaks by hollowing their bark out like a “cave.”
sometimes in riverbeds.263 The word *gurges*, which often signals karstic whirlpools, appears five times in the *Georgics*, but only once does it appear outside of the epyllion of Aristaeus, and it appears in a rather strange context;264 according to Vergil, one way that shepherds try to cure their diseased flocks, especially their rams, is to submerge them in streams: “therefore, the shepherds immerse the whole flock in the stream, and the ram with dripping fleece is plunged in the pool (*gurgite*) and released to float down with the current.”265 The use of *gurges* here in combination with a singled-out, masculine ram suggests that the *gurges* is a particular place within the larger stream, most likely the deepest part with the strongest current. Since the purpose of putting the ram into the whirlpool is to cure it of disease, the text, which describes a healing ritual, implies a sense of ‘divinity’ or remedial power that emanates from a whirlpool.

The karstic *palus*, or marsh/polje, occurs six times throughout the *Georgics*, three of which occur in book four.266 The first occurrence is in book one, where Vergil describes the landscapes that the farmer ‘works’ to make them resourceful.267 The farmer, in order to make the land arable, “soaks out a marsh’s gathered water with thirsty sand.” These marshes, however, are extremely variable in water input and output depending on the seasons. According to Vergil, “in changeable seasons when rivers overflow and cover everything far and wide with a coat of mud, the hollow ditches [of the *palus*] emit steamy vapors.”268 Bizarre geological phenomena, like gas emissions, are common in highly karstic marshlands where the porous rock underlying shifting mud and sand stores, and easily releases, subterranean vapors. Vergil does not name a particular place here, thus his observations are meant to be generalizations of marsh topographies. The farmer who intends to manipulate this type of landscape, especially during the rainy season, is a foolish man, or so Vergil asserts in the form of a rhetorical question.

263 Cf. G. 1.326: *cava flumina crescent*.
264 The four uses of *gurges* in book four occur only in the epyllion of Aristaeus (G. 4.321, 4.387, 4.395, and 4.524), and I will discuss them thoroughly during my close reading of the epyllion in chapters four, five, and six.
266 Two of these three mentions of *palus* in book four occur in the epyllion (G. 4.479 and 4.503). I will discuss these more in depth in chapter six.
267 quique paludis / collectum umorem bibula deducit harena (G. 1.111-117).
268 incertis si mensibus amnis abundans / exit et obducto late tenet omnia limo, / unde cauae tepido sudant umore lacunaes.
Palus appears again in book two within a comprehensive list of the best places to plant specific trees. The hydrogeological peculiarities of a palus are not mentioned again until book three, where Vergil describes the home of a vile water snake. When the “ground is wet” (madent udo terrae) and the “streams gush from springs” (ulli rampuntur fontibus), the snake chooses to live in “pools” (stagna). Yet, when the “marsh becomes dry” (exusta palus) and the ground “splits open from heat” (terraeque ardore dehiscent), he moves onto land. The landscape that Vergil paints here is extreme, as I have described above. Yet, Vergil takes extra effort to describe the natural variability of marshlands, which can at one time be overflowing with water (possessing pools, rivers, and springheads) and at another time be entirely parched. As a result of this quick transition, the earth often gives way (dehiscent) in dramatic fashion, as do its serpentine inhabitants. In book four, palus appears as an undesirable place to situate one’s beehive: “do not trust a deep marsh or where there’s a strong smell of mud” (altae neu crede paludi, / aut ubi odor caeni grauis). Vergil does not go into detail explaining why a palus is a bad place to situate a beehive; however, one can infer from the variegated nature of marshlands and the types of animals it houses that airy bees and their fragile hive would not survive long.

All this considered, the Georgics as a whole contains evidence for a general awareness of karst terrain and a concern for speleology. It becomes clear after looking at these examples in detail that Vergil is interested in every aspect of the earth in his poem, even the subterranean world. What is more interesting, I would argue, is how much more frequently Vergil’s karstic vocabulary and geological depictions appear in book four compared to the other books. Out of the karstologically and speleologically connotative words Vergil chooses to use in the Georgics, words like palus and gurges occur more often in book four than any other book, while the words antrum and specus occur only in book four. The words cavum, spelunca, and faux come up infrequently and scattered throughout all of the books. Out of these three words, cavum and faux are utilized to express all of their variegated meanings, while spelunca retains a consistent connotation of “a sheltered, cool grotto” usually placed in a distinctly pastoral setting.

---

269 fluminibus salices crassisque paludibus alni / nascuntur, steriles saxosis montibus orni (G. 2.110-111).
270 G. 4.47-50
Outside of the *Georgics*, interestingly enough, there seems to be relatively little that Vergil has to say about karstic phenomena. Yet, what Vergil does provide connects him to the well-established tradition of mythologizing the reemergence of disappearing streams. Vergil begins his tenth and final *Eclogue* with an address to the nymph Arethusa, who is invoked to send a message to his friend Gallus in Arcadia. Vergil describes the particularity of Arethusa’s domain briefly:  

_Sic tibi, cum fluctus subter labere Sicanos, Doris amara suam non intermiscat undam;_  

“Thus when you flow under the Sicilian waves, May bitter Doris not mix her water with yours.”

Arethusa here is a river nymph that flows under the sea. The fact that Vergil does not want her to mix with the briny (*amara*) Doris, who is a daughter of Ocean and mother to Arethusa, suggests that Arethusa is a freshwater river Nymph. The myth of Arethusa is a famous one and existed long before Vergil’s time. Arethusa was a beautiful nymph who lived in wild Arcadia and found herself pursued unremittingly by the river Alpheus. The chase continued all the way to the western coast of the Peloponnese. As she became exhausted, she cried out to Diana to rescue her. The goddess heard her cry and transformed her into trickling surface water. Alpheus, however, could still recognize her, so he became a river in hopes of intermingling his waters with hers. Diana, according to the poet Ovid, thus “opened up the ground” (*rupit humum*) into which Arethusa “plunged” (*mersa*) and then quickly traveled underground “through gloomy caves” (*caecisque...cavernis*) to Ortygia in Sicily. Vergil’s brief reference to Arethusa highlights her distinct purity as told later by Ovid; she has yet to be ‘mixed’ with other brinier waters. Vergil is obviously engaging with the karstic mythos of Arethusa, at least briefly, in his tenth *Eclogue* in how he highlights her subterranean flow and hydrological composition.  

---

271 *Ecl.* 10.4-5.  
272 Ovid describes her metamorphosis in detail: where her feet were planted became “pools of water” (*quaque pedem movi, manat lacus*) made of water drops “distilled from every pore of her body” (*cadunt toto de corpore*). Her body then “dissolved into flowing streams” (*in latices mutor*); Ov. *Met.* 5.572-641. Cf. also Clendenon 2009b, 295.  
273 Vergil’s reasoning behind calling forth this particular nymph may very well have been to orient the reader, at the poem’s outset, towards Sicily and thus Theocritus, whose bucolic hero Daphnis Vergil aims to replace with the Roman Gallus; cf. Theoc. *Id.* 1.117. The fact that Arethusa has her origins in mythic Arcadia and ends up creating a freshwater spring in Sicily suggests that Vergil is retracing her underwater journey from Sicily (where Theocritus places Daphnis) back to Arcadia (where Vergil
The myth of Arethusa, as is evident from Ovid’s detailed description of groundwater infiltration and Arethusa as a disappearing stream, has its origins in karstic observation. The spring of Arethusa in Sicily was a topic of much deliberation among ancient proto-scientists who understood the freshwater spring in Ortygia, which was named Arethusa, to have its origins in Elis, where a river named Alpheus disappeared underground. Callimachus quotes Pindar when he says that the Arethusa in Syracuse gets its waters from the Alpheus “under the territory of Elis” (κατὰ τὴν Ἡλείαν). Callimachus then describes the disappearing nature of the stream with a wondrous tale in his typically vivid fashion: whenever the priests of Elis wash the bodies of the sacrificial victims during the Olympic days, they say that the spring in Sicily becomes dirty and “flows with dung” (ῥεῖν ὄνθωι). Here, the waters of the river Alpheus in Elis and the spring of Arethusa in Sicily are connected, as evidenced by the fact that polluting Alpheus’s water has a direct effect on the spring in Ortygia.

Both Strabo and Pausanias describe the Arethusa spring in greater detail. Strabo takes the underwater movement of the Arethusa as fact and possesses most doubt in the belief that the potable water which disappears in Elis would remain potable upon reaching Ortygia. The sheer distance between the two sources, and the fact that the Alpheus in Elis empties into the sea directly and not through some entrance pit (τι βάραθρον) could not allow for a continuous, unmixed stream of fresh water. It is quite interesting that for Strabo the presence of karstic swallowholes (δίναι) near the source of the Alpheus would make the subterranean voyage of its fresh waters and its reemergence in Sicily much more plausible. Pausanias too believes in the subterranean motion of the Alpheus and its reemergence as the

places Gallus), a journey that reinforces Vergil’s intent to create a new origin of pastoral song. Furthermore, the tenth Eclogue is where Vergil establishes his poetic authority by creating a new myth that supplants the bucolic poetry of his Hellenistic predecessors. Thus, it would not be absurd to assert that Vergil’s reference to Arethusa could also suggest his engagement with his Hellenistic predecessor Callimachus, who is first to describe the marvelousness of the spring in detail.

274 Cf. the rich variety of Sicilian karst in DiMaggio et all. 2010 and the karst hydrology of Elis (and the Alpheus) in Clendenon 2009c.
276 Callimachus’ description here, interestingly enough, is an early form of ‘water tracing,’ which is a test used to analyze the waterflow of karstic waterbodies. Tracing is helpful in determining pollution rates in spring heads and their outflows. Other useful tools for analyzing the flow characteristics of karst aquifers is correlation and spectral analysis (Pulido-Bosch et al. 1995, 532).
277 Cf. Paus. 5.7.2-3, 8.54.2-3 and Strabo 6.2.4.
278 Cf. Strabo 6.2.4.
Arethusa in Sicily, and he quotes the indisputable Delphic oracle, which highlights the “bubbling” 
(βλύζει) of Alpheus’ springhead, as evidence.279

Vitruvius picks up Callimachus’ story in his own description of the Arethusa, but, unlike 
Callimachus, attempts to explain the popular myth of Elis and Sicily’s connecting waters:280

"Quidam fontes certo tempore purgamenta eictant,
ut Arethusa in Sicilia quinta quaque aestate per
Olympia. Inde opinio est Alpheon ex Achaea eo usque
penetrare et agere sub mari cursum nec ante quam
in Syracusanum litore emergere, ideoque his diebus
quibus Olympia sunt uictimarum stercus secundo
traditum flumini illic redundare.

“Some springs eject impurities at regular intervals
as the Arethusa in Sicily does every fourth summer,
during the Olympics. This gives rise to the view that
the Alpheus travels all that way from Achaea,
flowing under the sea, and only emerges on the shore
at Syracuse; and so on the days when the Olympics are taking place,
dung from the sacrificial victims is thrown into
the flowing river and resurfaces there.”"

According to Vitruvius, the popular belief that the Arethusa is a disappearing and subterranean spring
has risen from the observed ‘fact’ that the spring in Sicily becomes dirty at observably regular intervals
during the season of the Olympic Games. Vitruvius then tells the marvel of Callimachus almost verbatim.
Vitruvius, however, is not interested so much in the particulars of subterranean water conduits as he is in
how groundwater can become polluted and thus undrinkable.

Pliny offers a different approach to understanding the hydrological oddity of the Arethusa:281

“Some rivers, from a real hatred of the sea, pass under it, as does
Arethusa, a fountain of Syracuse, in which the substances are found
that are thrown into the Alpheus; which, after flowing by Olympia,
is discharged into the sea on the shore of the Peloponnesus.”

279 Ibid. 5.7.3.
280 Vit. De arch. 3.26.5.1-7.
281 Plin. HN 2.225.
Pliny attempts to explain the hydrological phenomenon that is the subterranean Arethusa River by highlighting the natural reaction of freshwater when it comes into contact with saltwater. A large amount of freshwater, when mixed with saltwater, oftentimes separates, and this is observable off of karstic coastlines where freshwater reemerges in the form of a spring. Pliny here seems to be more interested in explaining a facet of the mythos of Arethusa (i.e. the fact that Arethusa refused to ‘intermingle’ with Alpheus) than the river’s water quality as described by Callimachus and Vitruvius.

The interesting qualities of the Alpheus/Arethusa did not go unnoticed by Vergil, as is arguably evident in his *Eclogues*. Yet, Vergil’s understanding of the marvelousness of the Arethusa, and his engagement with the popular belief in its disappearance and reemergence across the Ionian sea via a subterranean conduit is made explicitly later in his *Aeneid*:282

\textit{Alpheum fama est huc Elidis amnem} \\
octullas egisse vias subter mare, qui nunc \\
ore, Arethusa, tuo Siculis confunditur undis.

“Hither runs the tale that the Alpheus, a river of Elis, led a secret course under the sea and who now mixes with Sicilian waves at your spring, Arethusa.”

Here Aeneas ends the retelling of his odyssey to the court of Dido in Carthage. His account of Sicily, or the island of Ortygia, is described in terms of the tale of Arethusa, which he introduces as an already well-known myth with \textit{fama est}. The Alpheus River flows underneath the Ionian Sea hidden from view and ultimately reemerges in Sicily, mixing with Arethusa’s spring water. This description itself offers no explanation of the intermingling of the two waters or the regular pollution of the two springheads, which is not surprising considering the epic context of the narration. Yet, Vergil’s choice to include the story as the sole descriptor of ancient Sicily is suggestive of the myth’s widespread fame, sheer antiquity, and hydrological wondrousness.

\footnote{Aen. 3.694-6.}
The spring in Ortygia is part of a complex karstic system, so it would not be absurd to assert that there very well could be a lengthy subterranean conduit that supplied its waters, though the distance between Elis and Ortygia far exceeds typical karstic subterranean conduits, which can extend only up to around 75 kilometers.\(^{283}\) Regardless, Clendenon argues that Arethusa’s sinking represented “the infiltration of rainfall and surface runoff into the porous soil and karstic sub-surface” of Elis, and thus her travels under the Ionian Sea suggests “lateral movement through a subterranean karstic pathway.”\(^{284}\)

Later in the *Aeneid*, we see a brief reference to another karstic phenomenon in the form of a disappearing stream:\(^{285}\)

\[...	ext{et fontem superare Timavi,} \]
\[unde per ora novem vasto cum murmere montis} \]
\[it mare proruptum et pelago permit arva sonanti.} \]

“…and [Antenor was able to] overpower the spring of Timavus, from which the sea, having burst forth through its nine mouths, with a huge roar, comes from the mountain and covers the fields with its resounding waves.”

The possible karstic origin of the Timavus, which Vergil describes here as a springhead (*fons*) emanating from the mountains, was known long before Vergil’s time. According to Strabo, who cites the Greek historian Polybius, all of the nine springs that feed the Timavus, except one, are saltwater.\(^{286}\) Because of this, the natives consider the river to be the “mother of the sea” (\(\mu\eta\pi\varepsilon\varphi\varphi\eta\ \tau\eta\tilde{h} \theta\alpha\lambda\alpha\tau\tau\eta\tilde{h}\)). Vergil appears to be highlighting this local tradition through the combined use of *mare* and *pelago* within the same line to mean “sea.” Furthermore, Strabo tells us that the stoic philosopher and hydrologist Posidonius says that the Timavus “runs from a mountain” (\(\dot{\epsilon}\kappa \tau\tilde{o} \nu \omicron \rho\omicron \nu \tau\varepsilon\rho\omicron\dot{m}\nu\nu\nu\)) and “falls into a chasm” (\(\kappa\tau\alpha\pi\pi\pi\tau\varepsilon\nu \epsilon\iota \beta\epsilon\rho\omicron\rho\nu\nu\)), disappearing from sight. This disappearing river travels underground for about one hundred and thirty stadia until it “reemerges at the sea” (\(\epsilon\pi\iota\ \tilde{h} \theta\alpha\lambda\alpha\tau\tau\eta\ \tau\iota\nu \dot{e}k\beta\omicron\lambda\iota\nu\n\))

\(^{283}\) Cf. Clendenon 2009b, 293, 298, 300.
\(^{284}\) Ibid., 297.
\(^{285}\) *Aen.* 1.244-246.
\(^{286}\) Strabo 5.1.8. Seneca (*QNat.* 1.1.1.5-6) uses the Timavus as his prime example in the theory that rivers ultimately get their water from the sea.
Vergil does not mention any disappearance of the Timavus’ water, but he does highlight its mountainous origins and dramatic arrival at the sea.

Posidonius and Strabo make clear that the Timavus has its origins in a visibly karstic environment, as evident by their vocabulary and their accurate descriptions of the river’s source and disappearance. The Timavus is the modern Timavo in Slovenia, which is another region, according to modern hydrologists, that possesses a variety of observable surface karst features and complex subterranean ones; tracer studies have shown that much of the water of the Timavo is supplied underground from other disappearing rivers like the Reka and Vipava. As a Homerically-inclined writer who was well aware of the outer reaches of the Roman Empire, Vergil would have had knowledge of the Slovenian Timavo and its bizarre, nine-headed source and powerful reemergence at sea, and it would make sense in this context of the Aeneid to add it to the list of marvelously powerful enemies conquered by the Greek hero Antenor.

It is evident that Vergil is not only interested in the subterranean world, but also cognizant of the processes and results of karstification, or at least the myths that possess such karstic significance. Both the Eclogues and Aeneid engage, albeit rather loosely, with specific traditions of hydrological understanding. This should come to no surprise since these poems as a whole are hardly concerned with the Earth and its geological processes. The Georgics, however, as a poem about Nature and mankind’s place in it, provides the perfect literary context to discuss earth’s machinations above and below the ground. Thus we as readers should expect to see more references to not only geological myth but also to the scientific discourses that pertain to the natural world if we are to get any technical wisdom from the verses.

Chapter 4 – Cyrene’s Spelunca

a. A Hydrogeological Reading of Georgics 4.315-386

By looking at Aristaeus’ descent into his mother’s subterranean kingdom through a hydrogeological lens, it becomes evident that Vergil is not simply pulling from or alluding to particular authors. It seems, however, that he is engaging with a particular aspect of the popular scientific discourse of the time concerning the natural world: a hydrological system, grounded in karst, that places subterranean Ocean at its source. This engagement exists under the surface throughout the entire epyllion; in other words, under the surface of the text, which is comprised of figurative language, allusions, and typical Vergilian erudition, exists a conscious awareness of karst terrain. Vergil first introduces Aristaeus and his current, lamentable situation in terms of a particular geography (317-320):

pastor Aristaeus fugiens Peneia Tempe,  
amissis, ut fama, apibus morboque fameque,  
tristis ad extremiti sacrum caput asstitit amnis  
multa querens, atque hac adfatus uoce parentem.  

“Aristaeus the shepherd, fleeing from Penean Tempe  
and bereft of his bees by starvation and disease, the story goes,  
stands sorrowfully at the edge of a sacred springhead  
complaining about many things, and he called to his parent in this voice.”

Vergil is quick to establish the geographical setting for the immediate conflict of the main character. We learn that Aristaeus is a shepherd and has lost his beehive due to plague. If we consider the tenses used in the first two lines, Aristaeus was raising his bees within the region of Tempi in Thessaly, nearby the Peneus river, when they died. We can also infer that Aristaeus never left the area of the Peneus River (extremi amnis) when he begins to lament his fate at its source (sacrum caput).288

288 The word extremus combined with amnis refers to either the “limits” or “ends” of the river, here the “source” or “origin” of the Peneus, which could geographically refer to any of the large river’s tributaries. Cf. Mynors 1990, 300. Most of these off-
Vergil’s placement of Aristaeus near the banks of the Peneus in the region of Tempi is not at all arbitrary. Rather, I would suggest, Vergil places Aristaeus at this particular place for a number of reasons. On the one hand, Tempi itself functions as the ideal pastoral locale for Aristaeus to lament his bees. The place-name τέμπη usually designates a defile or valley that takes up space between mountains.\textsuperscript{289} Earlier in the \textit{Georgics} (2.469), the place-name is used to define generally any sort of charming vale that contains forests and water, but usually the place name usually indicates the specific wooded valley between the mountains Olympus and Ossa in Thessaly known as Tempe. This narrow vale extends to the Aegean Sea, and was famous in antiquity for its idyllic beauty.\textsuperscript{290} The River Peneus, which flows through the Vale of Tempi, was also well-understood to be the mythic father (or grandfather) of Cyrene, so it would make geographical sense for Aristaeus to meet his mother at the banks of this particular river.\textsuperscript{291}

Tempi possesses a particular hydrogeological makeup that Vergil seems to allude to a little later in the epyllion. Today, and in antiquity, the narrow defile extends about five miles from the Plain of Larissa in Northeastern Thessaly and ultimately flows into the Aegean (cf. Fig. 5).\textsuperscript{292} The pass between the mountains is only around forty meters wide and cuts through soft marbles and dolomite. The vale was created by both seismic activity along the northeast/southwest faultline and fluvial erosion from the Peneus.\textsuperscript{293} As a result of these lengthy processes, the swamps that made up most of the Larissan plain during the Quaternary (a period lasting around 2.6 million years) were drained into the sea via the Peneus. The complex hydrogeological network that makes up the Thessalian hydrological basin (c. 10,700-11,200 km\textsuperscript{2}) did not become permanent until after the Vale of Tempi was formed, which suggests how crucial the vale’s creation was in determining the topographical nature of the delta. To this day the deltaic plain of the Peneus still contains a large number of marshes, freshwater lakes, and riparian forests.\textsuperscript{294}

\textsuperscript{289} Ramon 2014, 19.
\textsuperscript{292} Cf. \textit{OCD} s.v. “Tempe” and Higgins and Higgins 1996, 93.
\textsuperscript{293} Cf. Higgins and Higgins 1996, 93 and Connors 2016, 162.
\textsuperscript{294} Matiatis et al. 2018, 237.
The climate of Tempi near Ossa and Olympus is continental, meaning that the area experiences large temperature changes seasonally – winters are quite cold and summers are quite hot.\textsuperscript{295} During the dry season (c. May-October), Tempi is the only place within the greater Thessalian hydrological basin that has a constant source of water. This is the result of a large outpouring of fresh karstic springs, most of which have their origins around Ossa and Olympus.\textsuperscript{296} The fact that Aristaeus is standing (\textit{astiit}) near the \textit{sacrum caput} of the Peneus just outside of Tempi, combined with the information given later that the story takes place during a dry season (cf. ll. 401-2, 418-28), suggests that we should imagine Aristaeus standing near one of these karstic springheads that feed into the main channel.\textsuperscript{297}

The Peneus River is around 205 kilometers long, making it the third longest river in Greece. The riverbed of the Peneus consists of highly karstified limestone, and the groundwater chemistry suggests high levels of calcite and dolomite dissolution.\textsuperscript{298} The high velocity of the Peneus as it flows through Tempi, combined with the geological makeup of the riverbed and the surrounding marble-rich mountains, causes intense erosion across the vale with little seasonal changes.\textsuperscript{299} Karstic springs dot the landscape around the Ossa and Olympus mountains. The Peneus and its fresh water tributaries and springs supports a great biodiversity of plant and animal life due to the richness of its outflow.\textsuperscript{300} Geographically and geologically speaking, Tempi offers the ideal place to situate the \textit{pastor} Aristaeus.

It was well known in antiquity that the Vale of Tempi, specifically the river basin of the Peneus, possessed a strange geological history, which could be considered as karstic in modern terms. Peneus was a Thessalian river god and a son of Oceanus and Tethys.\textsuperscript{301} Since Peneus was contained against his will

\textsuperscript{295} Bathrellos et al. 2018, 4. The coastal side of Tempi experiences a typical Mediterranean climate.
\textsuperscript{296} Cf. Migaros et al. 2012, 218, 220, 224, and Matiatos et al. 2018, 247. During the wet season (c. November-April), however, the Thessalian river basin through which the Peneus flows becomes a highly flooded area; 146 floods occurred in the basin from 1979 to 2010, according to a 2018 study by Bathrellos et al. (7, 12-13). The narrowness of Tempi, combined with the low altitudes of the plains, is the main reason for the basin’s recurring floods; cf. Bathrellos et al. 2018, 15.
\textsuperscript{297} Cf. Thomas (1988, 204) who notes that \textit{caput} or \textit{fontem} could refer to either end of a river, but nymphs tend to emerge near the river’s source, as happens here with Arethusa. Cf. also Lucr. 5.270, Hor. \textit{Carm.} 1.1.22, and later Sen. \textit{Ep.} 41.4. The hot temperature will be discussed further in chapter 5a.
\textsuperscript{299} Cf. Bathrellos et al. 2018, 3-4. There is a cave on Mount Ossa that overlooks the vale which was reported to contain dedicatory offerings to the nymphs, many marble stelai, and black-glazed pottery and terra-cottas (Larson 2001, 238-9).
\textsuperscript{300} Matiatos et al. 2018, 237. The Peneus, especially around Tempi, allows for a diversity in agricultural production (e.g. kiwis, olives, corn, sunflower, cotton) and shepherding/animal grazing.
within Thessaly by the Ossa and Olympus mountains, his presence in Thessaly was initially a malign one, and he channeled his anger against the locals by creating inhospitable marshes with his water. Philostratus the Elder tells us that the Peneus “continually flooded” (τοῦ ῥεύματος ἐπικλόζοντος) because there was no outlet from which the river could empty. Because of this, Poseidon “broke through the mountains with his trident” (ῥήξει οὖν ὁ Ποσειδῶν τῇ τριαινῇ τὰ ὄρη) to open a gateway for the Peneus, who too was grateful to Poseidon for this action. The hydrogeological result of this was the draining of Tempi’s swamps.

Herodotus, in his Histories, acknowledges the mythic origin of the Vale of Tempi as the result of Poseidon, but he concludes that its formation was the direct result of a number of earthquakes.

The karstic nature of Tempi does not come to light in the text of Herodotus, but Philostratus seems aware of the basin’s ancient, marshy landscape, which would eventually come to be drained, for the most part, by the creation of the Vale of Tempi. Diodorus Siculus agrees with Philostratus that the area around Tempi used to be different because of the mountains’ restriction of the Peneus, but he specifies that the lands were once “largely covered with marshes” (ἐπὶ πολὺν τόπον λιμναζούσης διέσκαψε τὸν συνεχῆ τόπον). Diodorus, however, says that it was Hercules who cut through the channel of Tempi and thus carried with him “all the water of the marsh” (ἄπαν τὸ κατὰ τὴν λίμνην δῶρο). The idea that Hercules, not Poseidon, created Tempi and drained the swamps suggests that Diodorus was following the popular (geo)mythic tradition that considered Hercules as a stand-in for the human manipulation of inhospitable natural landscapes; Hercules was intricately tied in local myths to the creation of strange geological, usually karstic, phenomena, which local populations wanted to celebrate. Regardless of who split the vale, both Philostratus and Diodorus understand that karstic λίμναι used to define Tempi’s topography. Strabo too engages with this particular hydrological ‘tradition’ of Tempi’s creation; According to Strabo, much of the country of Thessaly “inundated by rivers” (ποταμόκλυστος), one of which is the mighty Peneus that too “often overflows” (ὑπερφείται πολλάκις). Strabo notes that the plain that makes up most of

303 Hdt. 7.129. Cf. also Clendenon 2009, 200.
304 Diod. Sic. 4.18.6.
Thessaly “was once lake-ified, as the story goes” (τὸ δὲ παλαιὸν καὶ ἐλιμνάξτο, ὡς λόγος, τὸ πεδίον), but the entire plain was eventually drained after earthquakes formed a cleft between Ossa and Olympus. Strabo’s addition of “as the story goes” implies that this information is common or localized knowledge.

Interestingly enough, we see Poseidon engage with hydrogeological creation in a similar fashion to that of Tempi earlier at the outset of the Georgics. At the very beginning of book one (1.12-14), Vergil lists the divine forces that encapsulate the farmer’s world. Neptune is briefly listed solely in the context of how “the earth was struck by his great trident” (magno tellus percussa tridenti). We are left to fill in the blanks that this ‘striking’ created the Earth’s waters, but we are left only with the statement that the earth was struck. By Vergil’s mentioning Tempi in the context of the Peneus (Peneia Tempe), combined with an already explicitly stated account of Poseidon’s hand in the creation of the Earth’s waters via a ‘striking trident,’ Vergil’s audience at this early point in the epyllion would have been drawn to the mythic origin, and thus karstic nature, of the Vale of Tempi and the Peneus River. The karstic connection is only strengthened as the narrative continues (321-324):

‘mater, Cyrene mater, quae gurgitis huius
ina tenes, quid me praeclara stirpe deorum
(si modo, quem perhibes, pater est Thymbraeus Apollo)
inuisum fatis genuisti?...

“‘Mother, Mother Cyrene, who resides in the depths of this whirlpool, why did you give birth to me from the stock of the gods, (if indeed Thymbraean Apollo is my father, as you say) Me, who is hated by destiny?...”

Vergil’s first use of gurges in the epyllion strengthens the karstic implications of the (mythic) topography already present in the identification of Tempi with the Peneus, the Peneus with a springhead, and the creation of water (and/or Tempi) via Neptune’s trident. Here we are to imagine that Aristaeus is standing on the bank of the Peneus (or one of its spring-fed tributaries) overlooking a swirling mass of

306 Strabo 9.5.2: διεξέπεσε ταύτῃ πρὸς θάλασσαν ὁ Πηνειός καὶ ἀνέψυξε τὴν χώραν ταύτην.
307 Cf. Ov. Met. 1.568. Servius claims that several manuscripts have aquam rather than equum.
308 Such an intricate allusion, which very well might not have been that intricate for his erudite and/or localized Thessalian audience, would not be out of the realm of possibility for Vergil, especially in the Georgics, since the poem is constantly concerned with real landscapes and technical knowledge pertaining to the natural world.
water. Aristaeus seems to know that this particular part of the stream, which is signaled by the demonstrative *huius*, possesses divine significance, for he confidently communicates to his mother at this specific location.\(^{309}\) Aristaeus’ use of *ima* (“depths”) not only adds to the mystique of Cyrene’s realm, but tells us that this particular *gurges* along the Peneus has its origins far below the riverbed.

What follows is a series of rhetorical questions, complaints, and commands that Aristaeus poses his mother, all of which have been argued by scholars to allude either directly or indirectly to different Homeric models.\(^{310}\) Most of these commands, Ross argues, alternate between themes of fire and water.\(^{311}\) This is bitterly ironic considering that Aristaeus calls upon his ‘alluvial’ mother to “bear fire” (*fer... inimicum ignem*) and “burn” (*ure*) all that he has produced. If we are to keep the Homeric parallel between Aristaeus and Achilles alive, this alternation could very well be an allusion to Achilles’ battle with the river god Scamander, which is described in terms of competing elements of fire and water. Furthermore, Vergil’s use of *gurges* to define the locale within the Peneus is identical to the *δίνη* Homer uses to describe the whirlpool of the Scamander in which Achilles and the river do battle.\(^{312}\)

Aristaeus’ cries travel through the whirlpool and reach Cyrene’s subterranean domain. Her underwater home is described initially as a *thalamus*, or ‘bedchamber,’ *sub fluminis alti* (“under the deep river”), which both reinforces the ‘depth’ (*ima*) of the *gurges* and introduces the domestic atmosphere of the scene to come. The audience’s first glimpse of this watery realm, however, is actually a list of its inhabitants: a gang of female nymphs who accompany Cyrene under the Peneus (ll. 334-356). The

---

\(^{309}\) The ‘divinity’ that is usually associated with *gurgites* is introduced earlier in the *Georgics* when a shepherd submerges the ram of his flock into a *gurges* to cure it of the plague. Pliny the Elder suggests that the water of the Peneus in particular possesses a similar divine (?) power in that the river is said to have turned white sheep black (*facit...oves...rursus nigras Penius*) (Plin. *HN* 2.230). Here Aristaeus names his mother Cyrene and associates her name with a specific domain in which he knows she resides: “this whirlpool” (*gurgitis huius*). Thus far in the narrative, Vergil’s audience would have most likely associated Cyrene with her appearance in Pindar’s ninth Pythian; Pind. *Pyth.* 9.15-18, 9.62-5. We get no sense of Cyrene as a heroic huntress or lion-wrestler in Vergil’s Cyrene. Rather, Vergil introduces her here as a means to a narrative end, specifically as the ‘divine aid’ to the hero protagonist who possesses all the necessary, indispensable *praecptia* (“precepts”) that the *Georgic* farmer must heed; Cf. Nappa 2005, 194.

\(^{310}\) Aristaeus complaining to his mother recalls Achilles’ chat with his mother Thetis regarding the loss of Briseis and Patroclus (*Il.* 1.348, 18.35-6, and 18.79-93. Cf. also Campbell 1982, 110, Farrell 1991, 267-8, and Thomas 1999, 132), Polyphemus’ complaint to his father Poseidon (*Od.* 9.528-35), or possibly to Ariadne’s complaint towards Theseus (Catull. 64.132-201). Cf. also Thomas 1988, 202).

\(^{311}\) Ross 1987, 221.

\(^{312}\) Cf. *Il.* 21.11.
domesticity of the *thalamus* loses none of its rigor with this list. On the contrary, the nymphs listed here (Drymo, Xantho, Ligea, Phylloodoce, Cydippe, Lycorias, Clío, Beroe, Ephyrye, Opis, Deiopea, and Arethusa) only add to the feminine space that makes up the deepest part of the Peneus River through their weaving and love-focused storytelling. The nymphs, whose original domains range from salty seas to freshwater rivers, live under the waters of *one father*, Peneus, and thus emblematize a distinct, united world of peace and femininity that is shared by all sorts of watery divinities.  

Arguably the most interesting nymph in the catalogue is Arethusa: she ends the detailed list and possesses more masculine qualities than the other more feminine nymphs as an arrow-wielding narrative agent. She also carries with her a lot of hydrogeological baggage regarding her mythos. As described in detail in chapter three, Arethusa and her myth were well-understood up to Vergil’s time, and by Vergil himself, to signify the particular karstic connection between the river Alpheus in Elis and the spring Arethusa in Syracuse. Vergil’s placement of Arethusa as the last nymph in the catalogue is significant; it is her name that his audience should keep in mind, for she will soon function as the intermediary between Aristaeus and his mother. Here, moreover, she is distinct from her Nymph sisters in that she is “swift” (*velox* [344]) and “unarmed” (*positis sagittis* [344]), which not only befits the domestic scene going on around her, but more so forces Vergil’s reader to recall her karstic myth: firstly, her ‘swiftness’ alludes to her escape from the advances of Alpheus. Secondly, her ‘set-aside arrows,’ ‘observant’ personality (*prospiciens*), and supportive role as intermediary directly associates her with Artemis, who helped

---

313 Cf. Campbell 1982, 110. The later addition of Ocean only strengthens this idea. Cf. below. This catalogue of nymphs is indisputably based on archaic catalogues; Cf. *Il*. 18.34-147 and Hes. *Theog.* 240-64. Yet, it is quite significant that the specific nymphs listed here are *deliberately not* from the Homeric or Hesiodic models; Thomas 1988, 207 and 1999, 133 calls it an “apparent reference.” Scholars have separated these nymphs into two suggestive groups, Sylvan and Musical, yet they seems to be more individually suggestive of Vergil’s Hellenistic sources, particularly Callimachus’ prose and poetry. The Sylvan nymphs include Drymo (“Oak”), Phylloodoce (“Leaf-Receiver”), Opis (“Power”, and a close companion to Artemis) and possibly Arethusa. The Musical nymphs include Xantho (“Blonde”), Ligea (“Clear-Voiced”), Cydippe, Lycorias, Clío (the Muse?), and Ephrye. Cydippe is the heroine of Callimachus’ *Acontius* epyllion in the *Aetia* (3 frs. 67-75 Pf.), Lycorias could possibly allude to the town of Lycoreia in Callimachus’ *Hymn to Apollo* (2.18-19), and Ephrye is the only name with which Callimachus calls the city of Corinth (cf. Thomas 1999, 133-4). Unfortunately, the nymph Nonacrina is the only name preserved from Callimachus’ *On the Nymphs*, which might have been Vergil’s primary source of inspiration for his catalogue. Furthermore, Thomas (1999, 134) notes that the repetition of *ambae* in Vergil’s catalogue recalls Callimachus’ repetition of *naiads* in his *Hymn to Artemis* (3.40-3) in which Artemis goes to Oceanus to select a number of nymphs to accompany her on her travels. Cf. Thomas 1988, 207-210 and Mynors 1990, 303-304 for a detailed list of the possible Hellenistic influences on Vergil’s catalogue.  

314 Thomas (1988, 210) considers that the Arethusa here is meant to recall the Arethusa of *Eclogue* 10, but Mynors (1990, 303-4) says that Vergil “gives us no reason to recall the Arethusa of the tenth *Eclogue*.” Neither scholar goes into any detail why they lean their respective ways.
Arethusa escape Alpheus through her vigilance and divine power. The karstic resonance becomes manifest in Vergil’s addition of *summa flauum caput extulit unda* (352); Arethusa’s *flauum caput* (“golden head”) reflects the traditional image of water nymphs, particularly freshwater nymphs, while the *ex*- prefix in *extulit* connotes the re-emergence of (personified) water out of a springhead.\(^\text{315}\) Furthermore, the hydrological idea that Arethusa flows under the water in a subterranean conduit is implied by the fact that *summa unda* (“surface of the water”) is ambiguous regarding whether *unda* refers to the “swelling” of the water of the Peneus, which would be the *gurges* of the river, or to the water underneath the Peneus. In other words, Arethusa initially ‘resurfaces’ either on the surface of the Peneus to see Aristaeus and in turn talk to Cyrene at a distance (*procul* [353]), or underwater to talk to Cyrene before she travels to Aristaeus. It seems, however, that the recurrence of *unda* to describe the water of the Peneus (352, 355, and 361) suggests the former reading. Regardless, Vergil’s choice of Arethusa as the chief go-between is not arbitrary, but instead an overt pointing to her particular mythos, which is befitting of the subterranean scene, solicitous conflict, and karstic topography of Tempi.

All of the nymphs listed, including Arethusa, are engaged in weaving (ll. 334-5, 348-9) or storytelling (ll. 345-8), which romanticize the domestic atmosphere of the subterranean space. What and why the nymphs are weaving, however, has befuddled scholars for some time. Literally speaking, the nymphs are weaving ‘glass-colored’ fleeces (335), but Vergil’s use of *hyalus* is strange. Nowhere else in classical Latin does this word appear, and it seems to be pulled directly from the Greek ὑαλός. Furthermore, the ‘glassy’ descriptor of the wool occurs just a few lines later (350) to describe the nymphs’ seats. Here, however, Vergil uses *uitreus*, but the general meaning of “glassy” is synonymous with that of *hyalus*.

I would suggest that the purpose of weaving at this point in the narrative, as well as the emphasis on *what* is being weaved, is to highlight the speleological setting of Cyrene’s domain. Thomas and Mynors


\(^{316}\) Thomas (1988, 211) only mentions that *hyalus* occurs here, and here alone within the classical Latin corpus, but he does note further that *uitreus* implies a “greenish color and glassy opaqueness that suits the locale.” Mynors (1990, 304) agrees with Thomas on this point, and notes that *hyalus* shares with *uitreus* the greenish tint of ancient glass that befits the *thalamus*’ “subaqueous furniture.” Thomas, however, is explicitly unsure why the nymphs are engaged in wool-working in the first place.
are correct in their conclusion that the glassy fleeces and glassy seats of the nymphs are suggestive of their subaqueous domicile, but I would take this even further by suggesting that the *uellera hyali* and *uitrea sedilia* describe particular speleothems that are quite common in (sub)aqueous Mediterranean caves.\(^3\)

One of these commonly found speleothems is flowstone, which is defined as sheets of calcite created by the constant flow of highly carbonized water. Flowstone, according to Crouch, can be deposited in many colors depending on the exact solution of stone and water, and its distinct presence throughout certain caves recalls draperies or curtains on house walls. After witnessing the sheer amount and physical qualities of flowstone *in situ*, it would be not be unreasonable to suggest that Vergil’s *uellera hyali* could in reality be flowstone, or at least inspired by it (cf. Fig. 6).

Vergil’s *uitrea sedilia*, on the other hand, could be suggestive of the presence of a different type of speleothem: stalagmites. Stalagmites are formed when calcified water deposits its calcite as the water drips onto the cave floor. Over time the calcite forms a visible mound that often connects to stalactites that extend from the ceiling. Stalagmites, like flowstone, can vary in color depending on the chemical composition of the water and the stone from which it falls. These speleothems can break off their pointed tops as a result of numerous factors, the most common of which is human interference. The resulting shape of the stalagmite greatly resembles a stool (cf. Fig. 7). Although glass was often used as a decorative component of furniture in aristocratic households, the “stools” (*sedilia*) here are described as if they are made *completely* out of glass. Glass is not a reliable material for furniture construction. The daintiness of the Nymphs and the ‘lightness’ that exemplifies Cyrene’s underwater *thalamus* might suggest otherwise, but the image of nymphs sitting on glass-colored stalagmites, I would argue, would be equally appropriate for this speleological setting.

No Roman author discusses in detail cave stones, much less speleothems, other than Seneca.\(^3\) He does explain the type of speleothems, or “rock-crystals” (*crystalla*), one finds inside a cave, and he does

\(^{317}\) Cf. pgs. 19-20.
\(^{318}\) Crouch 1993, 69.
so strictly in the context of hydrology. Speleothems are formed when the cold air (frigus) of a cave freezes the “very light water” (tenuissimae aquae) that flows throughout the cave. In other words, rock-crystals, or speleothems, are not very dense because the frozen water makes them is also not very dense. Seneca then supports this conclusion by highlighting the etymology of the Latin crystallum, which comes from the Greek κρύσταλλον. According to Seneca, the Greeks used the term κρύσταλλον to refer to both the “transparent stone” (perlucidum lapidem) and to the “ice from which the stone is believed to come” (illum glaciem ex qua fieri lapis creditur). For our present purposes, Seneca explicitly states that the stones that exist in caves, which we can infer are speleothems, are ‘crystal-like’ in that they resemble transparent ice. The ‘glass’ that Vergil ascribes to the nymphs’ furniture might qualify as crystalla.

Vergil’s use of hyalus, though not indicative of flowstone per se, is odd, and its distinct ‘Greekness’ suggests Greek influence of the sort that Seneca ascribes to κρύσταλλον. Vergil, I would argue, seems to be have been inspired for the most part by Homer and his description of the Cave of the Nymphs on Ithaca in his own depiction of Cyrene’s crystalline thalamus. According to Homer:

```
ἐν δὲ κρητῆρές τε καὶ ἁμφιφορῆς ἔασιν
λάϊνοι: ἐνθα δ’ ἔπειτα τιθαβόθσουσι μέλισσαι.
ἐν δ’ ἵστοι λίθοι περιμήκεες, ἐνθα τε νύμφαι
φάρε’ ὑφαίνουσιν ἀλπόρφυρα, θαῦμα ἰδέσθαι:
ἐν δ’ ἀδατ’ ἀενάοντα.
```

“In [the cave] are mixing bowls and jars of stone, and there the bees store honey too. And in [the cave] are long looms of stone where the nymphs weave large cloths of purple, a wonder to behold: and in [the cave] there are ever-flowing springs.”

The Cave of the Nymphs on Ithaca is a marvelous place; here, nymphs go about their daily chores of weaving within the cave-space, much like the Vergilian nymphs. By “long looms of stone” (ἰστοι λίθοι περιμήκεες) Homer means stalagmites, and by “large cloths of purple” (φάρεα...ἀλπόρφυρα), I would argue that Homer means flowstone; Vergil’s use of uellera is synonymous with the Greek φάρεα, and both types of ‘cloth’ share colors (glassy opaqueness and sea-purple) typically associated with water.

---

320 Od. 13.105-9.
Homer’s “long looms of stone” do not appear in Vergil’s weaving scene, but the geological equivalent is present in the “glassy stools” on which Cyrene’s nympha do their weaving. Furthermore, both episodes have “bowls” and “cups” upon the tables, which we finally see in the Vergilian version at line 379. The presence of λάϊνοι (“of stone”) to describe the Homeric cups emphasize the speleology of the scene. Although Vergil does not describe the cups as “stony,” Vergil’s use of “glassy” to define the weavings, however, adds a bit more geological awareness to his tale. In terms of color, glass highlights the particular wateriness of Cyrene’s cave-space in a similar way to how Homer highlights the Ithacan cave as ‘rocky.’

The watery topography of Cyrene’s domain comes to light immediately after Arethusa delivers to Cyrene her son’s lamentations. Aristaeus’ descent into his mother’s realm, in context with early sections of the Georgics suggests a distinct geological image typical of Mediterranean karst landscapes (357-362):

```
huic percussa noua mentem formidine mater
‘duc, age, duc ad nos; fas illi limina diuum
tangere’ ait. simul alta iubet discedere late
flumina, qua iuuenis gressus inferret, at illum
curuata in montis faciem circumstetit unda
acceptique sinu vasto misitque sub annum.
```

“His mother, struck in her heart with a new fear for him, says “bring him, go now, bring him to us; it is divine will that he touch the thresholds of the gods.” At once she order the deep river to split apart far and wide so that the youth could enter. But the swell, arched into the shape of a mountain, surrounds him and receives him in its vast fold and sends him under the river.”

Our hero’s descent into his mother’s realm is by no means a Vergilian invention. On the contrary, this scene, it has been argued, exudes Homeric influence, but what specific episode within the Homeric corpus Vergil uses as his model is up to interpretation.321 Outside of Homer, Vergil might be alluding to the descent of Theseus into his mother Amphitrite’s underwater palace as told by Bacchylides.322 Both of

321 Achilles’ meeting with his mother Thetis could have been Vergil’s model for Aristaeus’ lamentations, but Homer never has Achilles traverse into her underwater realm. Rather, it seems more likely that this episode is meant to recall the movement of Iris within Thetis’ watery abode or possibly when Tyro is brought underwater by Poseidon; cf. Il. 24.83-96 and Od. 11.243. Cf. also Thomas 1988, 212 and Mynors 1990, 305. Yet, Iris ascendit from the kingdom rather than descending into it, like Aristaeus does, and Tyro and Poseidon do not travel any distance at all when they are encompassed by water. Vergil’s use of sinu vasto to describe the nurturing quality of the Peneus’ water also resonates with Dionysus’ embrace by Thetis after he is forced into the sea by the raging Lycurgus (Il. 6.135).

322 Bacchyl. 17; Cf. Clark 1979, 96.
these possible sources, however, involve a hero’s descent into the sea, and not into a river. For Vergil’s audience, this choice of having Aristaeus descend into a river would not be out of the realm of possibility, considering what they would already know about the topography of Tempi and what Vergil has already described earlier in the Georgics.

The descent itself is described in figurative detail; the river’s water, or ‘swell’ (unda), “surrounds” Aristaeus (illum circumstetit). The swell, as it engulfs him, is so large that it takes “the shape of a mountain” (curvata in montis faciem). After the water surrounds Aristaeus, it “accepts” him (accepit) and “sends” him (misit) underneath the river. The continuous -que’s highlight the velocity between each successive step of his descent.323 What commentators have failed to call attention to is what leads up to Aristaeus’ actual descent, which could very well possess geological significance and in turn shed some light on this question. The Peneus, and in particular Tempi, is the perfect location to allow for the hydrogeological phenomena that could have very well occurred. Topographically speaking, the Vale of Tempi and the Peneus River would have made the ‘mythic’ account of Aristaeus’ subterranean movements not out of the realm of geological possibility. I would suggest that this entire mythological event describes the creation and following results of a swallowhole.

What appears to be at first Cyrene ordering the “deep river” (alta flumina) to “split apart” (discedere), is actually a command to Arethusa, the disappearing river, to lead Aristaeus down into her domain. What follows her command is another command (iubet), which we can assume is also an action of Cyrene, but we are unsure grammatically whether Cyrene or Arethusa causes the splitting. Regardless, we can infer that Arethusa heeds her superior’s command, and the unda from which she first stuck out her head now encapsulates Aristaeus. The association between the descent of Aristaeus into a riverbed with Arethusa, who, in her own myth, descended into a riverbed via a swallowhole after Diana “split open” (rupit) the earth, would have been an obvious one to Vergil’s learned readership.

---

323 Both Thomas (1988) and Mynors (1990) note that Aristaeus’s movement is most akin to that of Iris, but she ascends after being “enveloped” (ἀμφὶ...σφιζέτο) by the “swell of the sea” (κῦμα θαλάσσης). The possible connection to Poseidon and Tyro is also limited by the fact that the encircling waters (κῦμα περιστάθη οὕρει Ίσον) hide their lovemaking and do not transport them in any direction.
Furthermore, Cyrene wants the opening of the river to be large enough (late) so that Aristaeus can enter it. Poetic descriptions of doline formation is evident earlier in the *Georgics*, and it was known among observers of the natural world that rivers are prone to “swallow up” (dehiscunt) whatever is in their channels, especially during particularly dry spells. Could Cyrene’s call to discedere the flumina reflect the similar geological phenomenon of pronounced desiccation cracks described earlier in the *Georgics*? In Ovid’s myth of Arethusa, Artemis too violently “splits the earth” (*rupit humum*), which allows for Arethusa to descend into the earth as a river.\(^{324}\) Furthermore, the result of this splitting, Cyrene hopes, will cover a large distance, which is implied by *late*. Seneca notes that large chasms tend to “swallow” (*hiatus*) more than just a few meters of soil, but more often entire cities and ruins (*saepe…urbes receperunt et ingentem ruinam*).\(^ {325}\) Vergil also takes time later to highlight that the entire epyllion, and in turn this ‘splitting’ of the Peneus, takes place during the hottest part of summer.\(^ {326}\) We also know that dolines can form rather abruptly, which Vergil could be alluding to when he has Cyrene immediately call for the splitting of the river while she is talking, which is evident by the presence of *simul* that connects her command to the following narration of events.

The possibility of this scene representing the creation of a swallowhole that engulfs Aristaeus is strengthened by a few additional factors. Firstly, Aristaeus is distinctly passive during the whole event. We see from Vergil’s sources that this is not entirely peculiar, for it is generally out of the hero’s (semi)mortal power to descend/ascend into a divine realm (*limina diuum*) of his own accord; a divine figure tends to play the active role in bringing the hero to him or her. Still, the curved swell of the Peneus seems to have much more agency than usual; the *unda* governs not one, but three active verbs that effect Aristaeus (*circumstetit, accepit, and misit*), all of which distinctly personify the *unda* as a sort of general or manager, which could very well reflect Cyrene and her matriarchal authority. Yet, Cyrene’s control over the *unda* seems to be relatively little. In fact, the *unda* appears to possess *more* agency in bringing


\(^{325}\) Sen. *QNat.* 3.16.4.5-6. It is interesting that Seneca notes that most of these types of catastrophic sinkholes occur between mountains (*inde montibus laxa*), whereas the water that surrounds Aristaeus functions as a ‘mountain’ of sorts. Both *curvata* and *unda* also rest on opposite sides of the line and thus metrically swallow up all that is written in middle of the verse.

\(^{326}\) Cf. chapter 5a, but especially *Georgics* 4.401-2 and 425-8.
down Aristaeus than the matriarchal nymph herself; Cyrene’s initial command appears to be directed at Arethusa, who just informed her of Aristaeus’ crying. She simply tells the nymph to lead him to her domain and then orders that the earth ‘split open.’ Vergil then adds a purpose clause (introduced by qua) to highlight Cyrene’s intent, namely that Aristaeus “can step into” the aperture (gressus inferret). What actually happens, however, is not a ‘stepping in’ at all. Instead, Aristaeus is encircled, taken in, and sent away without any indication of him ‘stepping’ or leaving a single footprint.

There seems to be a distinct conflict between what Cyrene wants to happen and what actually happens, which suggests that the unda (or Arethusa herself) created a sinkhole, which, in antiquity, was seen as both a portentous and uncontrollable natural phenomenon. Vergil’s use of at to introduce what the unda actually does could also point to the dichotomy between what Cyrene wanted to happen (i.e. her command before the at) and what actually happened (i.e. the phrase after the at).328

The forceful imagery of Aristaeus being engulfed by a disappearing stream is immediately abated when Aristaeus sees for the first time the watery topography of his mother’s kingdom (363-365):

iamque domum mirans genetricis et umida regna
speluncisque lacus clausos lucosque sonantis
ibat…

“And by this time Aristaeus was traveling [downward] and marveling at the house of his mother, her damp kingdom, the groves enclosed in grottos, and the echoing glades…”

At this point Aristaeus has regained his agency as the one “going” (ibat) through the water, and the alternating et and que’s highlight his darting gaze. Vergil first describes Cyrene’s subterranean abode as a domus, which emphasizes the domesticity and welcoming aura of the landscape. The area beneath the Peneus is then called a “watery kingdom” (umida regna). The adjective is quite befitting of the

---

327 The portentousness of this particular swallowhole is evident in Cyrene’s brief speech, in which she considers the ‘splitting’ of the river to be a “divine threshold” (limina diuum) and that “divine will” (fas) commands that Aristaeus enter. Cf. also Propertius’ similar description of the ominous creation of earthquakes, when “earth [itself] separates hollow fissures” in the ground (cavos tellus diducat hiatus) (4.1.149).

328 The word at can simply mean “and” in a narrative sequence, especially in an epic narration, and thus function similarly as the Greek ἦ. As a conjunction, at can introduce a different idea than what precedes it, not entirely opposite, but more often than not a sort of qualification or restriction of the idea presented before the at.
topography: the kingdom exists below the Peneus River, is inhabited by nymphs, is surrounded by groves, grottos, and glades, all of which tend to possess water, usually in the form of neighboring springs.\(^{329}\)

As has been detailed above and in previous chapters, ancient Romans by Vergil’s time were well aware of the theory that under the earth exists large caverns, caves, and chasms, most of which store or transport water from one place underground to another, or even back up to the surface. The *umida regna* described by Vergil here would have not only been an acceptable image to Vergil’s audience that reflects the pastoral, karstic surface-world of Tempe above, but also true to scientific discourse popular during his time. A more detailed picture of this hydrological cycle emerges during the catalogue of rivers, which Aristaeus witnesses during his descent (365-373):

\[
...et ingenti motu stupefactus aquarum
omnia sub magna labentia flumina terra
spectabat diuersa locis, Phasimque Lycumque,
et caput unde alius primum se erumpit Enipeus,
unde pater Tiberinus et unde Aniena fluenta
saxosusque somans Hypanis Mysusque Caicus
et gemina auratus taurino cornua uitu
Eridanus, quo non alius per pingua culta
in mare purpureum uiolentior effluit amnis.
\]

“…and amazed by the massive rushing of waters
Aristaeus was watching every river flowing under the great earth,
each in its separate place: the Phasis and the Lycus,
and the spring from which deep Enipeus first emerges,
whence Father Tiber and the river Anio flow,
and the rocky, resounding Hypanis and Mysian Caicus,
and golden Eridanus with twin horns on his taurine face;
no other river flows through rich fields
and into the purple sea more aggressively than he.”

In structure and scope, this catalogue of eight rivers mirrors nicely the catalogue of the twelve nymphs given earlier. Like the previous catalogue, Vergil’s catalogue of rivers is most likely based on earlier Greek sources.\(^{330}\) The rivers that Vergil does list are interesting not only in how they define the

---

\(^{329}\) Cf. line 376 discussed below. Mynors (1990) suggests that the presence of “caves” (*speluncae*) at this point in the narrative would not have only been expected by Vergil’s readership, but it would have made it easier for the reader to imagine that the “groves” (*lucos*) are “resounding” with water (*sonantis*).\(^{329}\) The idea is that the caves themselves are actually emitting the resounding water, even though grammatically the *sonantis* modifies *lucos*.

\(^{330}\) Homer offers a relatively short list of rivers in the *Iliad*, but none of them appear in Vergil’s catalogue; cf. *Il.* 12.20-2. Hesiod’s list of rivers in the *Theogony* seems to be more similar to Vergil’s list in size, but only a few of Hesiod’s rivers make it into Vergil’s catalogue: the Phasis, Caicus, and Eridanus; cf. Hes. *Theog.* 367-73. Hesiod also includes the Peneus, which Vergil
geographical limits of the ‘civilized’ Roman world, but also in how they reflect the hydrogeological (Roman) world of the *Georgics*. Servius Honoratus (4th - 5th CE), who wrote the first full commentary on the *Georgics*, first detailed where on the map these rivers are actually located, yet he gives no justifications for, or citations to support, his identifications. Modern scholars, however, have praised Servius for his accuracy.\(^{331}\) Compared to his sources of inspiration, Vergil’s catalogue possesses no rivers of the ‘exotic’ or ‘foreign’ world, but three of them (the Phasis, Lycus, and Hypanis) exist on the ‘civilized’ world’s outer perimeter in Colchis and Scythia, and one of them (the Eridanus) was traditionally considered to flow directly into the Underworld. Mynors notes that the catalogue begins and ends with “half-mythical streams from far east and west” (the Phasis in Colchis and the Eridanus in Cisalpine Gaul).\(^{332}\) Vergil blends local Roman names with those from Greek poetry, and his final river, the Eridanus, is given three lines in order to metrically slow down the enumeration, which could reflect Aristaenus’ slowing approach to Cyrene’s *thalamus*. So much effort from later scholars has been put into categorizing and thus understanding these rivers in terms of their geography, but Mynors questions whether that type of categorization is at all necessary, considering that the subterranean image that Aristaenus is witnessing is logistically complex, deliberately ambiguous, and loaded with sensory detail.

---

\(^{331}\) The Phasis is the modern Rioni River located in western Georgia. The river has its origins in the Caucasus and passes through what was known in antiquity as Colchis (Hes. *Theog.* 1.340). The Lycus could be a number of rivers, possibly the modern Kelkit River in Asia Minor, which flows into the Black Sea. Apollonius and Strabo, however, identify the Lycus with a river that flows into (or nearby) the Phasis in Colchis (*Ap. Rhod. Argon.* 4.131-4 and Strabo 11.14.7). Vergil, it is argued, would be more likely to mean the Colchis Lycus considering that Apollonius, one of his primary sources, also groups the two rivers in Colchis together. The Empeus is located in Thessaly and is a notable tributary of the Peneus (*Hom. Od.* 11.239, Strabo 9.5.6, and Plin. *HN* 4.30.6). The famous Tiber flows through Rome in Italy, while the Anio, which rises from two springs in the Simbruini mountains, flows into it to the north. The Hypanis has been identified as the Boug, which flows through modern Ukraine (ancient Scythia) and discharges into the northern coast of the Black Sea (*Hdt.* 4.52 and *Diod. Sic.* 2.37.4). The Caicus, or the modern Bakırçay, is a river in Mysia in northwestern Asia Minor, which flows by Lydia and Aeolis into the Aegean (*Diod. Sic.* 6.25, 7.42 and *Cic. Flac.* 72). The catalogue ends with the Eridanus, which Servius identifies as the Eridanus River in Cisalpine Gaul, which is also called the Padus. The Eridanus is also associated with the Rhone as well as the Po River on the Italian border of Cisalpine Gaul (Hes. *Theog.* 338 and *Aen.* 6.659). Cf. Mynors (1990, 306) for a more detailed look at the identification of the Eridanus.

\(^{332}\) Mynors 1990, 305.
In a similar manner to Mynors, I would also suggest stepping away from a geographical approach to these rivers and instead offer a geological one; the hydrogeological peculiarities of most of these rivers are worth mentioning, as they all seem to fit nicely into the hydrological system and karstic topographies that Vergil chooses to illustrate throughout the rest of the epyllion. Many ancient hydrologists list these particular rivers in their own scientific treatises; Aristotle notes the mountainous origins of the Phasis in his *Meteorologica*, and he highlights the fact that the Caucasus is the source of a number of large rivers around Colchis.333 Vitruvius also lists the Phasis as one of the major rivers that has mountainous origins, but he limits his discussion of the river to a mere list of rivers that have their origins in the ‘north.’334 Apollonius, however, describes the Phasis as “eddying” using the adjective δινήεις, which is suggestive of the channel’s depth, and possibly the karstic terrain above which it flows.335

Regarding the Lycus, which Vergil most likely places in Colchis, both Pliny and Ovid highlight its observable karstic properties in their respective works. In a list of disappearing streams, Pliny defines the “Asian Lycus” (Lycus in Asia), among many other notable rivers, as a stream that “sinks into the earth” (subeunt erras) and later reemerges (rursusque redduntur).336 Ovid gives a much more detailed account of the river Lycus in his *Metamorphoses*. This Lycus, like Pliny’s Lycus, is a disappearing stream, but Ovid’s particular elaboration of the river is the longest, most detailed example of a disappearing stream in all of his poetry:337

*Sic, ubi terreno Lycus est potatus hiatu,*  
*Existit procul hinc alioque renascitur ore.*  
*Sic modo combibitur, tácito modo gurgite lapsus*  
*Redditur Argolicis ingens Erasinus in undis.*

“Thus after the Lycus is swallowed up into an earthly chasm,  
It emerges far away and is reborn from another springhead.  
Thus the giant Erasinus is at one point swallowed up, and at another flows with silent eddies,  
Is restored in the Argolid waves.”

334 Vitr. *De arch.* 8.2.6. Cf. also Strabo 11.2.17.  
335 Ap. Rhod. *Argon.* 2.401. The Rioni River is 327 km long with many flow eddies along its channel, and modern analyses have determined that the river is fed by snowmelt, rain, and underground water; Cf. Khaladze 1997, 239-40, 243 and Mikhailova and Dzhaoshvili 1998, 134.  
336 Plin *HN* 2.225.  
The Lycus descends underground through a chasm in the earth (terreno...hiatu). The river then travels a significant distance underground (procul) before it reemerges from a different springhead (existit...aliaque renascitur ore). Ovid then compares the Lycus directly to the Erasinus in Arcadia, which also is “swallowed up” by the earth (combibitur), flows underground “with silent eddies” (tacito gurgite lapsus), and returns above ground into a different waterbody (redditur). Ovid’s use of gurges suggests his karstic awareness, and the Lycus itself shares certain eddying properties with the neighboring Phasis, which could very well be possible considering that both rivers are part of the same hydrogeological basin.

The Enipeus, which flows through Thessaly into the Peneus, appears first in Homer’s Odyssey, and the river possesses distinct ‘whirlpooling’ qualities similar to the Phasis in Colchis (δινήεντος). The hydrological nature of the Enipeus is not discussed in detail by any Roman author other than Vergil, but there is an agreement that the river is fast: Lucan calls the river “swift” (celer) and “turbid” (turbidus) while Ovid calls it “restless” (inrequietus). Vergil, however, notes that it is also “deep” (altus) and “breaks itself out” (se erumpit) from its source (caput unde). The verb erumpere is usually intransitive, so the fact that Vergil makes it reflexive with the additional se suggests that he is trying to grab his reader’s attention grammatically. This grammatical oddity could, however, be evident of Vergil’s subtle effort to highlight a peculiar quality of the Enipeus, particularly that it ‘reemerges’ at this subterranean source and connected via ‘whirlpool’ (gurges) as Homer describes it.

The Anio (or Aniene) rises to the earth’s surface from two springs in the Simbrian mountain range. A hydrological peculiarity of this river seems to arise in an elegy of Propertius, who describes the river as the nymph Aniena, who “falls into spacious basins” (cadit in patulos...lacus), which could have been inspired by the river’s actual descent into karstic barathra. Strabo notes that the Anio eventually...

---

338 Od. 11.242.
339 Luc. 6.375; 7.116.
340 Ov. Met. 1.579
341 Both Thomas (1988, 213) and Mynors (1990, 306) note that the reflexive use of erumpere is odd, but it does appear in Late Republican Latin, especially in Lucretius. Cf. Lucr. 4.1115.
342 Prop. 3.16.4. During his travels and sightseeing of the Falls of Tivoli near the Anio, William Webb (1827, 107) recalls that the river finds a “pitfall” into the grotto of Neptune and consequently “disappears from its channel.” Webb is amazed by its later reappearance some distance away from the base of the precipice.
“falls down from a great height” (ἀφ᾽ ὕψους μεγάλου καταπίπτων) into a “deep wooded ravine” (φάραγγα βαθεῖαν καὶ καταλσῆ).\(^{343}\) Modern analyses have shown that the streambed of the Aniene coincides with an underlying karst aquifer, and numerous springs and accessible caves are located along its banks.\(^{344}\)

Along with the Phasis, Vitruvius also mentions the Tiber and the Hypanis (Boug) rivers as having their origins in the north,\(^{345}\) but again the Roman engineer does not discuss either river’s qualities in too much detail. Ovid, however, highlights the water quality of the Hypanis in the *Metamorphoses*.\(^{346}\) In the form of a rhetorical question, which suggests that the following information would have been common knowledge to his audience, the Hypanis originates as “fresh water” (*dulcis*) in the mountains of Scythia (*Scythicis...de montibus ortus*). But as it flows away from its source, it becomes mixed with salt (*salibus vitiatum amaris*). The concern for the process of saltwater infiltration here is somewhat akin to Vergil’s concern for the Arethusa in *Eclogue* 10. Vergil, however, highlights the Hypanis’ rockiness with the supplementary description *saxosusque sonans* (“rocky and resounding”). Thomas (1988) understands the collocation of the adjective and participle as emphasizing the crashing water through alliteration.\(^{347}\) This interpretation has some merit, as it befits the subterranean cave in which these rivers are flowing as well as the observable qualities of the rocky Boug, which tends to flood quite dramatically in the springtime.\(^{348}\)

The Caicus (modern Bakırçay), which is described in terms of its Anatolian origins near Mysia, is described by many Latin authors, two of whom highlight its peculiar ‘disappearing’ nature. Pliny the Elder does not describe how the river Caicus disappears, but tells us that the Caicus gets the local name Mysus from the place in which it “rises” to the earth (*oritur*).\(^{349}\) Ovid also engages with the seemingly common question of whether the Caicus is the Mysus.\(^{350}\) Ovid tells us that the Mysus river “appears

\(^{343}\) Strabo 5.3.11.

\(^{344}\) Bono and Percopo 1996, 210-11, 214.

\(^{345}\) Cf. *De arch.* 8.2.6.


\(^{347}\) Thomas 1988, 214. Cf. also *Aen.* 7.566 and 12.592. Servius, however, recommends that we think of the two words as separate descriptors but rather as the result of one another – that is, not “rocky and resounding” but “resounding against the rocks” (*saxosusque sonans*’ non ut duo intellegendum, *saxosus et sonans, sed ob saxa sonans*).

\(^{348}\) Cf. Francois et al. 2010, 39-44. The Boug meanders quite heavily in some sections, with the highlands consisting of highly carbonate rocks and channels with large amounts of underground flow; Michalczyk and Sobolewski 2002, 112-114, 122.

\(^{349}\) Plin. *HN* 5.125.9.

elsewhere” (alia...ire) at a location away from its former source and banks (capitisque sui ripae prioris / paenituisse ferunt). It is implied that the river disappears, but when it reemerges it becomes the river Caicus (nunc...Caicum). Vergil appears to be aware of the Caicus’ local naming, and thus quite possibly its disappearing nature, as is evident in his emphatic combination of Mysus with Caicus.

The Eridanus, unlike the other listed rivers, had a well-known association to Hades in antiquity.\textsuperscript{351} This connection was strengthened by the interesting karstic qualities of the river first noted by Hesiod, who describes the Eridanus as possessing particularly ‘deep’ whirlpools (Ἡριδανὸν βαθοδίνην),\textsuperscript{352} and later when Ovid and Apollonius of Rhodes mythologize the creation of the Eridanus as the result of the fall of Phaethon.\textsuperscript{353} According to Apollonius, there exists “deep marshes” (λίμνης...πολύβενθέος) alongside the Eridanus that “exhale heavy vapors” (αιθομένοι βαρὺν ἀνακηκίει ἀτμόν) where Phaethon and the sun hit the earth. These vapors are poisonous, and any bird that flies over the waters of the marsh “falls dead mid-flight” into the hole (μεσηγὺς φλογῷ ἐπιθρώσκει πεποτημένος). The noxious water quality is reminiscent of the marvelous waters of Callimachus, who Apollonius might be drawing from. Vergil, an avid follower of Apollonius, would have been aware of this history of the Eridanus in his own catalogue of rivers in the Georgics and later in the rivers of the Underworld detailed in book six of the Aeneid.\textsuperscript{354} In the Aeneid, Vergil highlights the continuity of the Eridanus’ flow below and above the surface of the Earth when he details how the river “flows upward” (unde superne...uoluitur amnis) through the forests of Elysium to reach Earth’s surface and the land of the living under the name Po.\textsuperscript{355}

It is evident that the rivers of Vergil’s catalogue share more qualities than just their literary sources or geographical distance from one another. Every river, with the possible exception of the Tiber, is a disappearing stream, some of which (i.e. the Phasis, Lycus, Hypanis, and Eridanus) possess notable

\textsuperscript{351} Cf. Hes. Theog. 11.334-345 and Verg. Aen. 6.656-659. Strabo considers the Eridanus to “not actually exist on earth” (τὸν Ηριδανὸν, τὸν μηδαμοῦ γῆς ὄντα), even though it is said to be near the Padus river (5.1.9).

\textsuperscript{352} Hes. Theog. 338.


\textsuperscript{355} Propertius names the Eridanus alongside the Hypanis (Boug) as two rivers that function as Earth’s outer limits (1.12). The Po is the longest river in Italy (652 km) and is fed by several Alpine lakes and subterranean reservoirs; cf. Musolino et al. 2017, 167-8.
karstic qualities. At some point in their travels, the waters of the Phasis, Lycus, Enipeus, Anio, Hypanis, Caicus, and Eridanus disappear into the earth and reappear elsewhere later on. The presence of labentia to describe “all the rivers” (omnia flumina) that Aristaeus sees suggests, moreover, that these rivers do in fact flow underground. Vergil’s choice to end the list with a detailed description of the Eridanus, which was a well-known subterranean river, only strengthens the hydrological connection between the surface world and the subterranean world of Cyrene’s kingdom, which is surrounded by Ocean. The ultimate picture, then, is that Aristaeus, having sunken through the Peneus, witnesses other sinking rivers as they literally travel under the surface of the earth, each sharing a common, subterranean origin despite their varying locations upon the earth’s surface, which Vergil aims to emphasize with diuersa locis.

Up to this point in the narrative, Vergil’s hydrological cycle considers the shared source of water for the world’s disappearing rivers to be the cavernous, subterranean Earth. This conception of the subterranean world, which will be described further below, is not Vergil’s creation. As evident from chapter two, many Romans and Greeks, most of whom Vergil found explicit inspiration for the epyllion, considered the subterranean world to be full of watery caves which supplied the surface-world’s rivers and oceans. The full picture of the water cycle, according to the Georgics, emerges during the following scene in which Aristaeus meets his mother and witnesses a libation to Ocean (374-386):

```
potquam est in thalami pendentia pumice tecta
peruentum et nati fletus cognouit inanis
Cyrene, manibus liquidos dant ordine fontis
germanae, tonsisque ferunt mantelia uillis;
pars epulis onerant mensas et plena reponunt
pocula, Panchaeis adolescunt ignibus arae.
et mater 'cape Maeonii carchesia Bacchi:
Ocean olibemus' ait, simul ipsa precatur
Oceanumque patrem rerum Nymphasque sorores,
centum quae siluas, centum quae flumina seruant.
ter liquido ardentem perfundit nectare Vestam,
ter flamma ad summum tecti subiecta reluxit.
onine quo firmans animum sic incipit ipsa.
```

“Afterwards he arrived at the chamber with vaulted ceilings of pumice stone
And Cyrene recognizes the empty tears of her son.
Her sisters, in order, give his hands liquid spring water,

---

And they bring towels with clipped fibers;
Some of the sisters fill the tables with food and replace
full cups, and the altars burn with flames of incense.
And the mother says “take the cups of Maeonian Bacchus:
To Ocean shall we pour a libation.” She herself prays
to Ocean, the father of everything, and to her Nymph sisters,
one hundred of whom serve the forests, one hundred of whom serve the rivers.
Thrice she sprinkles the glowing hearth with liquid nectar,
Thrice the flame shined and flared up to the ceiling.
Fortifying her spirit with this omen, she begins as so.”

Vergil describes Aristaeus’ first glimpse of his mother’s chamber in the same way as when he introduces his readers to the weaving nymphs: as a *thalamus*, which tells us that Aristaeus has truly arrived in her abode. Here, Cyrene’s subterranean house is a “chamber” with a distinct geological marker, its “arching pumice stone,” that act as the chamber’s ceiling (*pendentia pumice tecta*). Pumice is an igneous rock that forms when a volcano expels subterranean rock under high pressure. It is extremely porous, sometimes containing crystals, and is thus described as ‘spongey’ or ‘foamy’ in appearance. Pumice is quite common throughout Mediterranean caves.

Cyrene immediately notices her son and begins a ritual of libation to determine the next steps in his quest to save his bees. Her sisters make the preparations for a proper reception and libation, which includes washing Aristaeus’ hands with clear water, giving him towels with which to dry his hands, setting the table for a feast, and lighting the altars with incense. Vergil’s use of *liquidos fontes* suggests an image of total purity; the general meaning ‘water’ comes from *fons*, but its primary definition is ‘springhead.’ As noted above, springs were the primary source of fresh water for ancient peoples, thus the addition of *liquidus* (“clear”) is emphatic. Topographically speaking, the presence of *fontes* here could very well suggest an actual presence of *fontes* around the nymphs, considering that they are also surrounded by grottos, groves, and lakes.

The meaning of “shorn towels” (*tonsis mantelia villis*), however, is a bit more ambiguous. Mynors (1990) is unsure why the ‘napkins’ are mentioned at all, since there is no sacrifice taking place, and

---

357 This process has deep resonances with the banquets in *Od.* 4.47-58 and, later, *Aen.* 1.701-6.
358 Cf. line 364.
Thomas (1988) considers it to be a gloss to Varro.\textsuperscript{359} I would suggest a speleological interpretation.

Modern geologists and cavers have identified numerous types of speleothems across the Mediterranean, especially within more aqueous caves, that possess observable similarities to that of ‘clipped fleece’ (cf. Fig. 8). These types of speleothems are called ‘filiform’ helictites because they resemble unkempt human hair.\textsuperscript{360} Etymologically speaking, the “\textit{fili}l-” of filiform comes from the Latin \textit{filum}, which means a thread of any woven thing.\textsuperscript{361} The Latin \textit{filum} and \textit{villum} are closely related etymologically, but their respective meanings are a bit different; a \textit{villum} could be understood as consisting of many interwoven \textit{fila}. The fact that the \textit{villa} (“tufts of hair”) which the Nymphs give to Aristaeus are \textit{tonsa} (“clipped”) suggests that the tufts are ‘kempt’ and thus orderly, which befits the ‘kempt’ solemnity of the scene and the ritual libation to come. In a similar manner to how Homer presents his nymphs as weaving among ‘looms of stone’ and eating from ‘bowls of stone,’ Vergil could be calling his readers to picture Cyrene’s sisters bestowing to Aristaeus items that make sense in the speleological setting.

The full picture of the \textit{Georgics}’ hydrological cycle emerges upon Cyrene’s libation to Ocean. The hydrological cycle which up to this point has been inferred as a unified, subterranean system of waters comes to light upon Cyrene’s specification of Ocean as “father of everything” (\textit{patrem rerum}). From the perspective of Vergil’s immediate audience, Cyrene’s words would have recalled Homer, who is first to describe Ocean as the subterranean source of all rivers, springs, and wells.\textsuperscript{362} Ocean is named \textit{twice}, both of which times his name lies at the \textit{very beginning} of the respective line, which metrically reflects, and stresses, his primordial nature as ‘the beginning.’ Yet, those who were educated or aware of the contemporary scientific discourse surrounding the natural world and its primary elements would have been drawn directly to the pre-Socratic Thales, who theorized that water was the primary element of the known universe, and that all other things originate from water.\textsuperscript{363} The former Homeric reading is intricately linked to the later Thales reading via close observational analysis.

\textsuperscript{360} Cf. chapter 2a. Cf. also Culver and White 2005, 493.
\textsuperscript{361} Cf. \textit{L&S} s.v. “\textit{filum}” 1.1.
Ocean as the primeval source of all rivers and waters originates in Homer, as far as we know, but his familial connection to particular rivers and other watery divinities comes from Hesiod. Ocean is the canonical son of primeval Gaia and Ouranos, but his orderliness, strength, and mild temper kept him from extinction or imprisonment by Zeus upon his ascension to the throne. Ocean’s power is evident in his sheer reach, which extends across the known and unknown world. Ancient conceptions of Ocean, from Archaic Greece to the Roman Empire, envisioned a broad waterbody, or river, that encircled the world. The breadth of this river, however, was not restricted to just the surface world, but extended deep underground. We learn from the myths that Ocean was a distinctly subterranean phenomenon, but his waters could extend both below and above the earth’s surface. We also learn from Hesiod that most of earth’s rivers have direct familial ties to mythic Ocean, but it is interesting that two nymphs (Clio and Beroe) and four rivers (Peneus, Phasis, Caicus, and Eridanus) from Vergil’s epyllion have Ocean as their mythic progenitor. By this genealogy, Cyrene, as the daughter of the Peneus, would have Ocean as her grandfather, and Aristaeus would have Ocean as his great-grandfather.

The mythic conception of Ocean as a distinctly subterranean and progenitive entity was based on keen observation by ancient peoples who saw links between their surface world and the world below in their everyday lives. Ancient Greek settlements’ exploitation of underground water in limestone formations (through wells, drainage systems, aqueducts, etc.) offered them their primary source of fresh, life-giving water. The shafts and channels beneath the earth’s surface in highly karstic areas offered natural pipelines for water to travel from mountains into the inhabited valleys. The ancient Greeks were keen observers and exploiters of these mountainous springheads and underground channels. What originally started as the extraction of groundwater via subterranean aqueducts led ancient thinkers to ponder over the nature of water in general as well as its movements from one place to another within

---

367 Fagan 2011, 156.
particular landscapes. According to the modern perception of the hydrological cycle, water that falls in the form of rain supplies both surface streams and groundwater. This groundwater eventually returns to the streams upon Earth’s surface, and due to gravity and other various geological/chemical processes, these streams aggregate into larger rivers, which eventually flow into oceans.\(^{368}\) This process, plus evaporation, creates a cycle in which no water is gained or lost. The ancient perception of the water cycle is not particularly inaccurate compared to what we know now, except that the ancient Greeks and Romans put a lot more thought into the origin of their waters, which came to be known as all-encompassing, ‘deep-eddying’ Ocean in myth and science. Ocean’s waters extend to the surface, creating rivers, which eventually either sink directly into the earth, and thus back into Ocean, or they flow into the sea, which then filters back into Ocean. Thales considered that water was not only the source of everything, but that the material upon which the observable world rests is a watery substrate of sorts, very much like Ocean.\(^{369}\)

The relationship between the earth and subterranean Ocean was developed further by later Greek and Roman thinkers. Herodotus, Strabo, and Pliny continued to rationalize Homer’s Ocean as a world-encircling river, but the connection between the earth and Ocean is most evident in the vocabulary utilized by these scientists to describe the ‘depth’ of a particular surface waterbody.\(^{370}\) Many surface rivers that were considered extremely deep or voracious, as seen in chapter two, were said to either possess δίναι/gurgites, or be located near or a part of λίμναι/paludes. Ancient authors used similar karstic-connotative vocabulary to describe Ocean itself.\(^{371}\) Ocean’s introduction at this point in the narrative sheds light on the catalogue of rivers listed immediately prior to Aristaeus’ grand entrance into his mother’s watery chamber. Four of his listed rivers (the Peneus, Phasis, Caicus, and Eridanus) are well-

---

\(^{368}\) White 1988, 155.

\(^{369}\) Llewelyn 1999, 39.

\(^{370}\) Cf. Hdt. 4.8, Orphic Hymn 11 (to Pan), Strabo 10.7.4, Ov. Fast. 5.79, and Plin. HN 2.66.2. Cf. also Casagrande-Kim 2012, 21 and 25.

\(^{371}\) Cf. Connors 2016, 155. It is worth noting that the ‘depth’ of waterbodies are emphasized within the epyllion at four different times (322, 333, 359, and 368), all of which instances occur within this section about Cyrene. This ‘depth,’ furthermore, is typically restricted to further defining gurgites or undae, which, as we have seen, function as hydrological passageways from which ecodeities emerge (cf. II. 321, 352, 387, 395, 403, 508, 524, and 529). Ocean is usually described solely in terms of his ‘depth;’ Cf. Hom. II. 14.311 (βαθύρροου), 21.194 (βαθύρρειταο), and Hes. Theo. 132 (βαθύρρειν). Pindar fr. 30 describes Ocean as possessing all of the earth’s “springs” (Ὠκεανοῦ παρά παγών). Cf. also Hes. Theog. 337 where the direct offspring of Ocean (i.e. the Rivers) are first described as ‘eddying’ (δύναντας).
known rivers that are mythologically tied to Ocean itself. As noted above, these rivers were known as ‘disappearing streams.’ This observable quality of each river, combined with how each of these four rivers possesses either δίναι/gurgites or located near λίμναι/paludes, directly ties these rivers to Ocean, and in turn the unifying, Thales-based hydrological system that Vergil illustrates in his poem.372

According to Connors, Vergil depicts a fantasy that recognizes all the world’s rivers as flowing underground. By doing so, Vergil utilizes his observational awareness of karst terrain to “create an experience like looking at a map or walking into a library and having hidden truths about the world open to one’s informed gaze.”373 Vergil’s inclusion of a catalogue of rivers at this point in the narrative, and at this particular subterranean locale, showcases his masterful ability to interweave geological knowledge with literary flourish to create a visually captivating myth that is reflective of, but not solely limited to, his sources. His fluvial catalogue functions as a ‘map’ of sorts that shows his readership, through words, a particular approach to understanding Earth’s hydrological cycle; all of the world’s rivers (here simplified to include particular rivers that highlight the limits of the civilized Roman world) originate underground, all of these rivers eventually resurface, and all of them have Ocean as their progenitor. This particular understanding of the hydrological cycle is by no means Vergil’s own creation. Rather it is one of the oldest theorizations of the subterranean world first detailed by Homer and Hesiod in their poetry. This theory, however, continued to be developed by later Greek and Roman authors up until Vergil’s own time. Yet, Vergil is the first to bring such a comprehensive hydrological system into the world of poetry.

Vergil’s karstic awareness is evident in how he positions the entire episode along the Peneus near Tempi, his choice of characters, the descent of the hero Aristaeus, and the domain of his divine mother and great-grandfather Ocean. Vergil’s engagement with this discourse of karst terrain and the hydro(geo)logical cycle does not end with Aristaeus’ descent. As the narrative continues, and the audience observes the hero’s encounter with Proteus and his own subterranean domain, we gain an even fuller picture of Vergil’s hydrogeological awareness.

372 Cf. also Clendenon 2009, 117.
373 Connors 2016, 175.
b. The Georgic *Spelunca* and the Imperial Grotto

Cyrene’s subterranean home is the first explicit ‘cave-space’ that the audience, and Aristaeus, enters during the course of the epyllion. The geological space itself, how Vergil describes it, and the characters that inhabit it give us a good understanding of how Vergil’s Roman audience would have understood this particular ‘cave’ in the context of the epyllion as a whole. The first cave system that Vergil’s readers enter is one of pure domesticity, femininity, and artificiality, an ‘imperial grotto’ of sorts that allows us readers, alongside Aristaeus, to witness and, in turn, contemplate larger themes pertaining to the natural world of the *Georgics*. In terms of the narrative, the grotto gives our hero Aristaeus the contemplative and supportive space he needs to tackle the next leg of his journey.

The vocabulary chosen by Vergil to describe Cyrene’s cave elicits comfort and repose. The first description of Cyrene’s cave comes at 333. Vergil’s choice in *thalamus* (“chamber”) to describe her location connotes isolation and secularization of distinctly feminine space. At 363 her domain is called a *domus*, or ‘home,’ which encompasses the entirety of her domain and extends well beyond the particular room (*thalamus*) in which Cyrene is actually located, but still possesses a distinct familial quality. At the end of 363, Cyrene’s watery kingdom is described in vividly dynamic detail, but not so much as a military *regnum* as one might initially expect; the *regnum* of Cyrene does not consist of battlements, marketplaces, stadia, or buildings, but groves, springs, lakes, and caves. The caves that dot the landscape are not *antra*, nor *cava*, nor *specus*, but *speluncae*. Vergil’s use of *speluncae* alone suggests, as we have discussed above, a place of refuge surrounded by natural beauty and imminence, inhabited sometimes by beasts, sometimes by divinities. The scenery of Cyrene’s *umida regna*, as Vergil describes it, almost necessitates the presence of *speluncae* among its rivers, springs, groves, and nymphs.

---

374 The word *thalamus*, most likely just “chamber” here, also can be translated as “bed chamber” or “wedding chamber,” both of which could be considered ‘caves’ in terms of their function as spaces of safety and seclusion. It is also the *thalamus* into which Aristaeus first arrives in his subterranean journey.
All of these words that Vergil uses to describe Cyrene’s cave exude a certain domesticity that is only emphasized by the location’s scenery. The image of nymphastrans weaving and telling tales is the romantic world of divinity and femininity, far from the world of labor stressed earlier in the Georgics. The watery nature of the location, which highlights the female principle of nature and life, contrasts significantly with the tragic, earthly reality above ground.\footnote{Cf. Putnam 1979, 278 and Campbell 1982, 106.} Crystalline furniture dots the thalamus, and the echoing of rivers through glens and springs from caves passes through the entire kingdom. The scenery becomes even more homely when the nymphastrans prepare Aristaeus a feast; the hearth is burning and the smell of incense and the fragrant flames reach to the highest parts of the pumice-laden ceiling. There is no feeling of hostility whatsoever. There is no sense of fear. The only conflict that exists in this world are the “empty concerns” of Aristaeus, which pertain to the world above and his labors there, far away from the maternal, nourishing world where he is now.

What actually happens during this episode, or rather how Aristaeus moves through the environment, also highlights the exotic atmosphere of the cave space. The spatial relations between Aristaeus and what he sees upon his descent (i.e. the groves, caves, lakes, rivers, etc.) are left intentionally vague. This vagueness gives Cyrene’s umida regna that mysterious, divine quality which sets it apart from other topographies that Aristaeus has experienced above ground.\footnote{Cf. Murgatroyd 2003, 28.} The vagueness of spatial relations, moreover, seems to be a distinct quality of chthonic topographies, particularly subterranean cave-spaces. Casagrande-Kim notes that chthonic spaces are never illustrated abstractly in Greco-Roman poetry. Whatever cartographical detail that gives the audience a sense of the subterranean topography is introduced solely for how it interacts with the narrative events.\footnote{Casagrande-Kim 2012, 40, 43.} In other words, topographical details are not introduced for their own value \textit{per se}. This type of space is called hodological space, or a space that is perceived by an individual moving between two points, which usually yields a horizontal perspective of the landscape.\footnote{Ibid. 43, 46.} Thus the umida regna as Aristaeus sees it as he moves from point A (the Peneus) to
point B (Cyrene’s thalamus) gives us a particular vision of a cave space that is highly pastoral, idyllic, and safe. The meter itself also reflects a leisurely pace; we can envision Aristaeus gawking at his mother’s kingdom, even though her pastoral, subterranean landscape is not unlike his own at Tempi.\footnote{Murgatroyd 2003, 28.}

The speluncae of Cyrene are not uninhabited. Many bodies fill the caverns and groves, but they are all divine in nature. These nymphs and their hodological reach, however, are limited to only Cyrene’s domus or thalamus, but they are given individual names and bring life and personality to the cave-space. The nymphs are weaving and telling stories before Aristaeus meets them. These actions and individuals introduce to the audience the idea that this particular cave-space functions as the only type of landscape where feminine society can remain untouched by labor. Cyrene herself only adds to this idyllic picture in how Vergil represents her, not as an arrow-wielding, tiger-wrestling huntress (as Pindar depicts her), but as an elder and a matriarch of all sorts of nymphs. She will soon become indispensable to Aristaeus and his cause as the possessor of all practical wisdom (praeecepta) with which Aristaeus can revive his bees.\footnote{Cf. Nappa 2005, 194.}

Although Proteus has not been introduced yet in the narrative, Cyrene is the only divine character thus far who makes an effort to help Aristaeus. She seems to speak from a position of higher knowledge from the fact that she considers Aristaeus’ laments as “empty” (inanis) and that she will soon bridge the gap, both narratively and topographically, between her comfortable world and the uncomfortable world of Proteus. Stehle understands Cyrene to be a part of the Iron Age world similarly to her son, which is why she understands him and can offer him helpful praeecepta. What she lacks, however, is the reasoning behind the issue from which she can derive helpful solutions.\footnote{Stehle 1974, 366.} This is why she will soon escort her son to Proteus, the divine seer and shapeshifter. Yet, her domain and all of its comfortable qualities suggest everything but Iron Age life. The world of the Iron Age, which we learn from ancient authors from Hesiod onward, is defined by suffering and toil. Aristaeus is an experienced member of this world, as evidenced by his loss of bees. The fact that Cyrene both understands Aristaeus’ ‘Iron Age’ situation and

\begin{thebibliography}{9}
\item Murgatroyd 2003, 28.
\item Cf. Nappa 2005, 194.
\item Stehle 1974, 366.
\end{thebibliography}
lives in a distinctly ‘un-Iron Age’ society (surrounded by eternal leisure) makes her a highly liminal character; it is easy for her to move and guide others between worlds (e.g. Aristaeus from Tempi to Proteus to Orpheus in the Underworld), but she can only live in the middle – in a cave.

The inclusion of Ocean here not only signals to the audience a particular hydrological framework with which to orient the Georgics as a whole, but Ocean’s presence adds to the familial aura of the scene as the “father” (pater) of the universe, much like how the Peneus is the “father” (progenitor) of Cyrene and her sisters, and Cyrene the mother of Aristaeus. This familial bond is strengthened when we consider how Ocean is also the mythological grandfather of Cyrene and the great-grandfather of Aristaeus through the Peneus. Ocean is the only masculine character of the cave-space, but he is given no voice, body, or explicit shape; he is described solely in terms of his fertility.

Metaphorically speaking, the cave functions as a ‘womb’ in which Aristaeus is reborn when he is swallowed up by the Peneus River’s (i.e. his mother’s or grandfather’s) sinu vasto. The maternal nature of Cyrene, who lives among the wet enclosures of caves, lakes, and groves describe the primeval womb first associated with Gaia or an All-Mother. Furthermore, Aristaeus confronts not just his mother, who gives him the knowledge he needs to continue his heroic journey, but his great-grandfather, who is the begetter of all things. Womb imagery and its association with speluncae in particular seem to have been commonplace in poetry. In fact, Vergil himself highlights the womb-like quality of speluncae in his description of birthing places for pregnant horse in book three of the Georgics. This spelunca, like Cyrene’s spelunca, has hanging rocks, lush groves, flowing rivers, and cool shade, all of which are natural qualities that make up the ideal place to give birth for any animal.

Along these lines, the rebirth of Aristaeus signals that new knowledge is to be attained in order for his quest to continue. Thus Cyrene’s spelunca functions as a source, or ‘font’ of knowledge from which the protagonist hero is meant to imbibe. The first of the three major thresholds that Aristaeus, as the heroic protagonist, crosses is that into Cyrene’s spelunca. He does so with absolutely no difficulty, and he does

---

383 Cf. chapter 3b and G. 3.145.
so as the result of loss. This is the first of Aristaeus’ *katabaseis*, which will soon be reflected in his bout with Proteus and later in the seer’s narrative of Orpheus. The result of this *katabasis* is Aristaeus’ departure with his mother, no longer lost *per se*, but with a new set of *praecepta* regarding how to overpower Proteus. Only after subduing the seer could Aristaeus, and Cyrene, understand the *causae* behind Aristaeus’ loss of bees. Much like a prophetic grotto, Cyrene’s *spelunca*, therefore, functions as a liminal space where divine (and practical) knowledge of the natural world is passed on to mortal minds.\(^{384}\)

In the case of Cyrene’s cave, Vergil wants us to contemplate many things. One of these subjects are the first steps of regeneration, which is the ultimate goal in the cyclical process of life and death in Nature as described throughout the *Georgics*. What will soon become apparent is how each of these steps of life, death, and rebirth (which are mythologized in Aristaeus’ travels) occur solely in the context of caves. Up until now Aristaeus’ journey from Tempi to the domain of Cyrene under the Peneus reflects the hero’s death. Within Cyrene’s domain, life (or hope) is restored upon Aristaeus’ departure.

Vergil could also be calling his audience to reflect on the elemental forces that make up the natural world; Cyrene’s domain, which is a cave, functions as the innermost part of Earth, and thus contains all other elements. Elemental water makes up most of Cyrene’s domain: the nymphs, the rivers, the matriarch herself, her kingdom of groves and springs, the washing of Aristaeus’ hands, and the libation. In essence, Cyrene is ‘Water,’ which is evidenced not only by her authority over it, but also how supportive she is as a main character; water, as Ocean signifies, is the origin of all life. Elements of Fire, however, are present

---

\(^{384}\) Vergil could very well have been looking to Homer’s Cave of the Nymphs on Ithaca (*Od. 13.102-112*) for inspiration regarding how best to craft his own cave of nymphs. In book thirteen of the *Odyssey*, Odysseus has finally returned to his native land, but to his confusion wakes up on a foggy beach where Athena leads him to a nearby grotto. The cave (*ἄντρον*) of the Ithacan nymphs appears as a semi-golden age landscape that has nearby it a good harbor, green fields, and potable water which comes from springs (like the Cyclops cave at 9.132-141). The philosopher Porphyry (c. 234 – 305 CE) was first to explicitly comment on the symbolic femininity that the cave resonates, similar to that of Cyrene’s *spelunca*. The cave space is naturally dark and wet, but it has pleasant qualities in its habitation by female nymphs, bowls, and jars; Weinberg (1986, 35) understands the cave to reflect Odysseus’ “death-like but pleasant” and “pre-natal” sleep on his ship prior to landing on Ithacan shores. Odysseus experiences a ‘rebirth’ in the cave when Athena ultimately lifts the fog upon his departure from it. Odysseus can see clearly; his mind has been dispelled of all unknowing (36). The Cave of the Nymphs in Ithaca, as Weinberg (1986, 37) argues, is one of many examples in Homer where he uses the ‘cave’ as a metaphoric ‘field of experience’ in which the protagonist (and audience) can view the mind as an elevated entity above the physical body. Each cave represents a space containing natural forces that must be overcome by the hero in order to reach a higher level of understanding; which, in turn, will allow the hero to reach his goal and achieve success. In other words, the cave in Homer functions as a place where ‘pure’ contemplation happens most naturally.
in the heated complaint by Aristaeus over the Peneus. He calls his mother to bring fire to all of his hard work, and calls into question his relationship to Apollo, who is often associated with divine Fire. We see fire again during Cyrene’s libation to Ocean both when the altars are burning upon Aristaeus’ entrance and when the offered nectar causes the altar’s flame to “thrice shine towards the ceiling.” Vergil puts effort in highlighting the juxtaposition of fire against the watery pumice ceiling during this libation scene, and the parallel ter at the beginning of 385 strengthens the elemental juxtaposition between fire (flamma) and water (liquidum nectar). As a result, the scene is alluring, yet the elements themselves are at odds with one another even though they are ‘at home’ in the cave. Again, this elemental theme and call to reflection will emerge later when Aristaeus combats Proteus in his own cave.

Vergil could even be calling the audience to contemplate within this cave his own place, as poet, within the long history of poetry from Homer up to his own time.\textsuperscript{385} Llewelyn notes how traditional descriptions of Ocean resemble Homer and his mark on literature; Dionysius of Halicarnassus explicitly compares Ocean, the source of all life, to Homer, who is the source of all literature, and this tradition seems to have persisted through the Roman Imperial Period.\textsuperscript{386} Vergil could be using Cyrene’s libation to Ocean as a signpost to inform his readers that he is allusively paying homage to Homer and his epic tradition. Along those same lines, Marincic argues that the signposting during the libation is not to pay homage to Homer, but rather to Callimachus.\textsuperscript{387} The fact that Vergil has Cyrene, the divine patroness of

\textsuperscript{385} Vergil has been recognized as a major contributor to, if not the culminating author representing the polemical attitude of the neoteric poets; Vergil, Thomas (1982, 144-5) notes, was the master of setting himself into the poetic traditions of his predecessors. By placing himself as such, Vergil can freely comment on his own place within (or divergent from) that tradition.\textsuperscript{386} Cf. Dion. Hal. Comp. 24. Cf. Llewelyn 1999, 32, 34.\textsuperscript{387} Cf. Marincic 2007, 25. This call to reflect the metapoetics of the epyllion, I would argue, is evident in how Vergil describes the setting of the libation. The thalamus in which Aristaeus first enters is characterized in terms of its ceiling; Cyrene notices her son in thalami pendentia pumice tecta (“within vaulted ceilings of pumice stone”). Quite literally, pumice stone is “hanging” (pendentia) from the ceiling (tecta), which is evident in most subterranean caverns. Yet, Vergil’s choice in highlighting Cyrene’s chamber-cave, which is the setting of the coming ritual libation, solely in terms of its hanging pumice, resonates with contemporary narratives of poetic initiation. The most famous example of poetic initiation within a pumice-filled cave-space comes from Propertius; cf. Prop 3.3.25-30 on the cave’s interior. Cf. chapter two section b for a detailed discussion of this initiation episode and pertinent scholarship. Propertius’ dialogue with the Muse Calliope and Apollo takes place in a cave (spelunca) on Helicon, surrounded by springs, that too possesses arched pumice hanging on the cave’s ceiling (pendebantque cavis tympana pumicibus). It is within this cave that Propertius is convinced by the poetic divinities to remain loyal to elegy and elegy alone, and the scene as a whole has its resonances with earlier Hellenistic authors like Callimachus and Philetas. Ovid too experiences his poetic initiation among the Muses, as described in both the Amores and Metamorphoses, within a cave (spelunca), surrounded by sacred springs, and covered with hanging pumice stone (pendens pumice and pumice tectus respectively); cf. Ov. Am. 3.1.3-4 and Met. 10.692. Pumice stone was also utilized in the technical production of paper and libri.
Callimachus’ hometown, pour the libation to Ocean suggests that Vergil could either be paying homage to Callimachus or signaling Vergil’s symbolic conversion from strict Callimachean poetics to a ‘mixed’ sort of poetics that will come to define the *Aeneid*. The particular combination of Cyrene/Callimachus and Ocean/Homer during a libation could even function as a symbolic reflection of Vergil’s ‘swirling’ treatment of his two favorite models in the *Georgics*.

If we are to understand how Vergil’s immediate, Roman audience would have conceptualized this particular cave-space, which forces one to meditate on numerous, grand ideas, it might be best to equate that subterranean space with the imperial garden grotto. The ‘grotto’ and all that it entails both physically and culturally is first introduced in book two of the *Georgics*. Although the *umida regna* of Cyrene lacks the mooing of cows, the kingdom’s “resounding groves” and watery coolness (all underneath Tempi/tempe) resonate with leisure and ease of life that is to be expected of an elite garden grotto. Imperial grottos tended to emphasize in their location and contents, seclusion, erotic pastoralism, and a space for poetic reflection. These aspects were enhanced by the flowing of water, evocative pieces of art (e.g. sculptures, paintings, mosaics, inscriptions, etc.), and obscure rock formations. The presence of speleothems in Cyrene’s *thalamus* befits the domestic and distinctly exotic setting, and they elicit the juxtaposition between nature and culture which the imperial grotto essentially symbolized. The numinous quality of the cave-space was a *topos* of sorts; the elite would emphasize their grotto’s sense of immanence or otherworldliness by having their engineers prioritize dim lighting, echoing, and shadows from lit fires. Oftentimes imperial grottos were placed in bucolic seclusion, sometimes around thick vegetation and large trees, sometimes out in a clearing or on a remote mountain or cliff side.

---

All major Roman poets, at some point or another, seem to highlight the step of polishing their poetry with pumice, which also functions as a metapoetic signal to the art of poetic creation. Cf. Catull.1.2, Hor. *Ep.* 1.20.2, Prop. 3.1.8, and Tib. 3.1.10.

388 G. 2.469. Cf. also chapter 3b.


390 Cf. Casagrande-Kim 2012, 74 and Bowe 2013, 130. More secluded, natural caves that could offer travelers potable water, shade, and shelter would be more frequented, which would increase the likelihood that the cave would become a shrine to the nymphs (Larson 2001, 227); Cyrene’s cave offers all of these features.
The garden grotto of the Romans, in its most basic form, was an artificial, decorative simulation of a natural cave.391 These beautiful natural caves that inspired human artistic intervention with their flowing waters, speleothems, deep caverns, and disappearing streams, generally were located in highly karstic terrain. With that said, Cyrene’s spulunca would have elicited all of the images of the typical Imperial grotto in form and function; the presence of running water is a consistent, unifying thread throughout the scene. Aristaeus’ descent highlights the grotto as passageway between worlds, particularly that of the living and that of the divine.392 Imminence is achieved through the omnipresence of nymphs and divine figures like Cyrene, Ocean, the world’s disappearing streams, and even Apollo, while erotic undertones typical of imperial art found in grottos are present in how the female nymphs, some virgins some not, interact with one another within the thalamus. The reverberating sounds of running water, crystalline furniture and weavings, and the burning altars add to the mystique while Vergil’s allusions to his poetic predecessors add to the function of the grotto as a distinctly meditative space. Both above and within the spulunca exist beautiful woodlands and groves, and Vergil, the engineer of this grotto, takes effort to highlight the juxtaposing qualities of the cave, much like how imperial grottos emphasize juxtaposition between the natural (e.g. rough cave surfaces) and the artificial (e.g. refined, smooth statuary).393

In short, Cyrene’s spulunca offers everything that any aristocratic garden grotto would: shelter from the elements, a room with a distinct aesthetic appeal, and a place for worship and deep spiritual contemplation. On top of all this is the secular motivation of refinement; ‘art imitating nature’ is the cornerstone of an effective and affective artificial cave-space. Vergil masterfully succeeds in portraying this particular cave-space as a distinct world from which to view all aspects of the epyllion that have happened and that are to come. To fully grasp all that Nature has to offer on the surface, one must contemplate its beginnings, which flow from Earth’s deepest channels.

391 Bowe 2013, 128.
393 Ovid grapples with this interesting juxtaposition in his description of the cave of the sea-nymph Thetis (Met. 11.235-6); this divinity lives in a cave (spucus) that is “ambiguous whether it was crafted by nature or by hand, but more likely by art” (natura factus an arte, / ambiguum, magis arte tamen). This conclusion that her cave was created by art (ars) seems to derive from the fact that the cave’s inhabitant is a naked female (nuda) and that the cave lies in a pastoral landscape, surrounded by a myrtle grove and berries (myrtea silva...bicoloribus obsita bacis).
Chapter 5 – Proteus’ Specus

a. A Hydrogeological Reading of Georgics 4.387-452, 528-30

The next stage of Aristaeus’ heroic journey to recover his bees involves the conquest of a monster. Cyrene transports her son, and the audience, to the not so distant domain of Proteus, the divine seer and spawn of Neptune. This shapeshifter is the key to understanding the reasoning (causae) behind the death of Aristaeus’ bees. His watery, cavernous abode, much like that of Cyrene, not only befits Proteus’ character and the narrative itself, but helps us better assess Vergil’s commitment to accurately portraying particularly karstic landscapes within his epyllion.

Before Aristaeus arrives on the shores of Proteus’ home, Cyrene takes care to warn her son about the monstrous seer’s particular domain as well as the need for Aristaeus to physically subdue him (387-400):

‘Est in Carpathio Neptuni gurgite uates
cæruleus Proteus, magnum qui piscibus aequor
et iuncto bipedum currum metitur equorum.
hic nunc Emathiae portus patriamque reuisit
Pallenæ; hunc et Nymphæae ueneramur et ipse
grandæus Nereus: nout namque omnia uates,
quae sint, quae fuerint, quæ max uentura trahantur;
quippe ita Neptuno uisum est, immania culus
armenta et turpis pascit sub gurgite phocas.
hic tibi, nate, prius uinclis capiendus, ut omnem
expediat morbi causam eventusque secundet.
nam sine ui non ulla dabit præcepta, neque illum
orando flectes; uim duram et uincula capto
tende; doli circum haec demum frangentur inanes.’

‘There is in the Carpathian whirlpool of Neptune a seer, cerulean Proteus, who traverses the great sea upon a chariot of two-legged horses yoked to fish.
He is currently revisiting here, the gateway of Macedonia, and his homeland Pallene; we Nymphs revere this Proteus, as does aged Nereus, for the seer knows everything:
he ponders everything that is, everything that has been, and everything that is soon to come.
He is thus truly sanctioned by Neptune, whose monstrous beasts and ugly seals the seer grazes under the whirlpool.
You, my son, must first capture this one in chains so that he loosen
every reason for [your bees’] affliction and make favorable the outcome.
He will not give you any precepts without force, nor will you
bend his will with pleading; take aim with harsh force and chains for his capture;
only with these can his empty tricks be broken.”

In a similar fashion to how Vergil first introduces Aristaeus and then Cyrene, the divine Proteus is
described primarily in terms of relative geography; in a former time, Proteus was in the vicinity of
Karpathos, which is an island that lies between Crete and Rhodes, but has travelled via fishy chariot to
Macedonia (*Emathiae portus*), specifically his homeland of Pallene, which is known today as Kassandra
Peninsula in Chalcidice, Greece. Vergil is painting a complex picture with this particular description of
Proteus’ travels from Carpathian waters to Pallene; this picture is not only extremely literary in that it
both alludes to and undermines his Homeric and Hellenistic sources, but also, much like his description of
Tempi, suggestive of a particularly karstic topography.

Vergil’s choice to place Proteus’ homeland in Pallene is an obvious subversion of his Homeric model.
The entire episode, from Cyrene’s plan to the actual wrestling bout, is modeled after Homer’s tale of
Menelaus and Proteus in book four of the *Odyssey*. In this epic, Homer places Proteus’ home on the
island of Pharos off the coast of Egypt. Proteus is a sea-god and the son of Poseidon, but was later
conflated with a ‘historical ‘Proteus, who was the mortal “son of Aegyptus” that ruled either at Memphis
or on the island of Pharos itself. A separate literary tradition, however, places the divinity at or around
Pallene in Chalcidice. Servius attempts to explain this diverting tradition in his commentary. Proteus is a
Pallene native who married Torone and fathered two sons. These sons, who were wild in nature and
extremely violent towards the Macedonians (*advenas luctari secum adigerent et excruiciarent*), were
ultimately killed by Hercules. Their death forced Proteus to call upon his father Neptune for help, and the
sea god sped him away via subterranean conduit (*subter mare specum*) to the island of Pharos in Egypt.
This myth, including Proteus’ Pallene connection, is described by both Lycophron and Apollodorus.

---

394 Od. 4.355.
part of the *original* Proteus legend from which Homer later drew inspiration. Cf. also Clendenon 2009, 205.
Vergil, however, seems to be alluding to Callimachus, who is the earliest source that links Proteus to Pallene in Chalcidice at the outset of his *Victoria Berenices*. Callimachus follows the Homeric tradition in so far as Proteus is considered a divine seer (μάντις), and not a mortal king. Callimachus, however, changes his homeland to Pallene, but he alludes to Pharos with typical, Callimachean erudition as the “island of Helen” (Ἑλένης νησίδα). Regardless, three pieces of evidence tell us that Vergil is drawing from Callimachus in his introduction of Proteus: (1) Proteus’ home is distinctly Pallene (cf. *patriamque revisit / Pallenen*), (2) Vergil’s use of *vates* twice to describe Proteus (cf. ll. 387 and 392), and (3) Proteus’ occupation as seal-herd (cf. *custos...phocae*). As Mynors argues, by positioning the following episode in Pallene, Vergil can bring the divine and distinctly Homeric Proteus into contact with the divine and distinctly Callimachean Cyrene to achieve an end similar to that of the previous libation scene.

Yet, Vergil does not disregard completely the Homer locale of Pharos in his own story. Vergil masterfully alludes to the Homeric tradition without losing any of the introduction’s Callimachean flair. Vergil never mentions Pharos explicitly, but his introductory ‘*est in Carpathio Neptuni gurgite*’ is enough to subtly call attention to Homer and his epic tradition. Much like how Callimachus refers to Pharos obscurely in terms of its Euripidean/Herodotean tradition as the “island of Helen,” Vergil refers to Pharos obscurely in terms of its geography as the “Carpathian whirlpool” (*Carpathio...gurgite*). Although Karpathos can refer to the particular island between Crete and Rhodes, the term ‘Carpathian’ was often used by ancient poets to refer generally to the south-eastern Mediterranean Sea from Egypt to Asia Minor. Pharos would fit within these generalized geographical parameters, and Vergil’s learned audience would pick up on the reference without falling too deep into the Homeric connection.

---

398 Vergil makes this evident in how he mentions *twice* that Proteus functions under Neptune’s domain (ll. 387, 394). Cf. also Harder 2012, 403.
400 Cf. Mynors 1990, 308.
401 Ovid takes Vergil’s depiction of Proteus almost verbatim as a “Carpathian seer” (*Carpathius vates*) that lives in the “middle of a whirlpool” (*medio de gurgite*) in his own myth of how Proteus aids Peleus in capturing Thetis (*Met.* 11.229-65). It is interesting that Ovid uses the descriptor “Carpathian” to refer to Proteus himself, and not the water around Karpathos, which, in turn, one might argue, emphasizes the “whirlpool” quality of *gurges* rather than just a body of water.
402 Mynors 1990, 308. Cf. Strabo 10.5.14 and Plin *HN* 4.71, 5.36. If one takes *gurges* to simply mean “water,” this interpretation would make more sense.
But what of the gurges? The addition of gurges to describe a particular waterbody around Karpathos, however, seems to highlight not so much Pharos Island, but rather the subterranean movement of the divine seer via underwater conduit. Servius seems to think this is the case; according to the ancient commentator, Proteus was wont to travel via “undersea cave” (subter mare specus) from Pallene to Pharos (and back again), thanks to the powers of his father Neptune. Mythologically speaking, this type of travel is not unheard of, but seems to first be attested by Homer, who describes the movement of Poseidon via chariot from Samothrace to a large cave between Tenedos and Imbros. Homer describes the cave using highly karstic terms: the cave (σπέος) is naturally wide (εὐρὺ) and rests in the depths of a deep whirlpool (βαθείης βένθεσι...λίμνης). The alliteration of ‘b’ adds to the image of underwater ‘bubbling.’ Vergil is relatively vague in terms of describing Proteus’ movement, which he does using only metitur, but he seems to be drawing specifically from this Homeric episode in his introductory est in...Neptuni gurgite (cf. Homer’s introductory ἦστι δὲ ...βένθεσι λίμνης [13.32]) and later in Proteus’ departure sub vertice. Later, Vergil describes Proteus’ home as a specus (etymologically linked to the Greek σπέος), which, interestingly enough, Homer uses to describe Neptune’s subaqueous cave. The myth of Arethusa alone shows how popular this form of travel was among divine beings with any sort of relation to water, and her travel via subterranean conduit (which covers a distance of around 580 km) is described much like that of Neptune and Proteus. Karpathos Island, is located nearly halfway between Pharos and Pallene (around 550 km from Pharos and 571 km from Pallene). Geographically speaking, the underwater conduit via gurges would run directly under the island, which would make Karpathos an attractive midway stop for a traveling sea god.

403 Servius’ use of specus might suggest his looking forward to Vergil’s description of Proteus’ abode on Pallene as a specus (cf. 418), but he does not comment on this detail later.
404 Il. 13.32; cf. Connors 2016, 154-5.
405 The verb metitur generally means movement over a definite tract of land (OLD s.v. “metior” 3.a.). The verb connotes systematic measurement, and therefore a certain familiarity with the space or confidence in one’s movement over it. Cf. also Hor. Epod. 4.7, Cic. Arat. 475, and Ov. Met. 9.448.
406 Cf. l. 529 and below.
407 Cf. chapter three, section a, particularly note 27. Cf. also her travel as told by Sen. QNat. 3.26.5.4 (penetrare et agere sub mari cursum), Plin. HN 2.225 (quidam...maris ipsa subeunt vada), Verg. Ecl. 10.4 (fluctus subter labere Sicanos), Aen. 3.695 (occultas egisse vias subter mare), and Ov. Met. 5.639-40 (caecisque ego mersa cavernis l advehor).
This type of undersea travel from one whirlpool to another over far distances, moreover, was not considered out of the realm of possibility according to ancient hydrologists. As we have noted above, Aristotle highlights the frequency with which karstic streams sink underground and travel (short) distances, ultimately reaching the sea,408 but Strabo and Pausanias offer the most information about this hydrogeological phenomenon in terms of particular places. Both Strabo and Pausanias record in detail the underwater conduit of the Alpheus that flows an extensive route into the spring of Arethusa in Syracuse.409 The distance between the head of Alpheus to the spring of Arethusa (around 580 km) speaks to the sheer distance that water in subterranean conduits could travel in the ancient Greco-Roman mythic mindset. Ancient geographers, however, appear to be as equally interested in much shorter distances that subterranean waters travel. Strabo describes, with extreme doubt, the distance the Timavo travels underground via βέρεθρον out into the sea, though it lacks any whirlpool where it emerges (around a kilometer offshore).410 Pausanias describes a river on the western coast of Turkey with origins in Mount Mycale that sinks underground and “travels through the seabed” (διεξελθὸν δὲ θάλασσαν τὴν μεταξὺ) from Branchidae before rising on the opposite shore at the harbor of Panormus (no more than five km away).411

Vergil also uses the word *gurges* to describe a particular aqueous location under which Proteus grazes his flocks of seals. The metaphor of shepherding that comes to define Proteus before his capture is introduced here, so we are led to imagine the *gurges* as a grove, or an entryway into a grove of sorts where (sea)sheep can happily graze. This image would come naturally to Vergil’s audience at this point in the narrative, especially after just witnessing the lush, sub-whirlpool grottos and groves of Cyrene’s domain.412 Again, a *gurges* seems to function as a portal from which nature divinities can pass through one ‘world’ into another with ease. The presence of *gurges*, therefore, not only highlights Proteus’ domain and movement under (or across) the sea, but it seems to suggest Vergil’s karstic awareness of the hydrogeological qualities of *gurges* that were popular not only in myth but also in science. This

---

408 *Mete.* 1.13. Cf. also chapter 2c.
409 Cf. Strabo 6.2.271 and Paus. 5.7.2-3, 8.54.2-3.
410 Strabo 5.1.8.
411 Paus. 5.7.5.
412 Cf. also the descent of Iris to Thetis’ domain, where fish graze like cows (*Il.* 24.77-82).
awareness is consistent to what was previously illustrated in the epyllion during Aristaeus’ lamentations near the Peneus. Perhaps the addition of *Carpathius* to describe the *gurges* at this point in the narrative is meant to highlight the topographical nature of the island of Karpathos, much like how Vergil uses *gurges* to subtly allude to the karstological nature of the Peneus and the greater Vale of Tempi. Such a literary move does not take away from the allusions to previous sources, and could set Vergil apart from said sources through a greater awareness of a specific topography not commented on by his predecessors.

Modern geologists consider Karpathos Island a hydrogeological marvel. Recent studies have shown that the island possesses a complex hydrographic makeup as a result of its ancient limestone slabs and their positioning on a major fault line extending from Crete. Due to this tectonic interaction with highly soluble rock, numerous rivers, swamps, and basins cut away steep cliffs and deep ravines throughout the landscape. In general, the landscape promotes intense erosion, which is doubled by consistent wave-action along the limestone shoreline, high velocity winds along the summits, and swift river channels through the karstic ravines. Ancient sources mention very little about the geology, hydrology, or even the landscape in general of the island of Karpathos. Homer is the first to mention the island in his *Iliad*, but the island does not occur in literature again until Apollodorus describes it very briefly as a pit stop for the Argonauts on their journey to Crete. Diodorus says that Argive Iolchis, many generations after Minos, established a Dorian colony there, and Strabo only calls it “high” in his brief mention of the island.

Vergil could have been aware of the hydrogeological features briefly mentioned above, which we have gathered to be not only evident, but prioritized earlier in his description of Aristaeus’ descent and movement through Cyrene’s cavernous domain. Yet, it seems more likely that Vergil alludes to the island in the manner of his inspirational sources, particularly Apollonius, as the ‘midway’ point in a hero’s (or divinity’s) lengthy journey. Vergil seems to be pushing his audience to consider the landscape of Pallene much more than Karpathos. After all, it is in a cave on the shores of Pallene where Aristaeus and Cyrene

---

travel to wrestle the shapeshifting seer, and it is in this seaside cave on Pallene where Proteus tells the tale of Orpheus, which contains all the *causae* Aristaeus needs to save his bees.

Vergil’s Pallene would be today Kassandra, Chalcidice. Three peninsulas extend from Macedonia proper into the Aegean, Kassandra being the westernmost peninsula, Sithonia the middle, and Mount Athos the easternmost peninsula. We know from early Greek sources that Pallene was colonized by the Greeks around the 8th century BCE, and that different cities on Pallene revolted against Athens in the 430s BCE.\[416\] We know little regarding why Pallene was colonized, but it was quite common that Greek colonizers, especially from the 8th to 4th centuries BCE, deliberately sought out landscapes and rock formations that reminded them of their karstic homelands and, in turn, could offer bountiful fresh water.\[417\] Topographically speaking, Pallene fits the typical mold of a lush, Greek island with sandy beaches, rocky cliffs, and rolling pastures that contain many rivers and springs.

Geologically speaking, Kassandra is made up largely of sedimentary rocks, which are highly indicative of well-developed subterranean karst.\[418\] The south-easternmost shores of Pallene are comprised of steep cliffs made up primarily of coarse-grained, sedimentary rocks and overlie limestones (cf. Fig. 9).\[419\] This portion of Pallene (south of the modern town Xina) is relatively uninhabited.\[420\] Both seaside caves and inland caves, such as the caves of Aghia Paraskevi and Aphytis, dot these steep southern shores as a result of continuous wave action, wind action, gravitational forces, and geothermal forces that underlie the limestone tip of the peninsula.\[421\] In short, Pallene, especially its south-eastern most coastline, is an intensely erosive, dynamic environment that possesses many caves and very few human inhabitants.

---

\[416\] Cf. Hdt. 7.123.1, Thuc. 1.58.1, Strabo 7 fr. 27. These classical poleis were Sane, Mende, and Poteidaiia. Cf. Hansen 2004, 111. Cf. also Higgins and Higgins 1996, 111.

\[417\] Crouch 1993, 66. This point might be reflected in Proteus’ home on Pallene, which resembles in many ways his (other) home on Pharos.

\[418\] The peninsulas of Sithonia and Mt. Athos have rather different geological compositions than Pallene. Sithonia is made up mostly of granite plutons (intrusive igneous rock), and Mount Athos of granite and metamorphic rocks; Higgins and Higgins 1996, 112.


\[420\] Today, Pallene is mined for copper and magnesite, which is commonly used in the manufacturing of refractory bricks. The cliff sides along this southern coast were long ago cut off by tectonic movement across the North Aegean Fault zone, which is now observable in the deep plunges within the sea-floor right off the coastline.

\[421\] Psilobikos et al. 1988, 332: the eight Aghia Paraskevi caves are part of a geothermal system once thought to have been created solely during an early karstic event. A later study by Lazaridis et al. (2011) shows that the caves are actually hypogenic, meaning
From Vergil’s text we learn that Proteus is a “seer” (vates) who considers Pallene to be his homeland. He can travel freely across the sea, and has a chariot of fish and hippocampi (hybrid fish-horses [bipedum...equorum; “two-legged horses”]) that carry him across great distances, seemingly with ease. Additionally, Proteus spends his time as an aqueous shepherd who grazes seals as if they are sheep. The fact that Vergil describes Proteus as “cerulean” (caeruleus) only emphasizes his connection to the deep-blue sea. The color too connotes a sense of ‘wildness’ that had come to be a topos in Roman literature to describe the eyes of ferocious, usually Gallic, men.422 The ‘wild’ qualities of caeruleus combined with the ‘winding’ nature of the sea is evident in its association with snakes.423

Vergil further defines the omniscient power of Proteus the vates as a product of his relationship with Neptune, who is in control of the area through which Proteus crosses and who has ‘bestowed’ such powers to the vates (quippe ita Neptuno visum est); Proteus has the oracular power to understand the past, the present, and the future. It is up to Aristaeus, Cyrene notes, to capture Proteus (i.e. a “present” test) in order to understand the past (i.e. the “cause” of his bees’ death [morbi causam]), so that he can better guarantee himself a successful future (i.e. “outcome” [eventus]). Cyrene spends a copious amount of time repeating the fact that Aristaeus must use “force” (vis) against Proteus in order to get what he needs. Images of violence and the use of force occur six times in just five lines (vinclis capiendus [396], sine vi [398], illum flectes [398-9], vim duram [399], vincula capto tende [399-400], frangentur [400]), which intensely juxtaposes the serene, welcoming atmosphere previously experienced in Cyrene’s domain.424

Cyrene also takes time to note how she and all other nymphs “deeply respect” Proteus (veneramur) because of his omniscience. She even adds that another ocean divinity, “aged Nereus himself” (ipse / grandaeus Nereus), also venerated the divine seer. The addition of Nereus is interesting in how his own mythos foreshadows that of Proteus, which Vergil’s attentive, erudite audience would have picked up on.

423 Cf. G. 4.482 in particular.
424 Vergil’s use of trahantur (literally “dragging”) to describe how Proteus accesses information about these different times foreshadows the literal “dragging” that he will soon experience at the hands of Aristaeus.
Nereus is the son of Pontus (the “Sea”) and Gaia (the “Earth”), and father to around fifty Nereids.\textsuperscript{425} He is consistently referred to as the “old man of the sea” (ἀλιος γέρων), and dwells within the Mediterranean, but is sometimes restricted solely to the Aegean.\textsuperscript{426} Ancient Greek and Roman sources consider him to be cerulean,\textsuperscript{427} a shapeshifter,\textsuperscript{428} and a wise seer who knows all things and is always truthful.\textsuperscript{429} Much like Proteus in the Homeric myth of Menelaus and Glaucus in the Hellenistic myth of the Argonauts, Nereus wrestled with a hero (Herakles) who sought divine wisdom.\textsuperscript{430} All of these mythic attributes are consistent with those of Proteus as Vergil describes him throughout the epyllion: he is cerulean (caeruleus), an old man of the sea (senex), dwells within the Aegean (Emathiae portus), is a shapeshifter (transformat sese in miracula rerum), a seer (vates), and wrestles with a heroic figure (Aristaeus).\textsuperscript{431}

By including Nereus at this point in the narrative, Vergil adds another layer of (geo)mythical reference to an already complex hydrological schema just recently established in Cyrene’s domain; a hierarchy of water divinities has taken shape: Ocean, Neptune, Proteus, Nereus, Rivers, and Nymphs. Proteus is given prominence due to the respect given him by Nereus “himself” (ipse). Vergil does not simply add Nereus to highlight his breadth of knowledge of the major water divinities in mythology; rather, his addition of Nereus is an addition to the hydrological system he masterfully crafted around ten lines prior. Nereus’ domain encompasses the ‘broad’ and ‘barren’ sea, which is an area unlike the ‘living waters’ commanded by Neptune that contain animals and divinities. This particularly empty sea that Nereus commands, Clendenon notes, comes from his parents, who were Pontus (the primeval sea) and

\textsuperscript{427} Cf. Ov. Her. 9.13 and Sen. Oed. 508
\textsuperscript{428} Cf. Stesich. Fr. 184A and Apollod. Bibl. 2.114
\textsuperscript{431} On a metapoetic level, by calling out Nereus’ name, which in turn carries with it a particular mythos that is akin to that of Proteus, and having Nereus explicitly recognize Proteus’ power, Vergil succeeds in highlighting his Callimachean learnedness while simultaneously having Nereus hand over mythic knowledge to Proteus. This transaction/reverence could symbolize the passing-down of poetic knowledge from Homer/Apollodorus (personified as Nereus) to Vergil (personified as Proteus). In other words, the poetry of Homer, though respectful, has become very outdated (grandaeus) and requires a certain revitalization that only Vergil can provide. We must remember that vates can refer not just to an oracular seer, but also to the poet (OLD s.v. “vates” 2a). In a similar vein to how Nereus the vates (i.e. Homer) acknowledges the power of Proteus the vates (i.e. Vergil), Cyrene and her nymphs’ acknowledgement of Proteus’ divine wisdom could symbolize Callimachus’ approval of this transition of divine, poetic wisdom to Vergil. Much like the libation scene earlier (cf. chapter 4b), Vergil has Callimachus assent to his crafting of amazing poetry.
Gaia (primeval earth). Like Oceanus, Nereus is often referred to in terms of his ‘depth,’ and sometimes the access-points into his cavernous depths were whirlpools. Nereus, like Oceanus, Neptune, Cyrene (and her nymphs), many of the Flumina (“Rivers”), and Proteus (as we will see further below), possesses some common karstic resonances in terms of the vocabulary used to describe him, and he adds breadth to the hydrological system already illustrated in the Georgics.

After Cyrene introduces Proteus and the preliminary instructions for her, the matriarchal nymph elucidates her plan for Proteus’ capture. This plan involves strategic timing on Aristaeus’ part, and what follows is a lengthy warning about the specific powers that Proteus possesses as a sea-god (401-418):

`ipsa ego te, medios cum sol accenderit aestus,  
cum sitiunt herbæ et pecori iam gratior umbra est,  
in secreta senis ducam, quo fessus ab undis  
se recipit, facile ut somno adgrediare iacentem.  
uerum ubi correctum manibus uinclusque tenebis,  
tum uariae eludent species atque ora ferarum.  
fiel enim subito sus horridus atraque tigris  
squamosusque draco et fulua ceruice leaena,  
aet inquam flammæ sonitum dabat atque ita uinclis  
excidet, aut in aquas tenuis dilapsus abibit.  
sed quanto ille magis formas se uertet in  
omnis tam tu, nate, magis contende tenacia uincla,  
donec talis erit mutato corpore qualem  
uideris incepto tegeret cum lumina somno.'  
Hae ait et liquidum ambrosiae defundit odorem,  
quo totum nati corpus perduxit; at illi  
dulcis compositis spirauit crinibus aura  
atque habibilis membris uenit uigor…`

“When the sun has ascended to its highest, hottest point,  
when the plants dry up and shade becomes more appealing to the herd,  
I myself shall lead you into the old man’s hideaway, where he, now tired,  
recovers from the waves, so that it is easy for you to approach him as he lays asleep.  
When you hold him seized by hands and chains,  
the various forms and faces of wild beasts will then attempt to frustrate you.  
He will suddenly become a hairy sow, then a ferocious tigress,  
a scaly dragon, and a lioness with a tawny mane,  
or he will make the harsh din of a flame and thus slip through your chains, or he will depart having dissolved into delicate water.  
But the more that Proteus transforms himself into every form,  
the more you, my son, shall draw tight the tenacious chains  
until he becomes the sort of shape you saw

---

\footnotesize{432} Clendenon 2009, 205-6.  
\footnotesize{433} Il. 1.348 ff., 24.79.  
when he first closed his eyes in sleep.’
Cyrene says this and pours clear, perfumed water of ambrosia,
which she spread over the entire body of her son; and
a sweet breeze blew over his smooth hair
and a suitable vigor entered his limbs…”

Cyrene is quick to lay out the plan of capture: first, when it is the hottest part of the day, she will place her son close enough to Proteus in order to catch him while he is sleeping. Upon capture, Proteus will change into many forms, both animal and elemental. It is crucial that Aristaeus stay strong and hold the chains tight lest the seer get away. Cyrene then pours liquid ambrosia upon her son to give him the power he needs to combat the shapeshifting seer fearlessly.

Timing, it seems, is the most important part of the plan, in that Cyrene will only lead her son to Proteus during midday (medios cum sol accenderit aestus). Cyrene further highlights the effects of the midday sun with another temporal clause. Earlier passages of the Georgics, particularly those that illustrate the exhausting Mediterranean climate during summertime, seem to be recalled only briefly here; midday is when “plants dry up” (sitiunt herbae) and when flocks tend to congregate under the cover of shade. Proteus, Cyrene implies, is one of these shade-seeking ‘beasts’ in that his domain is a secluded “hideaway” (secreta). Much like his own flock of seals, Proteus becomes tired (fessus) from his traveling and requires sufficient rest, preferably in a place that offers shade, safety, and comfort. We can therefore infer that his secreta is a cave, and from our knowledge of speleology a specus, antrum, or spelunca.

When Aristaeus captures the sleeping Proteus, Cyrene warns him, he will turn into a number of beasts, all of which are ferociously strong, wily, and untamable.435 Cyrene describes four separate beasts in quick succession within just two lines. Interestingly, she gives two full lines to his other, more elemental, transformation. In addition to wild beasts, Proteus can turn himself into fire (flammæ) that is strong enough (acrem sonitum) to break through Aristaeus’ chains. He can also turn himself into water (aquæ) that is delicate enough (tenuis) to escape from the cuffs. In short, Cyrene highlights the elemental

435 Vergil’s Homeric source has Eidothea warn Menelaus of Proteus’ shapeshifting powers similarly to how Cyrene warns Aristaeus. Yet, Vergil has changed Homer’s panther to a tiger and Homer’s lion to a lioness. Llewelyn (1999, 42) argues that Aristaeus is actually usurping the violent nature of amor, which is itself a distinctly violent force already introduced as such in G. 3.242-6, 248. Orpheus, as we will see, will fail in this fight with amor.
ichotomy of fire and water, which is a dichotomy that Proteus emblematizes as Nature incarnate.\footnote{Cf. Segal 1966, 314-5, Putnam 1979, 285, and Nappa 2005, 197-8.} It is thus important for Aristaeus, who was just reborn from Water, to realize the fight with Fire that is directly ahead of him. Proteus’ potential cave-space, then, seems less likely to be a spelunca.

Vergil gives his audience the assurance that Aristaeus will succeed, by having Cyrene gift him divine strength via a bath in divine ambrosia. The initial act of “pouring liquid ambrosia” (liquidum ambrosiae defundit odorem) is a ritual libation, which is obviously meant to recall Cyrene’s earlier libation to Ocean; both libation scenes involve a pouring (perfundit [384], defundit [415]) of a divine liquid (liquido nectare [384], liquidum ambrosiae [415]) that ultimately gives the active protagonist strength (firmans animum [386], habilis membris venit vigor [418]). Again, elemental Water (here Cyrene, with the oracular support of Ocean, and liquidum ambrosiae itself) plays a nurturing role in the narrative that preps the hero for a battle in a landscape where no (nourishing) water is present. Immediately after this libation, Vergil describes the home of Proteus upon Aristaeus’ arrival (418-424):

\begin{quote}
...est specus ingens
exesi latere in montis, quo plurima uento
cogitur inque sinus scindit sese unda reductos,
depreensis olim statio tutissima nautis;
intus se uasti Proteus tegit obice saxi.
his iuuenem in latebris auersum a lumine Nympha
conlocat, ipsa procul nebulis obscura resistit.
\end{quote}

“...there is a massive cave
on the side of a devoured mountain where very many waves are forced together
by the wind, and where very many waves tear into its receding bays,
which is sometimes a very safe harbor for confined sailors;
Inside [this cave], Proteus is hiding behind a barrier of large stone.
The nymph positions the youth into his lair away from the light,
And she herself stands at a distance obscured in a mist.”

Immediately after Cyrene’s plan and libation to her son, Vergil introduces the landscape in which Proteus dwells, but this time with much more detail. Vergil’s illustration of Proteus’ home, much like his description of Cyrene’s domain, showcases his hydrogeological awareness of particular subterranean spaces. There is a very large cave (specus ingens) in which Proteus lives. This specus is located on the
side of a mountain (latere in montis), which has been “eaten away” (exesi) as a result of a number of erosive factors, which Vergil identifies as “wind action” (vento cogitur) and “wave action” (plurima... scindit...unda). This constant movement of winds and seawater has caused the “bays” of the cave (sinus) to recede back into the cave-space (reductos). As a result of this elemental tumult, this bay of the cave is only “sometimes” (olim) a safe harbor for sailors who have dropped anchor.

The specus, we can infer, is part of this ‘eaten away’ section of the mountain, and has thus formed through the highly erosive process of wave and wind action. Generally speaking, the landscape in which Proteus is situated is an extremely erosive environment. Verbs and adjectives with violent connotations govern the scene’s action (e.g. exesi, cogitur, scindit, reductos, deprensis), while elemental forces (e.g. plurima unda and venta) become jumbled up grammatically and syntactically, which reflects the tumultuous mixing of coastal winds and waters. We can imagine, through the mixture of sight and sound, the presence of blowholes along this coast, for many waves are “forced together by wind” (vento cogitur) that “cut into the receded bays” (in sinus scindit...reductos), which would emit a roaring sound as air is violently forced through channels in the coastal rock.

Proteus’ cave, from a speleologist's point of view, would easily fit the mold of a typical littoral, pseudo-karst cave. In the Mediterranean, littoral caves are usually located immediately landward of the shoreline, sometimes near the beach, sometimes within precipices or on mountainsides. We know from Vergil’s text that Proteus’ specus would qualify as a littoral cave in its proximity to the sea (as evidenced by the continuous wave action against the cave’s bays) as well as its attachment to a hewn mountainside (exesi latere in montis). Pseudo-karst caves, typically consisting of a single chamber, are the most common type of littoral cave in the Mediterranean. Coastal weathering promotes continuous modification of these cave-spaces, and can create a number of different cave systems. Proteus’ specus, like a typical pseudo-karst cave, has been formed mainly due to wave action (plurima unda) that has quarried out voids

---

437 Mynors (1990, 311) argues that the sinus is of the specus and not of the breaker immediately offshore.
438 Cf. chapter 3b and in particular G. 3.252-254 for similar erosive wave action against exposed cliff sides.
440 Ibid. 281, 288.
into the rocks of the cave. This *specus*, we can assume, contains weathering pockets from wave and wind action (which is a typical feature of Tafoni caves) as well as boulder deposits, as evidenced from the *obice saxi*, (which is a typical feature of Talus caves). The forthcoming wrestling scene and Proteus’ quick departure suggests that his *specus* has only one chamber.

The addition of *olim* (“sometimes”) suggests that this space is rarely welcoming to sailors, or humans in general, and the oscillating nature of the topography is amplified by the juxtaposition of *tutissima* (“very safe”) with the raucous images that came immediately before it. Mynors, moreover, notes that the presence of sheltered sailors here, as well as the *size* and secluded properties of the cave in general, suggests that this cave really exists, and that Vergil is tapping into a particular location as he describes Proteus’ home.441 I would go further and suggest that Vergil is quite attuned to the particular topography of Pallene in this description of Proteus’ cave, which suggests that he is looking at a particular cave on Pallene for inspiration. We know from modern geological reports that Pallene as a whole possesses a highly erosive environment, especially along the south-eastern portion of the peninsula, which is comprised of softer limestones that are constantly battered by Aegean waves. It would make sense, upon simple observation of the coastline, that this part of Pallene would be the perfect place to situate the sea god: there are many secluded beaches and caverns that constantly face the brunt of waves and wind, and that would function as secluded harbors for sailors on days where winds and waves are calm.442

Proteus, we learn, is “inside” this cave-space (*intus*) and hidden behind a “barrier of rock” (*obice saxi*). Again, his habitual, animalistic nature is evident in how he rests in this ‘hideaway,’ which Vergil here calls *latebrae* (“lair”). The *in latebris*, however, amplifies the seclusion and potential danger of the environment, for *latebrae* are usually specific hiding-places for animals or other wild creatures.443 This,

---

441 Mynors 1990, 311.
442 Vergil could also be highlighting the erosive hydrology of Pallene in an effort to remain consistent with (or allude to) the island of Pharos, where Homer places Proteus and whence Vergil’s Proteus has arrived at Pallene. According to Strabo, the shores of Pharos are covered in rocks (*πρὸς δὲ τὴν πεπλάτησιν τοῦ μεταξὺ πόρου καὶ πέτρας εἶταν αἱ μὲν θάλασσας αἱ δὲ καὶ ἔξωκοσσας*), and these rocks roughen up the waves that come from the open sea (*μερικῶς πάντας ὑπὸ τὸ προσπέφεσαν ἐκ τοῦ πελάσιον καὶ πόλεικος κλυδώνιον* (17.1.6)). Homer, however, hardly mentions anything about the landscape of Pharos in his own Proteus episode.
443 Cf. OLD s.v. “latebra” 1b. Cf. in particular Lucr. 6.766, Tib. 3.9.9, Liv. 30.13.7, and Ov. Fast. 5.177. Earlier in the *Georgics*, Vergil uses *latebrae* to describe the secluded home of threatened vipers (3.544).
combined with the fact that Aristaeus is placed “away from the light” (*aversum a lumine*), heightens the suspense of the action to come while reflecting the nature of the *specus* as a naturally dark and threatening place. Cyrene seems to know this, for she shrouds herself in mist to view her son at a safe distance away.

It should be noted too that the transition from Cyrene’s second libation to the *specus* of Proteus is overtly instantaneous. Before Vergil describes Proteus’ *specus*, Cyrene had just finished explaining the plan of capture to her son, which we can assume happened in her *umida regna* after her libation to Ocean. The second libation of Aristaeus also appears to occur within her domain, as is evidenced by the present tenses of *ait* and *defundit* and a lack of ‘sequential’ words like *deinde*, *tum*, *tunc*, or even *at* that would indicate the passing of time. Instead, we get an immediate transition from Cyrene’s libation and its effects to the cave of Proteus. The spatial whiplash that the audience might have felt, and which Vergil seems to highlight, is evident in how this transition from one subterranean space to another takes place over one single line. According to Murgatroyd, converging and returning movement draws attention to significant places.444 The slow, detailed descent of Aristaeus into his mother’s watery domain not only skips unnecessary detail for the sake of rapidity, but it complements the atmosphere of the scene, which is distinctly mystical and welcoming. The (lack of) movement to Proteus’ domain does seem to complement the atmosphere of his abode, which possesses an overwhelming sense of urgency and angst.

Yet, this instantaneous movement itself would not have been that far-fetched if one considers the mythological and hydrogeological context of the scene. Rather, I would argue, the lack of any explicit movement befits the migration from one place to another via subterranean conduit. Firstly, the audience would have already been placed into a specific, hydrological frame of reference upon the mentioning and descriptions of notable water divinities with karstic implications, such as Peneus, Arethusa, Ocean, and Proteus. As we have seen, and will soon see in the embedded narrative of Orpheus, movement through space, particularly in connection with rivers, encompasses both the outer tale of Aristaeus as well as the inner tale of Orpheus.445 These specific rivers and sea divinities, moreover, travel in a particular fashion:

underwater via subterranean conduit. Aristaeus himself arrived at his mother’s _thalamus_ via subterranean conduit, so it would not be absurd to suggest that a similar type of movement is implied by this instantaneous transition in space and time across one line (or conduit) of text!

Hydrogeologically speaking, interconnections of freshwater and saltwater can occur in littoral cave systems between terrestrial and marine catchments. In other words, it is not out of the realm of hydrological probability that the freshwater, terrestrial cave-complex of Cyrene under the Peneus could be connected via subterranean conduit or catchment to the saltwater, littoral cave-complex of Proteus. Modern geologists are aware that inland freshwater can flow underground toward the ocean when rainfall infiltrates the soils and streams and gathers in a sloping subterranean aquifer. Sometimes the reemergence of this once inland freshwater can occur many kilometer offshore. Early modern reports indicate that seabed pathways can transport freshwater up to 60 kilometers offshore. Today, however, that distance has increased, for water tracers have shown that inland freshwater can travel around 70 kilometers, sometimes up to 120 kilometers away from the source, usually in noncoastal areas.

From an ancient Greco-Roman perspective, the distances of many of these seabed conduits far exceed these aforementioned limits, but the most common, identifiable feature of these subterranean conduits is the point where the terrestrial water ‘disappears.’ It is more often than not that these disappearing streams flow directly into the sea, which is often called the ‘mouth’ of the stream, and from the sea (via subterranean pathway) they arise elsewhere far away, sometimes on land. If we are to thus consider Aristaeus and Cyrene’s movement from the Peneus to Proteus’ _specus_, it would be most appropriate to begin that movement at the mouth of the Peneus, which flows directly into the Aegean. The distance between the mouth of the karstic Peneus (as identified as _sacrum caput_ and _gurges_) to the south-eastern coast of karstic Pallene (as identified as _gurges_) is around 85 kilometers, which is not only well within the _mythological_ range of subterranean streams that disappear and reappear through _gurges_, but also well

---

447 Culver and White 2005, 225.
448 Clendenon 2009b, 293.
449 Clendenon 2009b, 300.
within the plausible range of observable sebed conduits found throughout the Mediterranean, which oftentimes have karstic whirlpools at their sources/heads.

After Vergil has situated everyone around Proteus’ cave, the poet details the arrival of Proteus at his specus, but only after a lengthy description of the arid climate that encapsulates the cave-space (425-436):

```
iam rapidus torrens sititinis Sirius Indos
ardebat caelo et medium sol igneus orbem
hauserat, arebant herbae et cau flamina siccis
faucibus ad limum radii tepefacta coquebant,
cum Proteus consueta petens e fluctibus antra
ibat; eum uasti circum gens umida ponti
exsultans rorem late dispergit amarum.
sternunt se somno diuersae in litore phocae;
ipse, uelut stabuli custos in montibus olim,
Vesper ubi e pastu uitulos ad tecta reducit
auditisque lupos acuunt balatibus agni,
consedit scopulo medius, numerumque recenset.
```

“Now swift Sirius, who parches the thirsty Indians, was blazing in the sky and the fiery sun had consumed the middle of its course, the plants were burning and the sun’s rays were cooking the rivers, whose dried channels were voided and whose waters were parched to mud, when Proteus, now seeking his accustomed caves, was departing from the waves; around him the watery race of the vast ocean spread far and wide a brackish spray as they leapt up. Seals, spread out along the shore, lay down in sleep; And that seer recounts their number in the manner of a shepherd sitting in the middle of a rock on the mountains when Evening calls back calves from the pasture to their home and when lambs rouse wolves with their audible bleating.”

Immediately the scene is set for capture, and Proteus, who retreats into his specus from the waves, does exactly what Cyrene foretells. Vergil, however, elaborates the particulars of a scene that Cyrene does not offer to her son. These details underline the intensity of a climate and an image of a landscape constantly battered and re-shaped by acutely erosive forces.

The climate during the time of capture would best be characterized as intensely erosive, which mirrors the highly erosive landscape of Proteus’ own home. Within just four lines, Vergil uses around twelve words to describe Pallene’s parched climate. Many adjectives highlight the intense heat (rapidus, torrens, igneus, and siccis), as do many nouns (Sirius, sol, and radii). The verbiage (ardebat, arebant,
tepefacta, and coquebant), in addition to the aforementioned descriptors, especially the Dog Star Sirius, underscores how unbearably hot and inhospitable this landscape is.\textsuperscript{450} The alliteration of ‘s’ in 425 reflects the sizzling Sirius as it sits in the sky. Other verbs and descriptors highlight particular erosive processes already seen before in the \textit{Georgics}. The sun, rather than ascending to the sky (\textit{accenderit}), as Cyrene describes, has actually “swallowed” (\textit{hauserat}) its midday path, much like how the earth tends to “gape open” (\textit{dehiscunt}) during periods of intense heat.\textsuperscript{451} Furthermore, we again witness plants that are parched (\textit{arebant herbae}), rivers that become cavernous (\textit{cava flumina}) as a result of their channels drying up (\textit{siccis faucibus}), and their waters turning to mud (\textit{limum}). Upon reading this intense description of summer heat, Vergil’s audience would have been led to recall the aforementioned desiccation episodes earlier in the \textit{Georgics}, and therefore would approach the following scene with a sense of anxiety.

With a temporal clause, Vergil transitions quite abruptly to a scene that seems to oppose the preceding image of heat and fire with one of watery coolness and relaxation. Proteus, seeking his customary caves (\textit{antra}), surrounds himself with seals that happily spray briny mist (\textit{rorem amarum}) as they bask on the beach. Vergil stays consistent in how he depicts Proteus and his authority, which is over the “vast sea” (\textit{vasti ponti}) and its “watery inhabitants” (\textit{gens umida}). The image of Proteus and his reign recalls that of Cyrene, who too possesses a “watery kingdom” (\textit{umida regna}) comprised of caves, but her cavernous domain is full of water that is far from ‘briny’ and inhabitants that are far from ugly.\textsuperscript{452}

The simile between Proteus and the typical georgic shepherd reaches a climactic point upon his arrival at Proteus’ \textit{antra}. His actions mirror those of a shepherd, and the landscape, which is comprised of mountains (\textit{montes}) and cliffs (\textit{scopuli}), only strengthens this simile. Vergil never loses sight of the natural landscape during his detailed descriptions of notable characters and their cave-space. What follows this lengthy scene-setting is a swift narration of Aristaeus’ conquest over Proteus (437-453):

\textsuperscript{450} The rise of Sirius marks the hottest time of the year in the Mediterranean. Cf. Tib. 1.7.21, Verg. Aen. 3.141, 10.273, and Plin. \textit{HN} 8.152.

\textsuperscript{451} Cf. chapter 3b and in particular G. 1.332-337, 1.476-480, and 3.432-434.

\textsuperscript{452} Sea caves, specifically secluded sea caves, are universally favored basking and breeding grounds for seals; cf. O’Nolan 1960, 131 and Culver and White 2005, 224. Even today, seals claim most of the Aegean as their home, and would find the isolated coastline of Pallene to be a suitable place to rest from the waves.


“When an opportunity offered itself to Aristaeus, he rushes the old man with a great roar, hardly allowing him to rest his weary limbs, and seizes him lying down with handcuffs. That seer, now face-to-face and not forgetting his art, transforms himself into every marvelous thing: fire, a horrible beast, and flowing water. When no trickery achieved any sort of escape, the seer, now subdued, Finally turns back into himself and speaks in the voice of a human: “Who commanded you, most audacious youth, to enter our abode? What do you seek here?” he said. And Aristaeus: “You know, Proteus, you know [the answer], for nothing can deceive you, so stop desiring to deceive me! Having followed the precepts of the gods, we have come here to seek an oracle for our wearied circumstance.’ Aristaeus uttered this, and to this response the seer then, with great force, twists his burning eyes, greenish-grey in color, And thus loosens his mouth to these omens, gnashing heavily.”

The capture of Proteus happens relatively quickly compared both to the amount of time Cyrene takes to prepare her son as well as to the amount of time Vergil takes to describe the landscape and scorching climate. During this quick succession of events, Vergil includes only the import details, mainly that Aristaeus uses a large amount of force (e.g. *componere*, *magno clamore*, *ruit*, *manicis occupant*, and *victus*) to capture the shapeshifter, that Proteus transforms (*transformat sese*), and that his transformations come to no avail in the end.\textsuperscript{453} What is most interesting, however, is what Vergil prioritizes in his description of Proteus’ transformations. The specific beasts that Cyrene warned her son to expect are

\textsuperscript{453} The struggle between Aristaeus and Proteus not only recalls the Homeric struggle between Menelaus and Proteus, or the Apollonian struggle between Jason and Glaucos, but also the forceful capture and binding of Silenus by Chromis and Mnasyllos, who are aided by the nymph Aegle, in Vergil’s sixth *Eclogue*. 

119
bundled into a singular “horrible beast” (*horribilem feram*). Proteus does, however, transform into both fire (*ignem*) and water (*fluvium liquentum*) as Cyrene predicted. What Vergil seems to underscore, then, is the fluid rapidity between each particular transformation, which is evident in the three connective *que*’s and in the fact that all of his transformations happen in just one line in the action-packed present tense. Moreover, Vergil’s summation of beasts into one entity, along with his inclusion of opposing fire and water, fits with his introduction to the transformation: “[Proteus] transforms himself into every marvelous thing” (*omnia transformat sese in miracula rerum*). The presence of *miracula* suggests ‘amazing visuals’ that Aristaeus witnesses during the bout but can only be understood abstractly in the moment. *Miracula*, combined with *omnia* and the genitive *rerum*, ought to also draw the reader’s attention back to Ocean, who, like Proteus, is capable of controlling everything (*pater rerum*) as an elemental, thus naturally abstract force, whom Aristaeus also marveled at (*mirans*) earlier as he descended through the Peneus.

Much more time is given to the dialogue between Aristaeus and Proteus than the actual battle, which Cyrene does not particularly warn her son about. Proteus’ slick rhetoric, much like his dexterous physical abilities, does not beguile Aristaeus, fortunately, and Proteus offers up the portents to the bold hero. Proteus, interestingly enough, struggles to deliver the *causae*, and Vergil describes the seer’s powers in a way that foreshadows the Cumaean Sibyl’s prophecy to Aeneas – Proteus contorts his eyes and gnashes his teeth.⁴⁵⁴ The fact that Proteus’ eyes are *glauci* (“greyish-green”) befit his watery domain, but his fiery nature remains, even in his humanoid form, in that his eyes continue to “burn” (*ardentis*) as he speaks.⁴⁵⁵ After Proteus tells Aristaeus the fate of Orpheus, he swiftly departs into the ocean (528-530):

> *Haec Proteus, et se iactu dedit aequor in altum,*<br>  *quaque dedit, spumantem undam sub uertice torsit.*<br>  *at non Cyrene, namque ulter adfata timentem.*

> “Proteus divulged these things and threw himself into the deep sea.<br>  And where he entered he turned up a foamy swell under the whirlpool.<br>  But not Cyrene, for she spoke further to her fearful son.”

---

⁴⁵⁴ Cf. *Aen.* 6.45-51. The possessed prophet of Apollo (also called a *vates*) rolls her eyes and gnashes her teeth before she can lay out the fate of the hero Aeneas. Cf. also Putnam 1979, 285.⁴⁵⁵ Cf. the ‘sea-green’ eyes of other water divinities in *Il.* 16.34 and *Ov. Met.* 13.906.
The departure of Proteus after his tale, specifically 528, is taken directly from Homer: ὡς εἶπὼν ὑπὸ πόντον ἐδύσετο κυμαίνοντα (“having spoken thus, he plunged into the swelling sea”).\(^{456}\) Vergil, however, adds an extra line to describe the watery effects of his departure. After plunging himself into the sea, Proteus turns up a “foamy wave” (spumantem undam) under the crest of the swell (sub vertice) which he had created through his plunging. It seems most likely that Vergil here is attempting to outdo his Homeric source through a more visually detailed poetic description of the departure, but his addition of sub vertice, I would add, remains consistent with the function of (karstic) gurgites described before and throughout the epyllion.\(^{457}\) A vertex, from which we get the English ‘vortex,’ is synonymous with gurges in this watery context – a “whirlpool.”\(^{458}\) With this word Vergil remains consistent in how he depicts these whirlpools as divinely-influenced portals between the surface and subterranean worlds.

The presence of vertex here, combined with the fact that Proteus is able to easily and quickly plunge himself back into the sea, further specifies what sort of littoral cave Proteus calls his home. Modern speleologists would thus classify Proteus’ specus as a ‘pseudo-karst sea cave.’ When a coastal pseudo-karst cave has a seawater connection, it is called a ‘sea cave.’ Its entrance(s) and exit(s), therefore, could be a result of karstification, wave action, or a hybridization of both (cf. Fig. 10). In the case of Proteus’ sea cave, wave action seems to be the primary erosive force that has carved out its interior. Yet, the presence of a vertex (gurges) could be suggestive of karstic terrain below the waves, and therefore Proteus’ escape through the whirlpool might entail his return to the whirlpool in Karpathos, Carpathian waters, or Pharos Island specifically.\(^{459}\) Proteus’ forceful ‘leap’ into the vertex implies that the bubbling discharge would only be a few meters offshore, and would thus connect to his pseudo-karst sea cave.

\(^{456}\) *Od.* 4.570.  
\(^{457}\) Not only does Vergil attempt to outdo Homer in terms of poetics, but in terms of narrative, Vergil departs from his Homeric source quite explicitly. Powell (1970, 425) first noted how the addition of at non Cyrene functions as an abrupt signpost to his readers that Vergil will no longer look to his Homeric model for the following mythic narrative. In book four of the *Odyssey*, the nymph Eidotheia, whom Cyrene is based on, immediately departs into the water alongside Proteus after he delivers his message to Menelaus.  
\(^{459}\) If Proteus’ cave was formed as a result of both karstic freshwater (as possibly evident from vertex, but mostly evident in the actual geological makeup of Pallene) and brackish sea water, speleologists would classify his sea cave as ‘flank-margin,’ which is a common type of cave throughout Mediterranean islands.
b. Erosive Interactions in the Georgic Specus

The ‘cave’ as it pertains to the Proteus episode of the epyllion of Aristaeus functions rather differently than the cave of Cyrene, although both cave-spaces can be understood as the ‘home’ (domus [363, 446]) of their respective elemental deities. Firstly, Vergil uses different vocabulary to mark a distinction between this type of cave-space and that of Aristaeus’ mother; Vergil introduces Proteus’ cave first as a specus, which signals a natural (or artificial) cavity below the earth’s surface or above it near cliff sides. Specus typically function as places of refuge for monsters or divine beings. A specus, therefore, can be interchangeable with antrum, which Vergil seems well aware of from the fact that he later describes the ‘caves’ into which Proteus retreats from the waves as antra. The secluded aspect of Proteus’ cave is reinforced twice throughout the episode when Vergil uses secreta (403) and latebrae (423) to specify his seaside abode. Those words, combined with the violence of the landscape, climate, and barrier stone (obice saxi) would make this cave distinctly remote and cloistered. Vergil’s vocabulary alone tells the audience that Proteus’ secluded, rough cave is quite different than that of Cyrene’s welcoming grotto.

Proteus’ specus, moreover, functions at a deeper level metaphorically. The cave represents the dormant, unredeemed, and violent forces of nature witnessed time and time again throughout the Georgics. These destructive ‘forces’ of nature have their origin in competing elements, which Vergil depicts in the epyllion’s characters, setting, and plot. Proteus himself emblematizes Nature in all of its mutable qualities. As a shapeshifter, he is able to transform ‘pure matter’ into different forms, many of which are divinely decorated. Proteus contains within himself the mutable potential of every element in nature (omnia miracula rerum), and thus exists as simultaneously ambiguous and wonderful, whom Segal considers “a mystery of life itself.”

460 Ovid uses antrum to describe the cave of Thetis, whom Peleus wrestles for marriage with the help of Proteus (Met. 11.249).
461 Clendenon 2009, 204. According to Francis Bacon, Proteus the Shapeshifter is a stand-in figure for “Matter” itself (Pesic 1999, 84).
462 Segal 1966, 314-5.
mythic being. It would only make sense that such an omnipresent force be equally omniscient, or be able to witness Nature atemporally.

Even the name ‘Proteus’ (‘First One’) suggests primacy, not just in terms of his mythic origins but also as a narrative force and elemental power; Proteus, Nappa (2005) argues, recalls the opening invocation of the *Georgics* to the innovative gods who first introduced agricultural skills to mankind. Vergil utilizes Proteus as the “first one,” I would argue, to force his audience to recall elemental Water, which, according to Thales, is the origin of everything, and which Vergil introduces in Cyrene’s cave with the libation to Ocean; both divinities, Proteus and Ocean, come from water and possess the ability to control universal elements: Proteus as a divinity who can shapeshift into everything (*omnia miracula rerum*), Ocean as a primordial father of everything (*pater rerum*). The ‘Elemental’ Proteus is most evident in his ability to transform into fire (409, 442) and water (410, 442), but he, like elemental nature, is not useful to mankind unless he is made to be through a forceful, georgic hand, which must possess both *tenacitas* and *duritas*.

The wrestling itself between Proteus, a stand in for mutable Nature, and Aristaeus, a stand in for the *Georgic* farmer, is characterized by violence and labor in its most agonizing form. Vergil brings his Homeric model into the agricultural world of the *Georgics* with the constant mentioning of *vincla* and *manicae*, which are the symbolic ‘tools’ of the farmer in his constant battle against the indifference of Nature. The fact that Aristaeus wrestles with only the ‘elemental’ transformations of Proteus and not the particular beasts that his mother warned him of highlights what Pesic (1999) calls the “moment of

---

463 Proteus can be considered a ‘god’ in his ability to traverse the open sea (388-9), transform himself (406, 441), and utter prophecies (392-3, 397, 452). Proteus is also an ‘animal’ in that he seeks shelter in a cave (429), lives among seals (395) in the vast ocean (430), and can transform himself into numerous beasts (406-408, 442). Proteus is a ‘man’ in that he is a shepherd (395, 433-6) and rather sympathetic to Orpheus’ sufferings (cf. Stehle 1974, 366).
465 Cf. Heraclitus’ *Quaest. Hom.* 67.2-4 on Homer’s *Ody.* 4.384. Proteus’ name could also mean the “first leader” if we take him to be the mortal ruler of Egypt.
466 Nappa 2005, 197.
467 Nappa 2005, 197-8. Proteus has also been interpreted not just as an elemental force, but as a “narrative force” by Baumbach (2013). Cf. also Farrell 1991, 166.
468 Cf. Llewelyn 1999, 44. Homer’s Proteus is subdued by strength (i.e. hands) alone. The ritualistic tone of Vergil’s wrestling scene, Campbell (1982, 112) notes, would have been ruined if Vergil kept in the Homeric scene of the hero hiding in smelly seal skins to surprise the seer.
creation;” conquest over Proteus (i.e. Nature), then, is the moment of creation, or enlightenment, for Aristaeus, which is “always charged with divine energies ready to disclose their portent to the properly prepared seeker.” The result of this conquest is the obtaining of divine *causae*, which the brash hero would have never been able to get if he had stayed in the nurturing cave of his mother.

The energized force that defines Proteus’ *specus* is not only present in its main inhabitant and in the wrestling bout that takes place there, but also in its landscape and climate. The mutability that defines Proteus himself is equally matched by the sheer erosive mutability of his abode. Briny waters mixed with blowing gales constantly barrage the rocky shoreline, while the blazing heat and its unrelenting dryness parch the surrounding plants and waterbodies; in short, every element (earth, air, water, and fire) is in constant flux within Proteus’ realm at the moment Aristaeus approaches him. This ever-changing environment, as noted above, is still observable on the south-eastern coast of Pallene to this very day.

The *specus* of Proteus, as a mythic cave that could very well have been inspired by an actual cave on Pallene, therefore, opposes the *spelunca* of Cyrene both geologically and mythologically; the *specus* contains a violent mixture of winds, waters, fire, and earth. Its waters are “brackish” (*amara*), its fires are unrelenting, and the rocky terrain is not for weaving but for wrestling. All of Proteus’ bestial transformations (sow, tigress, dragon, and lioness), as well as his herd of seals, would find a *specus* (or *antrum*) a suitable place to call their home, whereas Cyrene’s nymph sisters would shy away from such a dangerous and uncivilized locale. Yet, both caves are necessary for the hero to enter lest he fail to revive his bees. Cyrene’s *spelunca* offered to her son a place of protection, a nurturing, highly feminine grotto that gives him the power, through ritualistic libations, to tackle what comes next, which is the highly exposed and violent cave of Proteus where he must stand on his own. Aristaeus, now within the *specus*, takes an individual stance in his quest to save his bees by ritually binding the prophetic shapeshifter.

---

469 Pesic 1999, 88.  
471 Cf. Ross 1987, 225. Vergil may very well have been looking at Polyphemus’ cave in the *Odyssey* for inspiration; everything within the cyclops’ cave (*σπέος*) reeks of death, wildness, and fear, where the hero must rely on his ‘masculine’ call to violence lest he die and fail to regain his *nostos*. Any potential for a connection between Aristaeus and Odysseus/Menelaus is further emphasized by Cyrene’s inconspicuous presence during the bout; the fact that she stands at a distance “shrouded in mist” (*nebulis obscura*) might recall Athena’s misty appearance on the shores of Ithaca nearby Odysseus at the Cave of the Nymphs. On the
The relationship between the two caves represented thus far in the epyllion reflects, overall, the vast subterranean world as understood by the Roman elite. Romans assumed Greek conceptions of the world in terms of its nature, shape, and structure. This becomes apparent in Vergil’s epyllion not only in how Vergil portrays Ocean as all-encompassing and all-fathering, but also how Cyrene’s subterranean grotto possesses labentia flumina and Proteus’ cave possesses acres flammans; the Greeks, and in turn the Romans, envisioned a subterranean world penetrated by networks of caverns and tunnels containing water and fire, which is exactly what Vergil illustrates. The difference between cave-spaces and, in turn, how Vergil perceived of them as naturally ‘energized’ spaces might lie in how the ‘elements’ themselves were differentiated among Roman physiologists. According to Seneca:

...Aegyptii quattuor elementa fecerunt, deinde ex singulis bina. Aera marem iudicant qua uentus est, feminam qua nebullosus et iners; aquam uirilem uocant mare, muliebrem omnem allam; ignem uocant masculum qua ardet flamma, et feminam qua lucet innoxius tactu; terram fortiorem marem uocant, saxa cautesque, feminae nomen assignant huic tractabili et cultae.

“...The Egyptians posited four elements, from each of which a pair is formed: they consider that air is ‘male’ when it is wind, ‘female’ when it is misty and still; they call the sea ‘masculine water’ and all other water ‘feminine;’ they call fire ‘masculine’ when it burns with a flame, and ‘feminine’ when it shines harmless to the touch; they call stronger earth, such as rocks and crags, ‘masculine,’ and they give the name ‘female’ to workable, cultivated soil.”

Although Seneca flourished decades after Vergil, his understanding of Nature’s elements (elementa) exudes a distinct Georgic flair. These elements are personified as competing, gendered forces, and they map directly onto how Vergil utilizes said elements in his epyllion; ‘Masculine’ air as ‘wind’ dominates on the other hand, the fact that she remains beside her son after Proteus’ escape (at non Cyrene [530]) is a direct departure from Vergil’s Homeric model of Eidothea in Odyssey book four; cf. Powell 1970, 425.

474 Sen. QNat. 3.14.2.2-10. The fact that Seneca explicitly names the Egyptians as holding this view, in addition to how these elements are portrayed and understood by both authors, could very well point to a particular scientific (Egyptian?) source that influenced both Seneca’s research and Vergil’s Georgics, particularly book four, which is concerned mainly with the Egyptian ritual of bugonia.
Proteus’ domain (ventum [419]), while ‘feminine’ air as ‘mist’ characterizes Cyrene herself (nebulis obscura [424]) as she stands on the shore of Pallene. ‘Masculine’ water is sea water, which, again, dominates Proteus’ domain (aequor [388, 528], pontus [430]), while ‘feminine’ water is “all other water” (omnem aliam [aquam]), which includes, one would argue, lakes (lacus [364]), springs (caput amnis [319, 373], fons [376]), and rivers (amnis [319], flumen [333, 360, 366, 383]), all of which make up Cyrene’s umida regna. ‘Masculine’ fire burns with a flame, which is evident in Proteus’ transformation against Aristaeus (acris flamma [409] ignis [442]) and as the sun rises over his specus (aestus [401], igneus [426]). ‘Feminine’ fire, Seneca tells us, only shines harmlessly (lucet innoxius), which is evident in the aftereffects of Cyrene’s libation to Ocean (adolescent ignibus arae [379], flamma reluxit [385]). Finally, ‘masculine’ earth consists of rocks and crags (saxa cautesque), which make up the entirety of Proteus’ cave space (exesi in montis [419], obice saxi [422], scopulus [436]), while ‘feminine’ earth includes soils that promote agriculture and herding, which extend throughout Cyrene’s ancestral Vale of Tempe (felices silvae [329], stabula [330], messes [330]).

In short, the subterranean world as understood by Vergil is one of mutability and energy, which takes the mythical form of portentous, watery caves inhabited by divine beings. Yet, within his myth exist accurate reflections in form and function of particular cave spaces (both karstic and pseudo-karstic) that actually dot the Mediterranean world. As the second major subterranean space into which the protagonist hero descends, Proteus’ specus will become the place where both Aristaeus and the seer delve even deeper into the origin of their present tribulations – an origin in the form of an embedded tale that discloses to Aristaeus, and the audience, how best to interact with Nature’s laws.
Chapter 6 – Orpheus’ *Antra*

a. A Hydrogeological Reading of *Georgics* 4.453-527

Vergil’s geological awareness is not only evident in how he depicts cave-spaces as part of the ‘accessible’ (or observable) world of myth, but also how he depicts them as part of the ‘inaccessible’ world of myth, particularly the Underworld. How Vergil engages with the underworld and Orpheus’ travels in his embedded narrative reflects common perceptions of the ultimate subterranean domain hovering around Roman authors during Vergil’s time. Yet, his treatment of the cavernous underworld remains consistent with the hydrogeological picture thus far established in the narrative.

The aqueous seer lets loose one of the most famous embedded tales in Greco-Roman literature. The story, which follows the bard Orpheus and his double loss of his betrothed Eurydice, was well known in antiquity, yet Vergil is highly innovative in his own representation of the tale in that his Orpheus tragically fails to bring his beloved back from the dead.\(^{475}\) The tale itself, which lingers on the tongue of Proteus, is to Aristaeus as much a warning as it is an outline of the *causae* to why his bees have died; trust in the divine order of things, or Nature’s laws, is paramount to a successful life as a farmer and, in turn, regeneration in general. The *durus* farmer who possesses *tenacitas* must understand these *causae* in order to correctly utilize the natural *praecepta* that Jupiter once bestowed upon all mortal beings (1.118-146). Orpheus, who is the poet *par excellence*, lacks any adhesion to the divine laws of Nature held to such esteem by the *Georgic* farmer, and as a result experiences a twofold death. Thus, the audience is left with

\(^{475}\) Cf. Clark 1979, 121. Apparently Orpheus’ visit to the land of the dead has no known relation to the Orphic Mysteries, though the descent must at one time have had some sort of mystical significance, according to Clark (1979, 98). Vergil might have been inspired by the legend that Aristaeus was born of Cyrene on Mount Orpheus (cf. Nigidius Figulus *apud* schol. Germanic 154, 12 Breys) or that after his death Orpheus became an angry demon until he was ultimately appeased by a sacrifice (cf. Conon *narrationes* 45).
an overwhelming sense of sympathy for Orpheus in their ability to connect the unsuccessful tale of Orpheus with that of the successful Aristaeus.\footnote{Vergil uses this embedded tale strategically to both frame and enhance the greater myth of Aristaeus, which, in turn, both frames and enhances the embedded tale. We as readers are left to see on the narrative and moral level an analogue between the two male heroes; cf. Campbell 1982, 105 and Conte 2001, 48. In this way, Vergil is engaging with a form of literary creation that was popular among neoteric authors (Cf. Catullus 64 and the embedded tale of Ariadne’s abandonment by Theseus within the larger epyllion of Peleus and Thetis).}

In terms of the embedded tale’s hydrogeological information, the tale loses none of its connectivity to the broader epyllion; in other words, Vergil remains consistent in his framing of the hydrological cycle and the function of cave-spaces already illustrated in the epyllion during both the Cyrene and Proteus episodes. Furthermore, the topography of the \textit{Georgics’} Underworld shares many qualities, mostly karstic, with the world above, which appears to be a widely accepted view during Vergil’s lifetime, and which appears to have greatly influenced his \textit{Aeneid} later on.

Proteus begins the tale of Orpheus by relaying the \textit{causae} of Aristaeus’ loss of bees: the death of Eurydice as a result of Aristaeus’ violently amorous advances. What follows is the immediate reaction of Eurydice’s nymph friends, who will eventually be identified by Cyrene as the individuals that need to be appeased to regain the bees (453-63):

\textit{Non te nullius exercent numinis irae;}
\textit{magna luis commissa: tibi has miserabilis Orpheus}
\textit{hauquaquam ob meritum poenas, ni fata resistant,}
\textit{suscitat, et rapta grautier pro coniuge saeuit.}
\textit{illa quidem, dum te fugeret per flumina praeceps,}
\textit{immanem ante pedes hydrum moritura puella}
\textit{seruantem ripas alta non uidit in herba.}
\textit{at chorus aequalis Dryadum clamore supremos}
\textit{impleuit montis; flerunt Rhodopeiae arces}
\textit{altaque Pangaea et Rhesi Mauortia tellus}
\textit{atque Getae atque Hebrus et Actias Orithyia.}

“The ire of some divinity harasses you:
You are suffering a great crime: miserable Orpheus
stirs up these punishments for you, not at all deservedly,
unless the fates were to oppose it, and he rages gravely for his wife
who was taken. That girl indeed, while she was fleeing you headlong across the riverbank,
soon to die, did not see before her feet the monstrous snake
keeping to the banks in the tall grass.
And a chorus of Dryads, all her friends, filled the highest mountains
with a clamor; the Rhodope summits wept
as did lofty Pangaea and the Thracian land of Rhesus
and the Getae and the Hebrus and Orithya of Attica.”
The reasoning or causes behind Aristaeus’ loss of bees, Proteus tells him, is the result of some divinity’s anger (\textit{irae}) towards him. The anger, it seems initially, is coming from Orpheus, who has lost his wife as a result of Aristaeus’ own actions. Proteus tells Aristaeus that the present ‘punishments’ (\textit{poenas}) are undeserved, though the seer is ambiguous regarding whether “him” is Aristaeus or Orpheus.\footnote{Cf. Thomas 1988, 226 for the three possible translations and meanings of the grammatically peculiar phrase \textit{haudquaquam ob meritum}.} Regardless, it is the death of Eurydice that has caused Aristaeus’ bees to die, a death that was caused directly by Aristaeus himself, which Proteus signals with \textit{te} (“you”).

Proteus then describes in detail the scene in which her death occurs. Interestingly enough, the death by snakebite is not explicitly illustrated. Rather, the natural topography of the scene takes priority. The readers of the \textit{Georgics} at this point would have already been familiar with this type of landscape, which has showed up numerous times throughout the \textit{Georgics} as a whole. This scene, however, seems to have been taken directly from book three in terms of its language, imagery, and mood.\footnote{Cf. \textit{G.} 3.425-434. Cf. also \textit{Ecl.} 3.93 (and Thomas 1988, 227) as well as the snake in Ap. Rhod. \textit{Argon.} 1.3.2 and \textit{Ov. Met.} 10.10, 11.775-6.} As I have described above in chapter three, this scene is both visually vibrant and emotionally gripping. Upon reading about the death of Eurydice, the audience would have been led to recall this earlier scene in which a monstrous snake resides (\textit{malus anguis…habitans}) on the banks of a river (\textit{amnes…ripis}) only to be disturbed by some external, natural force, which here is the unbearable heat (\textit{saevit agris…exteritus aequo}). In the myth of Eurydice, the girl encroaches upon the banks of a river (\textit{flumina…ripas}) in which a monstrous snake resides (\textit{immanem hydrum…servantem}), who is ultimately compelled to attack her. Yet, it is Orpheus, not the snake, who is actually raging (\textit{saevit}) as a result of some natural force (i.e. the snake). Both topographies are the same, and similar threats, I would argue, would have been expected upon entering such a space. One of these threats is the snake (\textit{anguis / hydrus}), but the other would be the earth itself; again, it is during these parched times where the land has the potential to split open violently (\textit{dehiscunt}) and engulf unsuspecting life. Of course it was the \textit{hydrus} that killed Eurydice, but, nevertheless, Proteus does not explicitly describe how she entered the underworld.
Furthermore, the presence of *hydrus* rather than *anguis* or *serpens*, for example, might be Vergil’s literary attempt to make his readers think in terms of the portentous effects of karstic landscapes. It should be stated once more that Hercules’ slaying of the hydra was considered even in antiquity to be based on the observation of natural processes. The numerous heads of the hydra were understood to symbolize the numerous winding rivers that fed the Lernean swamp, and Hercules’ decapitation of the serpent’s main head was a mythic image of the draining, or ‘de-swampification,’ of the area. If Vergil is alluding, perhaps only superficially, to this myth with the presence of a hostile *hydrus* along a riverbank, Eurydice’s death, as well as the previous images of river snakes in the *Georgics*, highlights the powerfully apathetic aims of Nature from a topographical perspective. The threat of sinkholes or some similar natural calamity would have been in the mind of the geologically-aware upon reading this description.

The immediate emotional response to Eurydice’s death, however, does not come from Orpheus, but from her girlfriends who had welcomed her into their band of nymphs. The sheer power and extent of their lamentations, moreover, are described (mostly) in terms of the geological terrain of ancient Thrace (today southern Bulgaria and north eastern Greece). This terrain consists of well-known mountain ranges (the Rhodope and Pangaea ranges) that Vergil highlights in terms of their height (*arces / altaque*), the level ground under the mythic control of the Thracian king Rhesus, the people of Thrace (*Getae*), the famous Hebrus River, and the Attic princess Orithyia. Of course these details are meant to highlight the extent of the nymphs’ lamentations across a particular cultural territory (i.e. Thrace), but the river Hebrus in particular stands out as foreshadowing Orpheus’ violent demise and sorrowful afterlife.

---


480 For the mythical female (Lernean) hydra, cf. Hes. *Theog.* 313ff., Hor. *Carm.* 4.4.61, Prop. 2.24.25, Verg. *Aen.* 7.658, and Ov. *Met.* 9.192, and Sen. *Ep.* 113.9. For the general water snake (male or female), cf. Verg. *Aen.* 7.753, Ov. *Fast.* 2.257, *Met.* 4.801, Sen. *Herc. F.* 222, and Plin. *HN* 6.98. Vergil applies the name *hydrus* earlier in the *Georgics* to the dragon of Cadmus (2.141). The horned viper (*vipera ammodytes*), which is one the most dangerous snakes in Europe and grows to an average length of 38 inches, might be the *hydrus* that Eurydice stumbled into during her flight; the viper, which tends to make its home along rocky and deserted embankments, is quite common throughout southern Bulgaria and northern Greece. The viper is more active during the daytime, and once provoked, it has been observed to strike out immediately; cf. Mallow et al. 2003.
Only after this swift catalogue of sympathetic places and persons does Proteus focus on Orpheus’ response to Eurydice’s death, which leads the famous singer to one of the most famous gateways into the underworld – Taenarum (464-70):

Ipse cauæ solans aegrum testudine amorem
Te, dulcis coniux, te solo in litore secum,
Te ueniente die, te decedente canebat.
Taenarias etiam fauces, alta ostia Ditis,
Et caligantem nigra formidine lucum
Ingressus, Manisque adiit regemque tremendum
Nesciaque humanis precibus mansuescere corda.

“That Orpheus, consoling his sorrowful love with an empty turtle shell, was singing of you, sweet bride, you, on the lonely bank with him, you, while the day arrives, you, while the day departs. He even entered the throat of Taenarum, the deep dungeons of Dis, and the grove dim with black fear, and he approached the Shades and the dread king and the hearts of those ignorant in softening human prayers.”

Orpheus’ response to his wife’s death is understandably lamentable. Vergil’s use of cava to describe Orpheus’ turtle shell lyre (testudo) is a masterful example of pathetic fallacy wherein the instrument reflects its master’s feelings of loss and total ‘emptiness,’ which, again, is the defining feature of actual cave-spaces as ‘voids’ in the earth. Vergil maintains focus on the emotional affect of Eurydice’s death, which is evident in the four uses of te to describe the object of Orpheus’ singing and in the not-so-subtle allusion to other distressed peoples along riverbanks in myth through the use of solo in litore (“on the solitary shore”). Geographically, Vergil transitions abruptly when Orpheus approaches the gates of Dis at Taenarum. Vergil’s choice to have Orpheus enter the Underworld at Taenarum, I would argue, is not an arbitrary choice, but rather suggestive of his learnedness as a poet of the natural world. The choice of Taenarum as the point of katabasis, moreover, highlights Vergil’s karstic awareness and, in turn, forces his audience to make connections with the cave-spaces already detailed earlier in the epyllion.

\[481\] Cf. particularly Ap. Rhod. Argon. 4.1719-20 and Catull. 64.133; Mynors 1990, 316.
\[482\] The audience, it has been argued, is meant to feel the weight of Orpheus’ bereavement in terms of the geography he covers during his grieving process; the loss of Eurydice in Thrace (which implies that Aristaeus was in Thrace at one point before he goes to the Peneus?) causes Orpheus to wander all the way to the southernmost tip of the Peloponnese at Taenarum. As a result of her second death in the Underworld, Orpheus travels from Taenarum (or Avernus in Campania?) to the northernmost parts of Thrace and then back to the Strymon in southern Thrace.
Vergil’s *Taenarias fauces* refers to Taenarum, or one of the “Big Four” oracles of the dead in the Greek world, according to Ogden.\(^{483}\) Taenarum is located on the southernmost tip of the Mani Peninsula, which extends southward off of the Peloponnese mainland. The oracular site once contained a famous temple of Poseidon, a sanctuary, and an adjacent cave that was thought to lead to the underworld.\(^{484}\) Out of the four major oracles of the dead, only the oracle at Heracleia Pontica (on the south coast of the Black Sea) and the one at Taenarum were based in natural caves that were modified by tooling and walling, and Taenarum was the only oracle with no lake or pool associated with it.\(^{485}\) The famous cave and its function as a gateway into the underworld was well known in antiquity, especially as the location from which Heracles emerged with Cerberus, but also a cultic site of divination (cf. Fig. 11).\(^{486}\) Modern archaeologists have also shown interest in this cave, and in recent decades numerous archaeological surveys have explored the temple area and its surrounding topography. These surveys have yielded two possibilities for underworld descent: a manmade cave-space next to the temple and an embellished cave on the seashore below the temple.\(^{487}\) The cave by the seashore (now Sternis Bay) is only 1.5 meters above sea level, and considered by some to be the most likely place for the oracle of the dead, even though the entrance does not extend that far underground due to the effects of erosion.\(^{488}\) The cave up by the temple of Poseidon also leads nowhere as a result of similar erosive factors, yet the foundations of the manmade cave-space still exist even after its roof collapsed long ago. The cave is currently around 15 meters deep and 10-12 meters wide with cuttings still visible in the bedrock.\(^{489}\) Its embellishment is evident in how the natural

---

\(^{483}\) The four major Oracles of the Dead in the Greek world were the Acheron in Thesprotia, Avernus in Campania, Heracleia Pontica on the Black Sea, and Taenarum on the Mani Peninsula; Ogden 2001.

\(^{484}\) Thucydides (1.133) tells us that Taenarum was a state-sponsored sanctuary that had the right of asylum. Strabo (8.6.14) gives the mythical account of how Poseidon received the temple (and cave) from Apollo in exchange for Neptune’s half of Delphi with Gaia. The temple’s cave is currently next to the ruined church of the Agioi Asomatoi; Curnow 2004, 92.

\(^{485}\) Ogden 2001, 169, 172.

\(^{486}\) Cf. Strabo 8.5.1, Paus. 3.25.4-5, 8. Plut. *Mor.* 560e; all these authors name Taenarum as a “sending-place of ghosts” where consultation of said ghosts involved sleeping in the cave to receive dreams, which is a divination process called “incubation” (Ogden 2001, 38). Apparently Taenarum was an active oracular center from around the time of Archilochus in the 7th century BCE up until Plutarch’s time around the 1st century CE.

\(^{487}\) There also exists a Cave of Hades up the western cliffs that contain cavernous hallways, stalagmites, and stalactites (Ogden 2001, 172).


\(^{489}\) Ustinova 2009, 69.
rock is trimmed to form a level terrace above the bay area, and that a large space was cut out of bedrock to fit a 2-meter thick ashlar block into the doorway.\textsuperscript{490}

This cave near the temple to Poseidon is what Strabo and Pausanias considered to be the entrance to the underworld, but Pausanias, much like modern excavators, is explicit in his disappointment that the cave does not actually go anywhere. Pausanias’ particular concern for Taenarum’s geology, Connors argues, “reflects a desire among ancients to map mythical descent narratives onto actual landscapes.”\textsuperscript{491} Pausanias, in essence, is looking to explain, or prove, the well-known mythic narrative by closely examining the speleological features of the cave-space. His interest in physical features matches quite closely to the interests of modern geomythologists.

Geologists, moreover, have found Taenarum, as well as its two cave systems, to possess an interesting hydrogeological makeup much like that of Pallene in Chalcidice. The cave of Taenarum is currently located in what is now called Cape Matapan on the Mani Peninsula. The underlying hydrogeological system of the cape is highly karstic, so much so that gushing springs exist both along the shoreline and offshore. This is a result of a complex mixture of highly soluble rocks and limestones (especially marbles) and preexisting fault lines that underlie the cape’s topsoil.\textsuperscript{492} The cave of Taenarum is located within this karstic terrain, and scholars have differing views on how the cave was created. Of course, much of the cave has been embellished to create what was once an oracular center for the dead, but the natural cave-space, like that of Proteus, was most likely created by mechanically erosive process of sea wave battering.\textsuperscript{493} Most of the current cave-space is exposed to the open air with natural and artificial cuttings in the bedrock, which led Higgins and Higgins to believe that the cave, like the larger Cape Matapan, was created by flowing waters across the fault lines that extend to the north of the

\textsuperscript{490} Cummer 1978, 37, 39; Cummer is at an impasse when he discusses in detail the possible effect(s) of the oracular building as an embellished cave-space; was the cave originally natural and the later addition of a stone-built façade was meant to resemble a temple (e.g. like the cave of Poseidon Asphaleios at Thera, the cave of Herakles at Delos, or the temple of Pluto at Eleusis), or was the cave originally manmade and possessed stonework that was meant to resemble a natural cave (e.g. like the oracular cave of Apollo at Claros or the Oracle of the Dead at Selinus)?

\textsuperscript{491} Connors 2016, 174.

\textsuperscript{492} Alexopoulos and Lekkas 1999, 699, 703; Migiros et al. 2010, 252.

\textsuperscript{493} Cf. Cummer 1978, 37.
This process has left the bedrock exposed and roughened, and has only become more rough due to constant wind erosion. What remains of the cave is very much a \textit{faux} (“throat”) in its coarseness and in its constant exposure to coastal winds.\footnote{Higgins and Higgins 1996, 58.}

Seneca, in his \textit{Hercules furens}, describes in detail Theseus and Hercules’ trip into Hades via the gates of Taenarum.\footnote{Thomas (1988, 228) believes that the \textit{fauxes} are meant to direct us to the cave of Taenarum specifically, and not so much the cape.} In this play, Seneca lingers on the karstic qualities of the cave more so than Vergil. The cave’s entrance, which is also a \textit{faux}, is surrounded by high cliffs (\textit{rupes alta}), dense forests (\textit{densae silvae}), and presses closely upon the sea (\textit{aequor premit}). Furthermore, the cave contains beyond its jaws (\textit{fauces}) a massive cavern (\textit{immense specu}) as well as a massive chasm (\textit{ingens vorago}).

Upon Orpheus’ arrival at the cave of Taenarum, the famous singer first approaches the interior “grove” (\textit{lucum}) that delineates most of the cave-space. Unlike the idyllic and lively groves one might expect from \textit{speluncae} or \textit{antra}, the cave-grove of Taenarum is full of fear; the physical imminence is masterfully blended with the spiritual imminence implied by the grove’s sheer darkness (\textit{caligantem nigra formidine}).\footnote{Sen. \textit{HF} 662-72.} Orpheus yields to none of the foreboding elements of the landscape, and he continues his journey down through the cave, passing ghosts and witnessing a gloomy topography (471-84):

\begin{quote}
\textit{at cantu commotae Erebi de sedibus imis umbrae ibant tenues simulacraque luce carentum, quam multa in foliis auium se milia condunt, Vesper ubi aut hibernus agit de montibus imber, matres atque uiri defunctaque corpora uita magnanimum heroum, pueri innuptaeque puellae, impositique rogis iuuenes ante ora parentum, quos circum limus niger et deformis harundo Cocyi tardaque palus inamabilis unda alligat et nouies Styx interfusa coercet, quin ipsae stupuere domus atque intima Leti Tartara caeruleosque implexae crinibus anguis Eumenides, tenutique inhiens tria Cerberus ora, atque Ixiuuii uento rota constitit orbis.}
\end{quote}

“And empty shadows were departing from the lowest seats of Erebus, perturbed by the tune, and the images of those lacking light,

\footnote{Thomas 1988, 228. The grove at Taenarum seems to preclude the formidable grove of the Sibyl at Cumae in \textit{Aen.} 6.238, 259. Cf. also Putnam 1979, 295.}
as many as the thousands of birds that hide themselves in the leaves
when Evening or wintery rain comes from the mountains,
and mothers and husbands and the bodies, bereft of life,
of brave-hearted heroes, boys and unwed girls,
and youths placed upon the pyres before the faces of their parents,
around whom the black mud and disfigured reed of Cocytus
and the vile swamp detain with sluggish water
and the nine-headed Styx, flowing hither and thither, confines.
The home of Death itself, as you see, and the deepest parts of Tartarus,
And the Furies, with cerulean snakes as hair, were stunned,
And Cerberus, gaping, held fast his three mouths,
And the turning of the wheel of Ixion stood still with the wind.”

Orpheus’ descent through the cave of Taenarum should recall the descent of Aristaeus through the
hollow Peneus; the way Vergil describes the topographies through which the two heroes travel is
distinctly hodological in that the journey contains horizontal, point-by-point references that bypasses
uninteresting, abstract details and focuses on definite features as they are discovered by the traveling
protagonist. The subterranean Underworld in the ancient Roman (and Greek) mind was understood
topographically as an antithesis to the surface world. Surface features, creatures, and experiences could
exist below ground within a distinctly ‘unknown’ dimension. Vergil continues this tradition in his use of
simile to describe the behavior of shades throughout the cave; the shades, which Vergil brings into the
observable, relatable, and distinctly natural world of birds, who are forced southward during the winter
months, are aroused by the thousands as Orpheus plays his tune as he passes through the cave.

These shades are identified as a combination of numerous groups of people, and Vergil tends to focus
on the more sympathetic figures, especially the young boys and girls who died before their time. After
these three lines, another three lines define the topography of the Underworld as it relates to the
segregation of souls. No information is given to the particulars of the separate groups, but what matters is
that particular waterbodies form a subterranean barrier within Hades proper (cf. *alligat, coercet*). Vergil
gives us two major waterbodies that create this barrier – the Cocytus and the Styx. Vergil describes the
Cocytus river as possessing both mud (*limus*) and reed beds (*harundo*), which are features not unlike
rivers on the surface world, except that the topographical features of the Cocytus befit the river’s gloomy

surroundings; the mud is distinctly black (niger) and the reed bed is disfigured (deformis). The Styx, on
the other hand, possesses nine heads, extends haphazardly across the landscape (diversa), and flows
slowly (tarda...unda). The dangerous swamp (palus inamabilis) that lies between the Cocytus and the
Styx (in the verses and topographically, it seems) is unnamed. Yet, hydrogeologically speaking, one
would expect there to be a massive swampland between such sluggish rivers.\(^{499}\)

Both rivers are distinctly sluggish and foreboding, which reflects their flow through gloomy Hades,
though. Again, the Roman underworld is zoned off by rivers, many of which actually flow above the
surface and at some point disappear underground. The Styx is one of these rivers. The famous river was
known to flow through karstic Arcadia and drain underground via limestone fissures.\(^{500}\) The Cocytus too,
in its association with an oracle of the dead along its banks near Acherusia, led Pausanias to believe that
Homer’s names of the Underworld’s rivers came directly from the surface-flowing, swampy, and
ultimately disappearing Thesprotian Rivers.\(^{501}\) Vergil’s consistent use of “swampy” to describe these
waterbodies (palus [479, 503] and stagna [493]), combined with particular waterbodies that have karstic
connotations (Cocytus [479], Styx [480], Avernus [493, cf. below], Eridanus [372]), helps his audience
picture a particular landscape that has its origins in accurate observations of hostile, karstic terrain.

In Greco-Roman cosmology, Tartarus is the lowest point in the universe, and Vergil identifies it as
such with intima Tartara (“deepest parts of Tartarus”). As the lowest point in the universe, Tartarus is the
ideal domain to house the most dangerous threats to the above world, such as blasphemous and
murderous prisoners, horrendous beasts, and fallen Titans.\(^{502}\) Hydrologically speaking, Tartarus is the
lowest point into which all of the world’s water is filtered. Tartarus was envisioned as a drain pan-like pit
that was carved through torrential wind activity, and, like the rivers and swamps of Hades, the poetic
image of Tartarus too was inspired by observable geological features on the earth’s surface, specifically

---

\(^{499}\) Cf. Thomas (1988, 229) who considers the palus as describing the banks of the Styx.


\(^{501}\) Cf. Paus. 1.17.5 and Clark 1979, 58-9. The Eridanus too was considered a disappearing, karstic stream with particular

\(^{502}\) Cf. Hom. Il. 8.13 ff, 8.481 ff; and Hes. Theog. 715 ff.
windy, karstic pits and bottomless sinkholes.\textsuperscript{503} The presence of whirlpools (\emph{λίμναι / gurgites}) on the surface of waterbodies, therefore, was suggestive of a hydrological connection to the subterranean world, as it was \emph{λίμναι} and \emph{gurgites} that resupplied Ocean with freshwater, which was then filtered through Tartarus and brought back up to the surface through reemerging rivers and springheads.\textsuperscript{504}

Hades was envisioned as the shallower zone of the underworld that rested directly above Tartarus and, like the surface world, was surrounded by Ocean and contained numerous winding rivers. Vergil could very well be pointing to the hydrological implications of Tartarus not just from the descriptor \emph{intima}, but also how he prefaces the identification of Tartarus with notable disappearing streams and how he follows up that identification with a similarly ‘gaping’ Cerberus (\emph{inhians...Cerberus}) and the blowing winds around Ixion’s halted wheel (\textit{vento rota constitit}). Furthermore, what follows Tartara is \emph{caeruleos} (‘cerulean’), which adds color to the snakes on the heads of the Furies. Although \emph{caeruleus} here agrees with \emph{anguis}, the word and its placement immediately after \emph{Tartara} would force one to connect this mythic ‘pit’ to other hydrological beings that are cerulean, such as Proteus, Nereus, and ‘deep-eddying’ Ocean.

Orpheus’ song is a success in that he retrieves his wife Eurydice from Hades and Persephone. What follows is a description of the swift ascent of the couple and the ‘rule’ (\emph{lex}) given to Orpheus by Persephone to not look back at his wife during their ascent lest she disappear forever (485-491). Alas, Orpheus fails in this test when forgetfulness (\emph{dementia}) overtakes him. The result is Eurydice’s dramatic disappearance, which Vergil describes at length and in vivid detail, again focusing on the landscape of Hades. He then adds to the \emph{pathos} by including a speech from Eurydice herself (491-8):

\begin{quote}
\emph{...ibi omnis}
\emph{effusus labor atque inmittis rupta tyranni}
\emph{foedera, terque fragor stagnis auditus Auernis.}
\emph{illa “quis et me” inquit “miseram et te perdidit, Orpheu, quis tantus furor? en iterum crudelia retro}
\emph{fata uocant, conditque natantia lumina sommus.}
\emph{iamque uale: feror ingenti circumdata nocte}
\emph{inualidasque tibi tendens, heu non tua, palmas.”}
\end{quote}

\begin{footnotes}
\textsuperscript{503} Cf. Clendenon 2009, 112. Cf. also Aesch. \textit{PV} 221 (\emph{Ταρτάρου μισλαμβαθής} = “Black-chasm Tartarus”).
\textsuperscript{504} Clendenon 2009, 118. Cf. Hes. \textit{Theog.} 820 ff. on the close proximity between Ocean and Tartarus.
\end{footnotes}
“…Then all the hard work
was washed away and the pact with the cruel tyrant was broken,
and thrice a crash was heard upon the Avernian pools.
That girl then said ‘Who has ruined wretched me and you,
my Orpheus, what great fury? Look! Cruel destiny again calls me back,
and sleep covers my floating eyes. Goodbye now!
Wrapped in vast darkness I am taken back,
Reaching out my weakened hands for you, alas! not yours.’”

Upon breaking the pact, a crash (fragor) echoes over the “Avernian pools” (stagnis...Avernis). The crash, which Mynors understands to be subterranean thunder, is a summons to Eurydice that her husband had failed her.505 Vergil here adds another important underworld waterbody to the landscape: the pools of Avernus. Lake Avernus would come to be the most famous entrance into the underworld as a result of Vergil’s Aeneid, which casts the hero Aeneas as descending into the underworld with the Cumaean Sibyl through Lake Avernus in Campania. Again, the actual topography of the area above ground reflects a similar image below ground, and the basis of the mythological phenomena ascribed to the natural landscape has its origin in accurate geological awareness, which Vergil emphasizes in his epic poem.506

spelunca alta fuit uastoque immanis hiatus,
scripea, tuta lacu nigro nemorumque tenebris,
quam super haud uallae poterant impune volantes
tenderite iter pennis: talis sese halitus atris
faucibus effundens supera ad conuexa ferebat...
...Tantum effata furens antro se immisit aperto.

“There was a deep cave made of jagged rock, yawning wide and vast,
and sheltered by a black lake and the shadows of forest,
over which no birds could fly safely: such a vapor pouring from
its black jaws was carrying itself to the vaulted sky...
Thus she [the Sibyl] spoke and madly descended into the open cave.”

The cave at Avernus is considered both a spelunca and antrum, and thus possesses qualities of each,

though all is deformed by its associations with death and Hades: the cave-space is surrounded by rocks,

505 Cf. Mynors 1990, 317-8; a similar crashing sound is heard in Eur. Hipp. 1201-2; apparently, surface-level natural phenomena like thunder can exist underground, much like flowing rivers, groves, and marshes. The broken pact (foedera rupta) was originally created by “the cruel tyrant” (immitis tyranni). In the present context, that tyrant would most likely refer to Hades, the ruler of the underworld and husband to Persephone, but the “cruel tyrant” could also refer to Jupiter, who, in book one of the Georgics, brought such natural hardships onto mankind with little regard for human happiness (1.118-146). The presence of fragor, then, might point more to Jupiter, who is not only the lightning-wielder, but also the god of oaths. Cf. also Mynors 1990, 318 for the different manuscript readings, and grammatical interpretations, of stagnis auditus.

lakes, and forests, and birds live nearby. The cave, however, is formidable dangerous in that any bird that flies above it will surely die and that each potentially idyllic feature is overtly ‘ghastly.’ The lake’s emission of noxious fumes through its cave entrance (fauces) is most likely based on accurate hydrogeological observation of the lake, which is situated above two major aquifers containing porous rock within a highly active volcanic region; the lake still emits geothermal gases and liquids.\textsuperscript{507}

In the epyllion of Aristaeus, we are given a minimal description of Avernus that lacks the vividness to come later in the \textit{Aeneid}, yet the information given is enough for Vergil’s learned audience to consider the important karstic qualities of Avernus: it is surrounded by stagnant pools or swamps (stagnis) and it extends down into the underworld via a cave (fauces). Both Taenarum and Avernus, moreover, possess natural qualities (e.g. groves, woods, whirlpools, lakes) that were thought to safeguard the entranceway into the underworld,\textsuperscript{508} and both locales are situated within highly visible karstic topographies.

It is from Avernus that Orpheus and Eurydice retrace their steps back up to Taenarum.\textsuperscript{509} Yet, all that trouble (labor) is for nothing, as Eurydice disappears like “smoke mixed with breezes” (fumus in auras / commixtus), and Orpheus is prohibited by Chiron, the undead ferryman, from crossing the “barrier swamp” of the Styx (obiectam paludem) once again. Orpheus’ immediate reaction to this loss is emotionally overwhelming (507-16):

\begin{verbatim}
septem illum totos perhibent ex ordine mensis rupe sub aëria deserti ad Strymonis undam flesse sibi, et gelidis haec euoluisse sub antris mulcentem tigris et agentem carmine quercus: quals populea maerens philomela sub umbra amissos queritur fetus, quos durus arator obseruans nido implumis detraxit; at illa flet noctem, ramoque sedens miserabile carmen integrat, et maestis late loca questibus implet. nulla Venus, non ulli animum flexere hymenaei.
\end{verbatim}

“They hold that Orpheus cried to himself at the bank of the lonely Strymon under a windy cliff for seven whole months without break, and that he pondered these things underneath chilly caves as he softened tigers and herded oaks with his song:

\textsuperscript{507} Cf. Caliro et al. 2007, 308-9. Cf. also chapter 2c, Connors 2016, 172 and Casagrande-Kim 2012 93-5; cf. her n. 27 for a discussion on modern attempts to identify the cave near modern Lake Avernus.
\textsuperscript{508} Cf. Casagrande-Kim 2012, 95.
just like a nightingale lamenting under the shade of a poplar
cries over its lost babies, whom, featherless, the harsh plowman,
noticing them, pulled from the nest; and that nightingale
cries through the night, and sitting upon the branch repeats its miserable
song, and fills the area far and wide with gloomy lamentations.
Neither Venus nor any wedding song appeased his soul.”

Again, the extent of Orpheus’ lamentations is reflected in the geographical extent to which he travels while grieving. The second loss of Eurydice brings Orpheus back up to Thrace all the way from Taenarum in the Peloponnese. He wanders to the Strymon River, which, like his cava testudo, is equally as “deserted” (desertus) as he is. Vergil again takes time to describe the particular landscape in which Orpheus cries: he sits within a chilly cave (gelidis sub antris) under a lofty cliff (rupe sub aëria) nearby the water of the Strymon (ad Strymonis undam). Within this cave, Orpheus soothes tigers (mulcentem tigris) and herds oak trees (agentem quercus) with his magical melodies.

The Strymon functions here quite similarly to the Peneus; both rivers offer the protagonist heroes a space to grieve about their respective losses, which brings Aristaeus and Orpheus that much closer together as analogous characters. The antrum along the Strymon, however, does not function like the spelunca underneath the Peneus. Orpheus’ antrum appears to function more so like the antrum of Proteus as a distinctly secluded hideaway; both caves are cool spaces within landscapes that are devoid of human life yet inhabited by wild animals that tend to sleep in caves. Therefore, Orpheus becomes a wild Proteus of sorts, yet he leaves the cave space none the wiser and having accomplished nothing. The setting of Orpheus’ mourning (e.g. the lofty rocks, the deserted river, and the chilly caves) mirrors his current

---

510 There is a divide in the two major manuscript traditions regarding the reading of antris, which is also given as astra (“stars”) and preferred by Thomas 1988, 233. Thomas cites Propertius (1.16.23-4) for a similar image, though he feels that sub astra is a little “flat” after the loftiness ascribed to the topography of the cliffs of the Strymon. Mynors (1990, 319), however, says that astra has much less authority in the manuscript tradition and that astra here goes against what is actually observable in nature: tigers sleep at night, so why would Orpheus be calming them during that time sub astra? Therefore, Mynors prefers antris, but limits its definition to broadly mean “valleys” and cites Propertius as a source (1.1.11). I would push Mynors further and suggest that antris makes sense thematically as the proper home to wild animals like tigers (as seen in Proteus’ transformation into a tiger within his own antrum), geographically as a common feature among cliffsides, and geologically as befitting the karstic Strymon river; cf. below.

511 Orpheus, it has been argued, does not fit in the world of the Georgics which prioritizes productivity and violence over art and aesthetics (Nappa 2005, 201). As a result, he is violated first by Aristaeus (through the first death of Eurydice) then by his disobedience towards Nature and its laws (through the second death of Eurydice); cf. Segal 1966, 317. One might argue that his ability to lead wild tigers and oak trees with music is a kind of “violence” (vis) practiced by farmers, but Orpheus’ manipulation of Nature has no real goal or end. His coercion is reckless and described by Proteus with utter pity; Nappa 2005, 204.
personality and his utter loneliness.\textsuperscript{512} The time spent in this cave of misery, unfortunately, does not appease the singer’s soul. He wanders once again, but this time northward to the furthest boundaries of the known world only to return to a Thracian river where he will meet his tragic demise (517-27):

\begin{verse}
solus Hyperboreas glacies Tanaimque niualem
araque Riphaeis numquam uiduata pruinis
lustrabat, raptam Eurydican atque inrita Ditis
dona querens, spretae Ciconum quo munere matres
inter sacra deum nocturnique orgia Bacchi
discerptum latos iuuenem sparsere per agros,
tum quoque marmorea caput a ceruice reuulsum
gurgite cum medio portans Oeagrius Hebrus
uolueret, Eurydican uox ipsa et frigida lingua,
a miseram Eurydican! anima fugiente uocabat:
Eurydican toto referebant flumine ripae.
\end{verse}

“Alone he was wandering the Northern ice, the snowy Tanais,
And the fields of Riphaea, never free of frost,
And as he lamented his stolen Eurydice and the empty gifts of Dis
the mothers of the Cicones, spurned by his devotion,
tore the youth apart and spread him far and wide across the fields
during the sacred rites of nocturnal Bacchus.
And then Oeagrian Hebrus rolled on, carrying in the middle of its whirlpool
Orpheus’ head, torn from his marble neck,
and his very voice and frigid tongue was calling
‘Eurydice! O miserable Eurydice!’ as his final breath escaped him:
The banks were echoing ‘Eurydice!’ across the whole river.”

Orpheus’ travels north of Thrace only emphasize the bitter and frigid loneliness he felt in the cave along the Strymon. The northern ice (\textit{Hyperboreas glacies}), the snowy Tanais, and the frozen fields of Riphaea exist as the ultimate northern boundaries of the known world through which Orpheus wanders seemingly with ease. His travels, for some reason or another, end back in southern Thrace along the banks of the Hebrus River, which flows east of the Strymon and also discharges into the northern Aegean.

It is along the Hebrus, or modern Maritsa River, that local Thracian women attack and eviscerate Orpheus as a result of some disrespect.\textsuperscript{513} Again, it is not arbitrary that Vergil has chosen the Hebrus as the final resting place of Orpheus. The audience is meant to see a connection between the Hebrus and the

\textsuperscript{512} Putnam 1979, 308; the \textit{amor} that drives Orpheus and his songs have been eternally “cooled” by this tragic loss, which is mirrored by the temperature of the cave-space.

\textsuperscript{513} Cf. Mynors 1990, 320 for a full analysis of three possible interpretations of why the Thracian women are ‘spurned’ and what \textit{munere} could potentially entail.
Peneus in how the rivers are described and how their respective hero behaves around them. The Hebrus is introduced with the adjective “Oeagrian,” which is actually a patronymic. Oeagrus was not only the mythic king of Thrace, but also the father of Orpheus. Earlier at the beginning of the epyllion, the Vale of Tempe is described as “Penean” (Peneia), which we could take as a patronymic of sorts when we consider the geomythological formation of the vale. Moreover, the Peneus is identified explicitly as the father of the nymphs of the vale, including Cyrene and, in turn, Aristaeus. Mythologically, the Strymon, like the Peneus, is also a direct son of Ocean. Both rivers even function as a space for lamentation, specifically regarding loss; yet, whereas Aristaeus’ laments to his mother at the bank of the Peneus end in success as a result of his hard work (labor), Orpheus’ laments to his Eurydice end in eternal tragedy as his ancestral river carries his singing head down its lengthy channel.

Furthermore, I would argue that an explicit connection between the two rivers, and in turn the rest of the epyllion, is evident in the gurges that carries Orpheus’ head down the river. This gurges, like the whirlpools of the Peneus, Karpathos, and Pallene is suggestive of a particularly karstic terrain and highlights Vergil’s attunement to the actual, natural topography of the Strymon. Modern surveys and analyses have shown that the area around the Strymon and Hebrus is highly karstic. In actuality, around 22.7 percent of Bulgaria (which was identified as Thrace in antiquity) is comprised of a great diversity of karst. A 1995 study by Pulido-Bosch investigated three major karstic massifs (a compact group of mountains) comprised of limestone, marble, and dolomite, each containing highly karstified spring catchments. The area surrounding these mountains, which supply the water for most of the country’s major waterbodies, is full of rivers of various sizes and natural caves. More than 20% of Bulgarian caves

---

515 Cf. Hes. Theog. 337.
516 The modern Maritsa is the longest river (480 km) that runs within the area of the Balkans, or ancient Thrace. The length of the river would not have gone unnoticed by ancient Romans who lived in the area. Vergil could very well be implicating the river’s length and its subsequent effect on the pathetic breadth of Orpheus’ tragic end with the grammatically ambiguous toto flumine.
517 Angelova 2003, 11.
have thus far been discovered along the western Rhodope Mountains, which contain deeply karstified rock that is fed groundwater from both rainwater infiltration and disappearing streams of ponors.\textsuperscript{519}

The Strymon River flows nearby the Rhodope range and deposits into Kresna gorge. Upon entering the karstic gorge, the river becomes deep and its velocity increases as the rocky banks narrow.\textsuperscript{520} The highly erosive flow continues southward into a river basin with a hydrogeological makeup, origin, and climate much like that of the Peneus; the Strymon river basin is covered in highly erosive, infertile soils and offered very little to local farmers until numerous bogs were drained.\textsuperscript{521} In terms of climate, the Strymon river basin was highly attractive to the Greeks and Romans, and near the coastline where the Strymon deposits into the North Aegean the climate changes from continental to Mediterranean.\textsuperscript{522} The presence of cliffs (\textit{rupes}) and caves (\textit{antra}) along most of the river’s banks, which before the 21\textsuperscript{st} century were left unfarmed (thus \textit{desertus}), therefore, suggests that Vergil is interested in accurately portraying the landscape of the Strymon as he does with the Peneus in Thessaly and Pallene in Chalcidice.

The Hebrus (modern Maritsa) has its origins in the Rila Mountains of Western Bulgaria, and like the Strymon, flows through the highly karstic terrain of southern Bulgaria and Northern Greece. The Maritsa river valley is marked by migrating river beds, which is the result of intense levels of erosion, the continuous creation of swamps, seismic activity, and mud volcanoes, which is the result of a mixture of rising hot water and subterranean earth deposits that slowly bubble up onto the earth’s surface.\textsuperscript{523} The presence of whirlpools (\textit{gurgites}) along the channel would thus not be unexpected or out of the unordinary for ancient observers along the Maritsa.

\textsuperscript{520} Garbov 2015, 57.
\textsuperscript{522} Cf. Garbov 2015, 64; Kulov 2017, 40.
\textsuperscript{523} Angelova et al. 1993, 41. The archaic Greek lyricist Alcaeus (fr. 45a) comments on the Maritsa’s sheer beauty (\textit{kάλλιστος ποτάμων}), and that maidens flock to bathe in its “marvelous water” (\textit{θηιον οδωρ}). Ovid (\textit{Her.}, 2.114) calls the Maritsa “sacred” (\textit{sacer Hebrus}).
b. The Georgic Underworld and its Linking Antra

It is significant that Vergil places Orpheus into two cave-spaces – the Underworld, and the banks of the Strymon. The famous singer’s two antra function quite differently within the narrative, though they share fundamental similarities with the two previous cave-spaces already commented on above. The character, behavior, and circumstance of Orpheus are not the only features that link the Thracian to his heroic Thessalian counterpart Aristaeus; the landscape of the embedded tale, its topography, and the implications of the cave-spaces within that topography also compel the reader to make important connections between the two grieving heroes and how they tackle their respective trials. The implications of the cave vocabulary that Vergil uses in the embedded narrative are significant, as are the topographical details, mythological connections, and overarching mood that defines the Georgics’ Underworld. Upon viewing the embedded narrative from this geomythological perspective and in context with the rest of the epyllion, it becomes apparent that the particularly karstic nature of Orpheus’ antra offers the perfect subterranean link to previous passages in the epyllion concerning karstic caves.

Orpheus’ time spent at Taenarum is relatively short, yet Vergil lingers on the pure dread that emanates from the entrance of the cave. The faux is foreboding, and the area surrounding it is gloomy. What one would expect from a neighboring lucus, as we have seen under the Peneus, is turned on its head as a naturally hostile locale in terms of its darkness (nigra), obscurity (caligantem), and evocation of fear (formidine). These qualities are explicitly lacking in the antrum of Proteus upon Aristaeus’ arrival, though they are implied by Cyrene’s lengthy warnings and libation to her son. The rhythm of line 468 is extremely slow, as if the formido is what the hero Orpheus (the embodiment of ars and amor) must first conquer before reaching death itself. The fauces of Taenarum, furthermore, share not only observable

---

524 The two characters are obviously designed to be seen as mirrored: both characters descend into a subterranean realm, both characters exhibit opposing models of behavior, and Proteus, as a narrative force, forces this comparison; Segal 1966, 314, Stehle 1974, 365, Campbell 1982, 105, and Conte 2001, 48.

hydrological qualities with the cave of Proteus, but also mythological qualities in terms of its divine patronage under Neptune. Both caves are linked in terms of their highly erosive, visibly pseudo-karstic topography as well as their mythological connection to the sea god himself. The audience should therefore expect Orpheus to meet a similar, ‘natural’ trial to that of Aristaeus.

Orpheus’ descent through Taenarum leads him into the next important cave-space: the Underworld. The Underworld, however, shares more qualities with Cyrene’s umida regna than it does with Proteus’ antrum, despite the overwhelming sense of agony that extends across the region. Firstly, both cave-spaces are linked in terms of how Vergil describes their topography hodologically. Secondly, Vergil classifies both subterranean spaces as a domus (363, 481) for some divinity that is explicitly female. Both Cyrene and Persephone have deep mythological connections to the natural world, and they both issue ‘rules’ for the respective hero to follow. But, rather than having cheerful, weaving nymphs sit on crystalline sedilia (350) across the cavernous domus, Vergil has the ghosts of mortals and monsters rise up from their sedes (471) out of Erebus. Both the Underworld and Cyrene’s subaqueous kingdom contain lakes (364, 493) and rivers (366, 479-80), but where Cyrene’s domain contains springs and groves, Persephone’s domain contains swamps and mud. The rivers that make up the Underworld are distinctly sluggish (tarda) and inhibiting (alligat, coerct, obiecta), whereas the rivers of Cyrene’s underworld are distinctly swift (fluenta, violentior) and unbarred (divera locis). The fact that most (if not all) of the rivers in both realms were understood in antiquity to be disappearing streams that flow both above and below the earth’s surface should compel the reader to contemplate both subterranean topographies as interrelated. Furthermore, both subterranean domains house primeval Water (pater Oceanus and intima Tartara).

We should therefore envision the cavernous landscapes of Orpheus’ Underworld and Aristaeus’ Peneus as complimentary to one another in that they offer both heroes similar spaces to showcase their heroism. Unfortunately, Orpheus does everything wrong in his descent through the subterranean world, for he shows total disrespect for the laws of Nature throughout the episode, which is evident not only in his lack of trust in Persephone’s lex, but also in how reverence, or ‘awe’ (mirari/stupere), is expressed, and for whom it is expressed, during the descent; within Cyrene’s realm, Aristaeus, who trusts the natural
praecepta of his mother, is in awe of the watery landscape of her domain (363), while in the Underworld, the swampy landscape itself is in awe of Orpheus (481). The fact that the topography itself gazes at Orpheus in amazement, who is a stand in for the urbane mortal, is an abomination of nature.

Orpheus’ failure in the Underworld brings him back to Thrace where he laments within another cave-space. Like the subterranean domain of Cyrene, this cave exists nearby a notable river (Strymon) that too has mythic connections to Ocean. Yet, the cave recalls the cave of Proteus in form and function; firstly, both antra are located within a notably desolate environment that is devoid of human life. Secondly, both antra house wild animals, particularly tigresses, who are wont to seek out such secluded spaces. Yet, within the Strymon antrum, the hero faces no competition, danger, or victory over the wild force, therefore no knowledge is gained in the cave since no labor was experienced. Although the cave shares particular features of isolation and loneliness with the cave of Proteus (secretallatebra), Orpheus’ antrum is more pathetic. Like Proteus’ antrum, Orpheus’ antrum offers the hero no permanent place of residence – he, like Proteus, will travel great distances both north and south along notable waterbodies. The tragic death of Orpheus, however, brings the audience to realize that the antrum along the Strymon will never become the place for him to visit, as Pallene is for Proteus. Furthermore, both individuals, who share distinctly prophetic powers, depart from the narrative as figures, defeated by violence, via gurgites that flow directly into the North Aegean. The topographies of these two rivers, therefore, compel the reader to make such connections lest the reader fall victim to Nature’s indifference like Orpheus.

Ancient Romans perceived of the Underworld as a remote location that was inaccessible to the living though permeable for a few. Casagrande-Kim makes this evident early on in her own work on the topography of the Roman Underworld, and she emphasizes recurrently throughout her work that such an isolated yet reachable space was inspired by similar sorts of locations above ground. It should therefore come to no surprise that karstic rock, which is also found in sometimes remote, often inaccessible locales, has long been associated with oracles of the dead and gateways into the Underworld, though scholarship

526 Cf. Conte 2001, 54, 59; Cf. also Segal 1966, 312.
527 Casagrande-Kim 2012, 17, 30.
on the subject is quite new and sparse. It makes sense that the Underworld, which is in fact a permeable landscape to the select few heroes bold enough to travel underground, consists of equally permeable features; the dank and inhospitable swamps, the meandering and dark riverbeds, and the noxious pools that make up the eerie corners of the surface world make sense within a subterranean setting that is meant to exude otherworldly fear, anxiety, and isolation while poetically and physically dwarfing the hero.\textsuperscript{528}

There is a fundamental connection in the Roman mindset between the subterranean word and the surface world in terms of Natural law and natural topographies. Vergil makes these connections visible all throughout the epyllion, including the embedded narrative. Both realms of the epyllion consist mainly of water, both observable and elemental, in the form of rivers, streams, springs, marshes, and lakes. Temperatures range from extreme cold (Taenarum/Underworld) to extreme heat (Pallene) to something hospitable in between (Tempi). Both realms also consist of cavernous spaces that emblematize these similarities and differences. The \textit{fauces} and \textit{antra} within the embedded tale of Orpheus only strengthen the images already illustrated in the epyllion of Cyrene’s domain and Proteus’ domain; not only can a cave-space be a sought-after spot for reflection and solace, but it can also be a spot worth avoiding due to its particularly wild inhabitants and its overwhelming sense of isolation.

The \textit{antra} of Orpheus offer both types of spaces. The two caves give the audience, like Orpheus, the space to connect to and reflect on all of the elements, peoples, and places of the epyllion that came before in the narrative, while simultaneously reinforcing traditional beliefs of the Underworld as a place of death worthy of fear yet inescapable for all mortals. The natural landscape and cavernous topography of the Underworld, which Vergil prioritizes in his hodological depiction of it, gives the audience, I would argue, solace in knowing not only that the afterlife is not entirely alien but also that regeneration or revival is attainable if one approaches Nature as a \textit{Georgic} farmer and not as a bold poet. The focus on topography makes the myth relatable to a wide audience and allows permeable connections to be made between the world above and the world below.

\textsuperscript{528} Murgatroyd 2003, 27.
Chapter 7 – Conclusions

a. *in medio gurgite*: The Significance of Karst in the Epyllion of Aristaeus

Every important moment, scene, and character within Vergil’s epyllion of Aristaeus takes place within the subterranean world: from Cyrene’s request to Arethusa to Aristaeus’ descent into the Peneus, from the libation to Ocean to the tumultuous shores of Pallene, from the wrestling bout between Proteus and Aristaeus to the descent of Orpheus to Taenarum and back again to the shores of the Strymon and Hebrus rivers, one cannot escape from a landscape that is dominated by rocks, cliffs, waters, and chasms. The subterranean world as Vergil depicts it in his *Georgics* is overwhelmingly wet and cavernous – the definitive subterranean features of a complex, highly accessible karst topography that is prevalent throughout the Mediterranean world.

Any indication to what we would today consider karst shines through Vergil’s choice vocabulary. As it has been argued, numerous words in the Latin language hold hydrogeological connotations when describing particular landscapes, many of such words reappear throughout Vergil’s myth; karstic poljes (paludes/stagna) occur four out of the nine times in the epyllion, karstic hollows (cava) occur more than ten times throughout the *Georgics*, twice in the epyllion, and karstic whirlpools (gurgites) occur five times throughout the *Georgics*, four of which occur within the epyllion.

One might argue that such words function solely as the poetic flavoring of more mundane words that could describe the same thing. On the surface of the text, such a reading could be possible, yet there are other signs throughout the *Georgics* that point us to perceive particular topographies, namely karstic, during the course of the epyllion. Firstly, and most importantly, the *Georgics* is a poem about Earth; the topic of focus throughout the entire poem is the breadth of power that Nature has over hardworking mankind, and the information that is provided takes a combined poetic and scientific stance. Vergil does
not limit his discussion of the aspects of Nature to a particular locale, rather the famous poet goes above and beyond to showcase the dynamism of the natural world in every form using highly technical language and narration. Vergil’s learned and rustic audience, who hope to leave the text with some technical wisdom pertaining to the natural world, would have been led to take these duplicitous words not at face value, but at their observationally dynamic core, which befits their topographically dynamic context.

Secondly, Vergil limits his use of karstic vocabulary to particular places. As detailed above, these specific landscapes are in fact observably karstic, which suggests that Vergil’s descriptions and subtle allusions to said places are topographically accurate (cf. Fig. 12). This is not to say that Vergil actually visited each of these locales before he composed the *Georgics*. It is more likely the case that he pulled most of these place-names from his prose and poetic sources, which he is wont to do often in the most complex ways. Yet, this literary move does not detract from the possibility that Vergil wants his audience to see a particularly karstic landscape. His audience, which consisted of fellow poets, scholars, farmers, and the well-travelled Octavian, was expected to walk away from his poem with useful insight into the local, natural world, so it would do Vergil no good to give his audience incorrect information about the specific places he names outright. Most of these places were well-known locales, and many myths that Vergil alludes to were extremely ancient and, therefore, meaningful.

Vergil both diverges from and augments both Homer and Callimachus in how he situates his Aristaeus within a subterranean realm totally consumed by flowing water in all of its conceivable forms. Vergil diverges from Homer in how much effort he puts into prefacing the bout with Proteus with lengthy descriptions of the erosive climate, the erosive coastline, and Proteus’ swirling departure from his cave. Vergil is also the first (as far as we know) to have a cave-dwelling Orpheus fail *twice* in his quest to return Eurydice. When we begin to view Vergil’s subterranean world from a geomythological perspective, or when we pull aside the veil of myth that covers the epyllion, a whole new and dynamic world opens up; the creation of sinkholes, the presence of speleothems, the presence of subterranean springs, the disappearance and reappearance of rivers, the creation of littoral caves, and the submarine travel of fresh waters all bubble to the surface of the text. Vergil’s engagement with karst in this complex
and subversive way could very well reinforce his reverence to Callimachus, whose divine matron is karstic Cyrene, and who pioneered the subversive exhibition of the natural world as spectacle.

Vergil is the first poet to provide a lengthy description of a sub-fluvial realm inextricably linked to a comprehensive, Thales-based hydrological system. Under the mythic veil, what Vergil frames as a hierarchy of water divinities is in fact a comprehensive hydrological cycle that expands on the theorization of Thales of Miletus and has its beginning and end within the subterranean world:

![Hydrological Cycle Diagram]

The connection between these steps in the cycle is the *gurges*. The karstic ‘whirlpool’ functions not only as portals from which *ecdoidaimones* (“nature divinities”) emerge and submerge between worlds, but also as portals through which the audience can direct their attention to other pertinently similar characters and locations in the epyllion. In other words, the presence of *gurges* should push the reader to make connections to other important places where *gurgites* are present, much like how disappearing streams push their waters underground only to reemerge elsewhere as nourishing springheads; it is via *gurges* that Aristaeus (and Thessaly) is linked to his mother Cyrene (and the Peneus); it is via *gurges* that Aristaeus (Thessaly) is linked to Proteus (Pallene); it is via *gurges* that Homer’s Proteus (Pharos/Karpathos) is linked to Vergil’s/Callimachus’ Proteus (Pallene); it is via *gurges* that Proteus (Pallene) is linked to Orpheus (the Strymon); and it is via *gurges* that Orpheus (the Strymon/Hebrus) is linked to Aristaeus (Tempi/Peneus). The protagonists’ complex movements across the Mediterranean is consistently
presented in terms of moving waters and hollow caverns. The subterranean world of the *Georgics* is inescapably karstic, and at the center of this ever-changing landscape is Aristaeus – the roughened and tenacious farmer who, like the watery terrain in which he resides, must remain dynamic to survive.

In short, Vergil is attuned to physiological discourse regarding the subterranean world. He is as interested in accurately portraying the hydrological landscape of the Strymon river valley as he is the Vale of Tempi in Thessaly and Pallene in Chalcidice. Each of these locations are dominated by caves, waters and notable rivers that flow directly into the North Aegean, and whirlpools that function as divine, narratological portals through which we can gaze at the beauty and mystique of the subterranean world. Each locale is presented in a way that highlights simultaneously its remoteness, accessibility, and permeability, much like the porous stone that comprises most of the underlying geology of these areas.

b. *cava mirabilia:* The Significance of Caves in the Epyllion of Aristaeus

Aristaeus ultimately succeeds in what he originally set out to do – his beloved bees are reborn from the ritual of *bugonia.* Vergil takes his time describing the visceral resurrection of the bees, which buzz “through the liquefied guts” of the bull (*liquefacta...per viscera*) and swarm out of its ruptured sides and belly (*toto...utero et ruptis efferuere costis*) (4.555-6). In the end, the bees are born from a hollowed, wet cavern, just as in the beginning of book four when they were given their natural characteristics within the moist hollows of Mount Dikte. Upon reaching the end of the epyllion, Vergil’s readers would then expect Aristaeus to situate his new hive within a similarly cave-like space.

---

531 Consider earlier in *Georgics* where Vergil describes the best places to situate one’s beehive: nearby springs and clear rivulets (4.18-20), nearby large rocks where they can sunbathe their wings (4.25-29), and within earthen ditches, the hollows of pumice stone (*pumicibus cavis*), and the caverns (*antra*) of eaten trees (4.42-44).
The presence of the ‘cave,’ therefore, demarcates each stage in the narrative of book four of the *Georgics*, and Vergil uses every word available to describe these enclosed, chthonic spaces. Each cave connotes a particular scene/aesthetic depending on who inhabits the cave-space, as well as where the cave-space is situated geographically. Vergil places *cava* around rivers, *speluncae* around groves, and *specus* and *antra* around rocky cliffs, all of which spaces are inhabited by divine figures, some of which are benevolent, others are hostile. Again, the particular topographies of the actual places in which Vergil places these caves would lead and Roman to conclude that one could very well expect to see such magnificent caves out in the wild: a lush, shady *spelunca* within Tempi, or a rocky, resounding, and ominous *specus* along Pallene, or a desolate, inhospitable *antrum* near Taenarum or the Strymon.

In terms of the epyllion’s overall moral, the cave functions as the backdrop for all moments of ‘transition’ within the narrative. The *Georgics* as a whole is structured in a way to highlight the natural, cyclical transitioning of life to death and death to life. This process is as multi-layered as the epyllion’s structure and as its notable characters. Aristaeus’ hive is revived, thus the process is overall positive (i.e. death to life) and, in turn, gives hope to the farmers who utilize *duritas* and *tenacitas* in tandem with their reverence towards Nature’s precepts. The embedded tale of Orpheus, however, warns the farmer of the dangers of failing to heed Nature’s laws, which is visualized in Orpheus’ double loss of Eurydice. On a smaller level, the protagonist Aristaeus experiences this cyclical transition again and again as he moves from cave to cave: Aristaeus journeys from Tempi (a place of death) underground to Cyrene (where his hopes are restored to life) only to venture to a cave on Pallene (a place of death) to have his divine *causaee* explained in terms of Orpheus’s descent into cavernous Hades (a tale of life to death). The overarching theme of mortalkind’s relationship with Nature comes to an optimistic, vivacious, and subtly ironic end within the hollowed flanks of a bull’s carcass.

Metaphorically speaking, the cave functions as a space where potentially destructive energy lies confined.\(^\text{532}\) All caves within the epyllion contain competing elements (air, water, earth, and fire) that

\(^{532}\) Weinberg (1986) comes to this conclusion in her own work on caves as metaphoric fields. She cites only a small handful of caves in Vergil’s corpus that bring her to such a conclusion; caves are the homes of (elemental) monsters: cf. the home of the
make up their respective, observably erosive environments, though elemental Water dominates all others: Cyrene’s *spelunca* contains within it divine waters (e.g. Cyrene, nymphs, and Ocean), flowing waters (e.g. the catalogue of rivers), and fresh waters (e.g. *liquidi fontes*); Proteus’ *specus* resounds with divine water (e.g. Proteus, Neptune, and Nereus), crashing waves, and brackish sprays; Orpheus’ *antra* possess divine water (Tartarus, sluggish, ominous flows (e.g. Cocytus, Styx, Strymon, and Hebrus), and stagnant pools (e.g. Avernus). The protagonist interacts with each of these potentially dangerous waters as he moves through the cave-spaces. This gives Vergil’s audience a sense of the Mediterranean’s karstic geology (or the elemental makeup of its subsurface material) as reflecting what occurs on its surface.533

By framing these spaces where divine knowledge is gained, trials (literal and elemental) are overcome, and life turns to death (and vice versa) as *subterranean* cave-spaces, Vergil adds *depth* to ideas already covered in breadth earlier in the *Georgics*.534 Yet, when one pulls off the shroud of myth from Vergil’s watery landscapes, we can see an overwhelmingly Roman outlook on humankind’s interaction with the natural world – Nature’s explicable and inexplicable processes are inescapable, yet humanity’s agricultural innovations hold superiority over the natural world. Aristaeus and Orpheus, who are stand-ins for mankind, behave differently within their respective cave-spaces, which are representative of the latent power and observable divinity of Nature. When we consider these caves as metaphoric (and physically accurate!) representations of untapped, unembellished natural environments, how the myth’s human protagonists act within such subterranean spaces, therefore, could be representative of how ancient (elite) Romans interacted with the natural world in reality; when approaching a cave-space, a virtuous Roman landowner had a choice of either leaving the cave as it is – naturally eminent and, therefore, suggestive of winds in *Aen*. 1 and the Sibyl of Cumae in *Aen*. 6.42; caves are also ‘refuge-traps’ where earthly pleasures are fulfilled that lead to ultimate destruction: cf. Aeneas and Dido’s marriage cave (*Aen*. 4.123ff), which is modeled off of Jason and Medea’s marriage cave: cf. Ap. Rhod. *Argon*. 4.1128-69, Weinberg 1986 66-68, and Nelsin 2001, 148-9. Weinberg is only interested in caves as metaphoric fields, which is why she pays no attention to the actual geology/science behind the cave spaces. It is odd, however, that Weinberg barely touches the *Georgics* for information about Vergil’s use of caves, considering how prevalent they are throughout the *Georgics*.

533 The aphorism ‘as above, so below,’ which was allegedly coined by Apollonius of Tyana (c. 15 – 100 CE), might best elucidate Vergil’s stance on speleology: the microcosm (subterranean Earth) reflects the macrocosm (surface Earth).

534 Cf. Vergil’s constant reminder to the audience that these subterranean spaces are “deep” (*altum*/*imus*): ll. 4.322, 333, 359, 368, 467, 471, 481, and 528.
divine influence – or embellishing it to make it ‘better’ – artificially eminent and, therefore, suggestive of a personal, cultured influence.

Within Cyrene’s spelunca, we see the human Aristaeus within a divinely inhabited grotto. How Vergil describes the watery, nymph-filled cave-space and how the grotto functions as a pastorally beautiful place to gawk at and contemplate would have led his more urban audience to view her cave as an ‘imperial grotto.’ Vergil’s Roman audience, therefore, would expect the space to have many elements of artificial embellishment. Yet, her cave has not been touched by human hands, even if we take Aristaeus as a stand-in for the innovative Georgic farmer/engineer. Aristaeus leaves no mark on the cave, rather the cave itself leaves a mark on Aristaeus, and in turn us readers, through its natural beauty, which Vergil illustrates with flowing waters, a juxtaposition of rough and smooth surfaces, nymph inhabitants, a watery libation to Ocean, and allusions to poetic predecessors. Aristaeus interacts with Nature’s beauty here with neither vis nor tenacitas, rather he explicitly shows utter reverence to Cyrene’s spelunca, and as a result he not only goes unpunished by his divine mother, but is also given praecepta to continue on his journey.

Within Proteus’ specus, however, we see the human Aristaeus within a naturally wild cave. Here, Aristaeus does in fact leave a mark on the cave-space. It has been argued that Aristaeus’ attack upon Proteus symbolizes mankind’s confident effect upon the mysteriously dormant powers of Nature; as a stand-in for the ideal Georgic farmer who possesses virtues of tenacitas and duritas, Aristaeus’ successful subduing the shapeshifting seer Proteus is the successful manipulation of Nature’s mystery.535 Speleologically speaking, Aristaeus leaves his ‘mark’ on the cave through the removal of Proteus, the cave’s wild, native inhabitant. What is left in the cave is the famous myth of their battle as well as a successful Aristaeus who ‘civilized’ the wild terrain.536 Such a violent move on Aristaeus’ part goes unpunished, according to Vergil – Aristaeus manipulated nature successfully because (1) the space itself

536 From a metapoetic perspective, Vergil could be alluding in Aristaeus’ success to the popular habit of filling aristocratic grottos (usually natural) with detailed sculptures with highly mythic connotations; in essence, Vergil’s famous description of Aristaeus’ bout with Proteus in a cave functions similarly to how mythically significant sculptures function within a naturally beautiful cave-space – immortalizing the commissioner’s erudition.
was inhospitable and useless to mankind and (2) Aristaeus kept his *Georgic* virtues at the forefront of his laborious efforts.

Orpheus’s tragedy, however, lies in how he incorrectly embellishes the wild cave-spaces in which he resides. Orpheus interacts with dangerous, natural caves (*antra*) at Taenarum and along the Strymon, which are similar to the dangerous caves (*specus/antrum*) with which Aristaeus interacts on Pallene. Orpheus, unlike Aristaeus, ultimately fails to show any reverence towards Nature’s laws and regenerative powers. As a stand-in for the ideal poet who possesses no virtues of *tenacitas* and *duritas*, Orpheus fails to ‘subdue’ Nature in his attempt to bring his Eurydice back from the dead. Speleologically speaking, Orpheus, like Aristaeus, leaves his ‘mark’ on the inhabitants of the cave-spaces of Taenarum and the Strymon, yet Orpheus’ lack of respect for Nature’s laws (i.e. Persephone’s *lex*) eradicates his humanity – he is left to dwell with the beasts and wander the desolate, northernmost boundaries of the civilized world having civilized nothing.\(^{537}\)

The sheer sight of a chasm beneath a mountain, the empty throats of stone within deep crags, and the running of water below the surface of the earth is enough to implant a sense of awe in one’s soul, which is proof, according to Seneca, that God exists in nature. Vergil seems to share with Seneca a similar sentiment in how he strategically places particular divinities and virtuous characters within particularly karstic caverns across the Roman world. Such a move in and of itself is enough to lead his Roman readership, like Vergil’s protagonist heroes, into the mysterious, alluring abyss for observable truths about the natural world.

---

\(^{537}\) Vergil, then, could be understood as critiquing those elites (Orpheus) who destroy naturally beautiful caves (or landscapes in general) with overly artistic and gaudy embellishment, which is a sentiment shared later by Seneca (*Ep. 55.6*) and Juvenal (3.17-22).
Appendix of Figures

Figure 1: The four major locations of cave-descents in the myth of Aristaeus.

Figure 2: Visualization of karst landscape and notable features.
Figure 4: Flowstones, stalactites, stalagmites, and limestone columns in Petralona Cave, Chalkidiki Greece.

Figure 3: Filiform helictite formation. Photo by Garry K. Smith
Figure 5: A sketch of the paleo-environment of the Thessaly plain with Tempi circled. Sketch from Migiros et al. 2012, 225.

Figure 6: White and orange flowstone in Psychro Cave, Crete. Photograph by Gerhard Huber, August 2013.
Figure 7: A white stalagmite “stool” in Phoros Cave on Andros, Cyclades. Photograph by Marios Papadopoulos.

Figure 8: An interwoven filiform helictite formation in the Cave of the Winds, Colorado.
Figure 9: Geological map of Pallene with possible region of Proteus’ cave circled. Sketch adapted from Psilobikos et al. 1988, 326.

Figure 10: A sea cave on the coast of Kassandra, Chalcidice. Photo by the management of Bubble Adventures Chalcidice, 2019.
Figure 11: Entranceway into the Oracle of the Dead at Taenarum. Photo by Paul Dykes, September 2018.

Figure 12: Schematic map of karst areas around the Mediterranean (bolded outline), including the location of known karst submarine springs (red dots) and notable karstic locations (labeled). Map adapted from Bakalowicz 2018, 2: Fig. 1.
Bibliography


