Callimachus of Cyrene and the wonders of the world: The invention of paradoxography for a Hellenistic audience

Submitted by

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Thesis submitted for the degree of Doctor of Philosophy

Faculty of Classics

University of Oxford

Trinity Term 2022

Word Count (excluding bibliography): 100,000 words

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Abstract

This thesis explores Callimachus' role within the discipline of paradoxography to reach further insights into Callimachus' compositional process for both his poetic and prose writings as well as to identify potential models that contributed to his conception of the genre. Our main source for Callimachus' paradoxography is the 9th-century Codex Heidelbergensis 398, which contains Antigonus' (of Carystus?) wonder catalogue. This in turn includes forty-three Callimachean wonders. Antigonus functions as an inevitable filter for most of our material. The most common examples of paradoxography are prose lists organised according to loose thematic or geographic criteria. Paradoxography poses fundamental questions about the reliability of second-hand information through its careful selection and manipulation of sources. I will examine the broad range of sources from which Callimachus extracts paradoxographical material and clarify his selection criteria. Especially, the location of wonders played a significant role. Geography was also the main organising principle for his paradoxographical notes. His poetry overlaps with paradoxography often enough in its geographical horizons, literary techniques, and material. The compilation of large amounts of data, the similarity to Aristotle's *Historia Animalium*, and the geographical focus on the Western Mediterranean places Callimachus' paradoxography on a similar footing to the vestiges of contemporary Peripatetic paradoxographical endeavours. Towards the end of my thesis, I examine how paradoxography concretely surfaced in Callimachus' poetry. Our Hellenistic sources indicate that prose paradoxography was deployed for poetical works, not only in Callimachus, but also in Archelaus, Posidippus, Philostephanus, and Apollonius of Rhodes. The thesis finishes with a case study on the *Seven Wonders*, a hebdomad also invented by Callimachus. The treatment of Callimachus' mostly natural wonders in Antigonus and that of the legacy of the famous hebdomad shows that he followed Herodotus' division of wonders into man-made and natural phenomena.

Acknowledgements

This thesis has been magnificently helped along by my supervisor Professor Jane Lightfoot who has always supported me in my research no matter how obscure the topic. She wrote countless recommendations, gave honest feedback where it was needed, and constantly encouraged me to take a step back and show a bit of compassion for my reader.

I have been lucky to call Brasenose College my academic home for several years now and will always cherish the hearty encouragement I have received from my former Brasenose tutors and especially Llewelyn Morgan to pursue graduate studies and explore all facets of my degree.

I would like to thank the staff at the *Bayerische Staatsbibliothek* in Munich who helped me navigate the depths of Rudolf Pfeiffer's archive despite the pandemic and restrictions on the amount of boxes that could be consulted in a day. The participants of the 2019 OIKOS conference in Nijmegen have helped shape my chapter on paradoxographical geography, particularly my respondent Professor Martin Hose. Fundamental was also the valuable feedback from my Transfer interview with Dirk Obbink and Felix Budelmann, which gave this thesis a completely different direction.

Several travel grants by the Craven Fund of the Classics faculty have helped me visit some of Callimachus' wonders and see the 'birdless' Lake Avernus in person – even if the budget did not stretch as far as Babylon and the Pyramids.

I would like to extend my thanks to Robin Lane Fox who has never tired of convincing me that Callimachus was more than an 'armchair' scholar and particularly Justine Potts and Neil McLynn who have shown me the way *ad astra per aspera* so that there will be a graduation day for me after all.

Most importantly, this DPhil would not have been possible without the unwavering support of my parents who have been there with me every step of the way. There are no words to express how much I owe to them.

List of Abbreviations

All of Callimachus's fragments are taken from Pfeiffer's edition and cited accordingly.

AB	*Posidippi Pellaei Quae Supersunt Omnia*, edd. C. Austin and G. Bastianini (Milan, 2002).
AP	*The Greek Anthology,* ed. W.R. Paton (London, 1916-18).
FGE	*Further Greek Epigrams,* ed. D.L. Page (Cambridge, 1981).
FGrHist	*Die Fragmente der griechischen Historiker,* ed. F. Jacoby (Leiden, 1923-58).
FHG	*Fragmenta Historicorum Graecorum*, ed. K.O. Müller (Paris, 1878-85).
Fränkel	*De Simia Rhodio* (Leipzig, 1915).
Giannini	*Paradoxographorum Graecorum reliquiae*, ed. A. Giannini (Milan, 1966).
IEG	*Iambi et elegi Graeci ante Alexandrum cantati*, 2 vols., ed. M.L. West (Oxford, 1989-92).
Nauck	*Tragicorum Graecorum fragmenta,* ed. A. Nauck (Leipzig, 1889).
PCG	*Poetae comici Graeci,* edd. C. Austin and R. Kassel (Berlin, 1983-89).
Pf.	*Callimachus. Vol. I: Fragmenta,* ed. R. Pfeiffer (Oxford, 1949).
PF	*Paradoxographus Florentinus*
Powell	*Collectanea Alexandrina,* ed. I. U. Powell (Oxford, 1925).
POxy	*The Oxyrhynchus Papyri*, edd. A.D. Trendall and A.S. Hunt (London, 1898-).
Rose 1886).	*Aristotelis Qui Ferebantur Librorum Fragmenta*, ed. V. Rose (Leipzig,
SH	*Supplementum Hellenisticum,* edd. H. Lloyd-Jones and P. Parsons (Berlin and New York 1983)
Wehrli	Die Schule des Aristoteles: Texte und Kommentar, ed. F. Wehrli (Basel, 1967-69).

I. Introduction to Paradoxography

It is a truth universally acknowledged among Hellenistic poets that it is best to start with Zeus, and for Callimachus' relationship to wonder there is no better place to start than *Iambus* 6 with the statue of Zeus in Olympia. Or rather the copy of the statue in Cyrene. Callimachus, who seems to be speaking for himself here, tries to dissuade his interlocutor from travelling to Elis solely for the purpose of seeing the statue. The armchair scholar openly admits that he does not acknowledge the aesthetic and awe-inspiring qualities of the original statue. Instead, he thinks that in its place one might as well satisfy oneself with the smaller copy in Cyrene and a list of the original's measurements, which he lists with an obsessive attention to completeness. As most of the *Iambi,* this one is not complete and we owe a summary to the *Digest*, which complements the few transmitted lines. The effect of seeing the original and awe at its artistic execution cannot be replaced by seeing a copy or indeed a list of its measurements. Still, Callimachus deconstructs the wonder a visitor might have felt. This is part of his manifold treatment of wonder. Although Callimachus sets his stories all over the Mediterranean, he evokes the impression that he never set a foot outside of Egypt or Cyrene and satisfies himself with the world as it is offered in his books.

The detached tone of what remains of this *Iambus* is strongly reminiscent of Callimachus' collection of paradoxographical notes transmitted to us via Antigonus of Carystus. The latter half of Antigonus' text from chapter 129 to 173 contains the Callimachean wonders.[1] The ca. fifty notes on marvellous natural phenomena clinically describe the bare essentials of natural wonders whilst attaching the name of the source of this information. But for the

[1] As remarked by de Sinner 1835, 6f. the end is corrupted, wherefore Westermann 1839 and Giannini 1963 left out chapters 174+175. Keller 1877, 42 added them in from *PV*.12 and Cramer 1839, 391, where they are ascribed to Antigonus rather than Callimachus.

content, the catalogue makes for an increasingly tedious reading. Still, one has to keep in mind that we are not dealing with Callimachus' own words but an excerpt by a non-Alexandrian scholar who wrote in a completely different environment and at least a century later.

With Callimachus' paradoxography we are walking on particularly slippery ground. Barely anything of what we might observe about these short notes can be unquestionably attributed to Callimachus himself as Antigonus has filtered Callimachus' original paradoxography. Still, in the absence of any comprehensive treatments on this topic, it is worthwhile to attempt to unlock some of Callimachus' achievements in this peculiar field of ancient scholarship. There is no instance before Callimachus of an independent systematic treatment of wonders.[2] Several scholars have even attributed to him the role of 'inventor' or 'pioneer' in the field of paradoxography,[3] a claim which this investigation will support, albeit with the qualification that paradoxographical interests existed in Greek literature before Callimachus. He only revolutionised the genre by aggregating and systematising these scattered paradoxographical reflexes, but this happened as part of a greater systematisation of knowledge which extended to many other disciplines. This creation of 'pure' paradoxography kick-started an excitement for the collection of wonders that exceeded even that of the Alexandrians, but these later paradoxographical features exhibited different features considering that the demands on the genre had changed over time.

[2] Pfeiffer 1968, 134-35.

[3] In favour of Callimachus as the starter of this tradition are Westermann 1839, X; Ziegler 1949, 1140f.; Giannini 1963, 248-9 and 1964, 105-9; Pfeiffer 1968, 134-35; Jacob 1983, 122-23; Hansen 1996, 3; Schepens/Delcroix 1996, 383-84; Pajón Leyra 2011, 22-23. For Sassi 1993, 458 Callimachus was 'come la tappa inaugurale del genere paradossografico.' Stramaglia 1999, 52-53 calls Callimachus and his contemporaries '*iniziatori*'. For Giannini 1963, 262, pseudo-scientist Bolos of Mendes together with Callimachus and Theopompus should get some of the credit for inventing the genre, but it is uncertain whether he lived before Callimachus or after. Fraser 1972, I.454 thinks there are 4th century predecessors but grants that Callimachus gave paradoxography its distinctive shape (pp.770f.).

1. What is paradoxography?

It is lamentable that only a small fraction of Callimachus' poetic output has survived into the present. Yet even greater is the loss of his prose works, of which we retain virtually nothing even though the *Suda*' generous estimation counted 800 Callimachean books.[4] His interests seem to have been wide-ranging in topics as diverse as ornithology, cult statues, city foundations, rivers of the world or the different names for the winds and many more besides. Research on these topics was facilitated through his access to the countless books in the library of Alexandria. Some of these fields of interest overlapped with a peculiar way of writing called paradoxography, which was a distinctively literary treatment of wonder. As part of this writing on wonders Callimachus seems to have dealt especially with water phenomena, zoological stories, as well as plants and stones. Like basically all of his prosaic oeuvre, Callimachus' paradoxographical writing does not survive first-hand. Our main source for Callimachus is the list of forty-four wonders in the 2nd century BC author Antigonus of Carystus[5] whose own identity is disputed. Callimachus, however, was the most widely quoted non-dramatic poet after Homer[6] and many traces of his work re-emerge in scattered references in later lexicographers, grammarians, and commentators, whom we can expect to have put their own individual spin on these evaluations of Callimachus' work. We also have regular mentions of him as a paradoxographer in Pliny and a small number of fragments filtered through later paradoxographical sources such as the anonymous *Paradoxographus Florentinus*, which contains several of Callimachus' wonders on water. Due to the problematic and obscure nature of paradoxography, there has never been a profound study of Callimachus' paradoxographical output, which the present treatment

[4] *Sud*.s.v.Καλλίμαχος.
[5] Pfeiffer 1953, XLVn.1 and Addenda p.122 argues that it was the 17th-century scholar Thomas Stanley who first discovered them not Bentley.
[6] Pfeiffer 1941.

intends to remedy. Because paradoxography is not a household term it will be necessary to clarify first what it entails and explore how it helps to enrich our picture of Callimachus' oeuvre.

a) Wonder does not a paradoxographer make

'Paradoxography' is a deceptive concept: on the one hand it is regularly used to signify any description of strange phenomena in a continuous text whether it be in prose or verse, epic or historiography. On the other hand, in the restricted sense, it refers to the fairly autonomous paradoxographical prose lists composed and rewritten from Hellenistic until Byzantine times, which will be the object of this treatise. The term also tries to encapsulate a dynamic textual phenomenon which was adapted to each author's needs, purposes, and intended readership, which themselves underwent profound transformations over the centuries. This means that even though two paradoxographical texts may look very similar on the outside, in reality they are organised according to completely different criteria and structural patterns. We will now analyse how paradoxography is different from the rather vague notion of wonder that occasionally appears in texts. Lately the general discourse on wonder has been labelled 'paradoxography' especially by scholars predominantly working on Roman literature,[7] but this should be sharply distinguished from the systematic writing about wonder as entailed by paradoxography proper.

Wonder in general can boast a strong presence and long tradition in Greek literature: Homer regularly resorted to the description of θαῦμα ἰδέσθαι for unbelievable phenomena, but his wonders usually concern human achievements or extraordinary characteristics.[8] Wonder was

[7] Hardie 2009 on Augustan poetry.
[8] Mette 1960, 49-53 classifies the Homeric marvels.

famously the state of mind that gave birth to philosophy and enquiry for Plato's Socrates.[9] Archilochus fr.122 West uses θαυμάσιος to describe a solar eclipse in 648 BC, but this does not mean that one should be looking here at the origin of a coordinated concept of wonder.[10] While science aims at both observing phenomena and explaining them, paradoxography presents a phenomenon but then actively withholds its explanation. This is exemplified by Antig.*Mir.*143 which talks about a well in Epirote Chaonia in which once its water is boiled, one will find a lot of salt. The full paradoxon, which is a very short example of its type, reads:

Ἐκ δὲ τῆς περὶ Χαονίαν, ὅταν ἀφεψηθῇ τὸ ὕδωρ, ἅλας γίνεσθαι.

This corresponds directly to Plin.*Nat.*XXXI.82: *in Chaonia excocunt aquam ex fonte refrigerandoque salem faciunt inertem nec candidum.* Pliny apparently preserves this wonder originally taken from Theopompus more fully than Antigonus who (taking this from Callimachus) omitted explanation and rationality to make the present passage sound more marvellous. For the paradoxographer explanations are not desired as what counts is the end product. Even Antigonus himself says that he has omitted the long explanations contained in Theopompus.[11] Antigonus' collection as a whole was probably not meant for publication considering it contains several personal anecdotes. It occasionally lacks care of composition, which results in some passages being not understandable if read isolated from their original e.g., Τὰ γαμψὰ πάντ᾽εἶναι μιμητικά.[12] Nebert also opens up the possibility that Antigonus' collection was written over a longer period of time.[13]

[9] *Tht.*155c-d cf. Arist.*Metaph.*982b
[10] Here θαυμάσιος describes the supernatural cf. Giannini 1963, 250, 253n.39.
[11] Γράφει δὲ καὶ τὴν πρόφασιν καὶ τὴν ἀρχήν, ἐξ ἧς ὤφθη, σφόδρα μακρῶς, διὸ καὶ παρελείπομεν (*Mir*.119). Schepens 2009, 272n.20 and Schepens/Delcroix 1996, 390-4 on 'extraction'.
[12] Antig.*Mir.*94 from Arist.*HA*.VIII.597b25. Köpke 1862, 10 and Wilamowitz-Moellendorff 1881, 20.
[13] Nebert 1895, 370-71.

Indeed, science and paradoxography seem mostly directly opposed in their functions. While the *paradoxa* are represented as facts and reported as such, they are purely meant to be pure curiosities, not scientific anomalies prompting an investigation. Early paradoxography seems to have been almost entirely restricted to natural phenomena[14] as the subjects of Callimachus, Pseudo-Aristotle, and Antigonus are exclusively taken from the natural world.[15] Giannini summarises the topics of typical paradoxography as water and animals, plants, and then in singular instances metals, stones, and fire.[16] The idea of a *paradoxon* in this case is pointing out irregularities in nature. This of course would postulate a relatively stable and unchanging conception of what nature or *physis* entails.[17] This idea would have been probably dictated by Aristotelian works on science together with other underlying conceptions about the world and that of Alexandrian scientists such as Eudoxus.[18] Paradoxography can only be classified as scientific insofar as it reproduces the results of scientific discussions, but it is void of causation or the seeking of understanding, which sets it apart from aetiology. One should picture it rather as living on the back of science than trying to imitate it in any way. Christ and Schmid expressed the same opinion more harshly: 'Uns erscheint diese ganze Schriftstellerei als ein Parasitengewächs am Baum der historischen und naturwissenschaftlichen Litteratur.'[19] Nita Krevans phrases this more positively: 'the key to the genre is the objective and rational presentation of an item which appears to break the laws of nature, in order to produce an "Oh!" of wonder, rather than an "aha" of understanding'.[20]

[14] Later paradoxography tends to be more inclusive in its subject matters. Apollonius for example includes anecdotes about mad people and their unusual behaviour, but this is very much the exception.
[15] Schepens 2009, 382-83.
[16] Giannini 1966, 427-30.
[17] Delattre 2018, 208: 'the paradoxographer points out elements of the world that belong to *phusis,* but are contrary to *doxa.*', cf. Krevans 2011, 125.
[18] According to Delattre 2018, 213 *paradoxa* are not supernatural but exceptional. A similar opposition is found in Arist.*Mete.*338a-339a (read with commentary by Pajón Leyra 2011, 244-45).
[19] Christ/Schmid/Stählin 1920, 237.
[20] Krevans 2004, 175 + 2005, 91.

What we should be looking at instead for the relationship of paradoxography with science is the maximum desired contrast between form and content which is already familiar from other Hellenistic poetry. Scientific subjects would have been the ideal candidates for wild claims.

With this background in mind, we should here supply the working definition of paradoxography as it will be deployed in this analysis. For paradoxography we will work with its restricted sense as paradoxographical collections contain lists of prose anecdotes of wondrous phenomena in close succession, which assiduously document their sources taken from a varied background and the locations associated with the wonders.[21]

Secondary scholarship commonly calls single paradoxographical entries *mirabilia* even in a non-Roman context, probably because *paradoxa* offers too many opportunities for confusion, for example, with philosophical paradoxes as those of the Stoics which had gained in literary traction in the 4th century. Most paradoxographical items are only a few sentences long: they offer a brief description of the wonder, whose location plays an important part, as well as an indication of the literary source from which this information is lifted. As Schepens pithily remarks: 'paradoxographical collections are essentially books made from books and systematic acknowledgement of sources is an essential ingredient of the paradoxographer's method.'[22] A typical example for a full *paradoxon* is the following, which derives from Antigonus' version of Callimachus:

> Τῶν δ᾽ἐν Ἄμμονι κρηνῶν λέγειν Ἀριστοτέλη, ὅτι τὴν μὲν Ἡλίου γε νομιζομένην μέσων μὲν νυκτῶν καὶ μεσημβρίας γίγνεσθαι θερμήν, ἕωθεν δὲ καὶ δείλης καθαπερεὶ

[21] Schepens/Delcroix 1996, 383-6, esp. 411: 'Paradoxography in its widest sense can be defined as the activity that describes παράδοξα, phenomena or creatures which occur against all δόξα (human expectation). […] Paradoxography in a narrower sense consists of a double activity: both collecting and describing παράδοξα.'
[22] Schepens 2009, 267.

κρύσταλλον, ἡ δ᾽ἄλλη Διὸς ὅτι καταφαίνοντος μὲν ἡλίου πιδύει, ἐπὶ δυσμαῖς δ᾽ἰόντος ἵσταται.[23]

Each paradoxographical text listed ca. 25-160 of these *paradoxa* in close succession. They were usually organised thematically and only rarely according to the author of the information. Especially since *paradoxa* were not extended narratives but smaller references, they probably seemed like movable entities, which could be inserted on demand.

Our paradoxographical texts date originally to Hellenistic times and often via Imperial Rome up until the third or 4th century AD but were especially well received in Byzantine times. For most of these texts we have to assume that they were copied, rewritten, cut, or extended over the course of time. Accordingly, for a text dating to Hellenistic times such as Antigonus' ἱστοριῶν παραδόξων συναγωγή we cannot be sure how much of the text contained in the Byzantine manuscript corresponds to the Hellenistic original.[24]

b) A largely anonymous genre

Often not even the authors' names help us to place the paradoxographical collections on a chronological timeline. Sometimes they are obscure names that are not known elsewhere, cannot be precisely identified, or are simply not conveyed. The paradoxographical texts seem to have set little store by the paradoxographers' names themselves, since it was their content that counted and not the person who had compiled the material. Part of the problem of identifying further authors of paradoxographical compilations is that their names are often not transmitted. Whereas the sources for the information carried intrinsic value as guarantors

[23] 'Concerning *the springs in Ammon Aristotle says that the one called 'that of Helios' is hot in the middle of the night and at midday, but at dawn and dusk it flows down with ice, and that the other called 'that of Zeus' gushes forth when the sun starts shining but is stayed at sunset* (Antig.*Mir.*144).'

[24] Musso 1977, 17 as a relatively isolated voice suggested that the concept of 'paradoxography' did not exist in antiquity but comprised only Byzantine collections with false names ascribed to them. This is contradicted by ancient testimonies such as Gel.IX.4.1-4 or papyrological evidence in POxy.II.218 (3rd century AD).

of authority, the excerptor was apparently considered less important. Either the information dropped out with further redactions of the same text or was not transmitted in the first place unless the later paradoxographer had a particular reason for including his name. By way of comparison, in Imperial times which experienced perhaps an even greater surge of epitomisation and compilation,[25] the name of the person transforming the original text was arguably accorded more importance than during Hellenistic times. In Hellenistic paradoxography, the intermediary or re-interpreter effectively vanishes behind the text.

Due to their compartmentalised and flexible character, paradoxographical collections often do not even have an introduction or have lost any introductions that may have existed. This is not exclusively the fault of the manuscript tradition, for most of them genuinely do not seem to have had one. The anonymous collections of the *Paradoxographus Florentinus*, *Vaticanus*, and *Palatinus* do not contain an introduction and the manuscripts do not show any signs that anything is missing here. The manuscript of pseudo-Aristotle, however, seems only to start in the middle of the text. Phlegon and Apollonius are also mutilated at the start. Antigonus likewise comes without an introduction but does contain methodological sections throughout the text. Delcroix was of the opinion that introductions were not even circulated in the first place[26]. At least we can assume that the compiler of paradoxography was not valued as much as their sources, and it is not unlikely that some paradoxographical collections genuinely did not contain an introduction or any personal comments.

Accordingly, scholars of paradoxography are faced with its unclear outline and transmission through mostly anonymous Byzantine compilations containing cores dating back to Hellenistic times. Paradoxography makes for a largely anonymous genre with many unidentified authors due the fact that it operates by preserving only the name of its ultimate

[25] König/Whitmarsh 2007, 29.
[26] Schepens/Delcroix 1996, 426-27.

sources.[27] Normally the names of the paradoxographers who have compiled the paradoxographical texts are dropped as unimportant when a new collection is compiled from it as it is the authority of the paradoxographical sources which gives the account credibility or worth rather than the compiler of the collection. Exceptionally, Antigonus credits Callimachus as an intermediary for his *paradoxa.* Occasionally, the same happens with other paradoxographers, but this is more the exception than the rule. The challenge consists in establishing which parts have to be dated earlier or at least contained information that was already compiled in its earliest stages. One can surmise that more profound discussions of the topic were presumably impeded by the unusual and unappealing appearance of the surviving paradoxographical lists as well as their uncertain provenance.

c) Audience(s)

The audience of paradoxography seems to have changed especially during the first two centuries of its existence.[28] The form of presenting paradoxographical information, however, appears not to have changed significantly across the centuries and probably always consisted of short prose items, which even back then were kept in simple and stylistically modest prose. It seems unlikely that people would have enjoyed or benefitted from reading these prose lists in quick succession.[29] Still, Schepens and Delcroix have included paradoxography under the broad category of literature for popular consumption which also includes the ancient novels. Yet this is a retrospective projection based on the claims of Roman Imperial authors such as Aulus Gellius who famously mentions the cheap wonder books that can be

[27] Rosenmeyer 2006 questions the concept of genre for antiquity. He would not call paradoxography a genre but a set of conventions following its πρῶτος ἑυρετής, Callimachus. For Susemihl 1891, 835 paradoxography became its own *Gattung* by developing out of Ionian historiography.

[28] As will be argued later on, Callimachus' paradoxography was organised according to geographical phenomena rather than thematic ones, which marks out his methods as different from that of later paradoxographers.

[29] Useful might be Umberto Eco 2009: His term 'vertigine della lista' ('dizziness of lists') describes the enthusiasm for catalogues which he considered typical of the Western world since Homer (transl. A. McEwen as the '*The Infinity of Lists*'.)

bought at the port of Brundisium.[30] Schepens and Delcroix rightly separate the Greek from the Roman traditions of paradoxography. By contrast, Jessica Lightfoot in her thesis 'Wonder and the Marvellous from Homer to the Hellenistic World' starts off her discussion with this Roman author from the 2nd century AD to demonstrate that by this point the Roman lens obscures the previous Greek paradoxography which she aims to uncover. It is problematic to assume that the readership of paradoxography around the turn of the millennia or later reflects the environment in which the first examples of systematic paradoxography was consumed. There are only few paradoxographical papyri in existence, which do not help to establish a firmer chronology. Among the strongest pieces of evidence for Callimachus' readership are other Hellenistic poets which either contain 'soft' allusions to paradoxographical interests such as Posidippus or are Callimachus' direct pupils such as Philostephanus and Polemon who wrote their own paradoxographical treatises. This range of authors clusters around Callimachus' own lifetime and shows that this genre was taken up almost immediately in elite circles, but the evidence for a wider popularity of paradoxographical texts is missing at these early stages – much in contrast to Callimachus' significance for later paradoxography.

An alternative way of approaching this question consists in looking at how contemporary understandings of wonder can reveal the rationale behind it. At least for Alexandria, the seat of the Ptolemaic court, we are surprisingly well-informed especially as concerns Ptolemy Philadelphus' interest in novelty and animals as well as the reading habits of the court and its intellectual elite. Ptolemy kept his own zoo in the royal quarters and sent expeditions downstream on the river Nile to bring back exotic animals. This is commemorated in an anecdote by Lucian in his *Literary Prometheus* (4): the king presents to the people firstly a black camel decked-out with jewels and secondly a man who is part white, part black.

[30] Gel.IX.4.1-4.

Whereas the people are scared of the former, they make fun of the latter. Ptolemy Philadelphus despondently realises that his appreciation for novelty was not shared by the majority of the people. Lucian here jibes at the gap between base emotions which these beings evoke in the broad public and that of profound wonder and appreciation, which Ptolemy as a member of the elite would have expected from his audience. From this one might deduce a difference in how paradoxography would have been appreciated as it implies that an elite audience would have been interested in the novelty effect of the information conveyed by paradoxography without offering enough entertainment to the broad public. Of course, one has to keep in mind that Lucian wrote significantly later than the events he describes, but in his context, this is precisely how this episode should be interpreted. Perhaps the different receptions of wonder represented by Lucian's anecdote and the ubiquity of Aulus Gellius' wonder books indicate that the audiences of paradoxography could vary in time and place depending on socio-cultural circumstances.

d) The purpose of paradoxography

There have been many different suggestions for the function of these little anecdotes, which are mainly characterised by their brevity. The idea that they are small nuclei of information for reuse similar to ὑπομνήματα is the most likely one.[31] They were the seeds for stories that could be inserted in poetical texts, versified into an epigram, or expanded into a longer story. Paradoxography later resurfaces as material for the Greek novel, but it should be stressed that prose lists are inherently different from proper novels, which never use this material systematically. By contrast, there are concrete examples for the versification of *paradoxa* especially by contemporaries of Callimachus in Archelaus and his pupil Philostephanus. Therefore, it would have been poets next to interested antiquarians and not everyday readers

[31] Schepens/Delcroix 1996, 403-4. We will compare this to Parthenius' Ἐρωτικὰ Παθήματα, cf. Jane Lightfoot 1999, 219-20.

who would have been the audience for these *paradoxa.* Most of the paradoxography which we can locate as having been written in Alexandria seems to have served as a basis for court literature. Archelaus' epigrams which are transmitted in Antigonus' text reflect this interest in exotic animals and correspond to the zoological focus in paradoxographical texts. Considering how long paradoxography existed as a literary concept, it is unlikely that it would have always maintained its same role whatever it might have been at the start. Imperial paradoxography could have well deployed paradoxography very differently to the first Hellenistic paradoxographers, a note of caution which we will have to continually keep in mind. Much more likely is it to argue for paradoxography's gradual move away from court literature to being mere material for copying and re-composition.

Considering the scale of lexicographical and grammatical activity in the Alexandrian library of which Callimachus was a pivotal figure, it seems necessary to consider where paradoxography might fit in this para-literary world of commentaries, lists, and excerpts. Lists were an integral part of ancient education, a métier, which Callimachus as a previous schoolteacher would have been all too familiar with, and there are some singular texts like the *Laterculi Alexandrini,* which list wonders next to other items. With the help of evidence from related disciplines one may overcome the severe lack of coherent paradoxographical material. Yet my focus on paradoxography seeks not to place it above any of the other disciplines practised in Hellenistic Alexandria. Indeed, Callimachus himself would probably be surprised by the overwhelming enthusiasm with which his collection was met during Imperial and Byzantine times. Instead, my intention is to demonstrate along which lines knowledge was collected in Alexandria and then passed on to later generations – with paradoxography representing one example among many. For example, Callimachus' research on foundation stories in the shape of his Κτίσεις νήσων καὶ πόλεων καὶ μετονομασίαι, which seems to have been based on the same concept of excerpting earlier prose and poetic models, was probably as extensive as that on wonders (one may think of

the Sicilian cities discussed in book II which combines both areas of research).[32] His Κτίσις-poetry could have impacted later literature as much as paradoxography did, had it only struck more of a chord with subsequent as well as Imperial and Byzantine generations. The decrease in dynamism with which new foundations occurred, meant that these stories mainly occur in fossilized form in Roman authors,[33] whereas interest in wonder only seems to have increased with time.

Just as paradoxography was based on extraction and copying, the material from other genres gained ever more in size. Once the creative process of inventing a text is abandoned in favour of copying, extracting, and rearranging, it is easier to produce large quantities more quickly. By the early Imperial period, the size of the material was vast and led to an increased output in the genre of encyclopaedias. On the Roman side, Varro and Pliny served up the Hellenistic material for a Roman audience. This development was both fortunate and unfortunate for our opportunities to study paradoxography. On the one hand more material including paradoxography was transmitted to posterity. On the other, it makes it increasingly difficult to discern paradoxographical content in this cumulative pile of anecdotes. Here, I would argue, one can see the origins for the influx of mythological material into paradoxographical lists, which we discuss later. Jacob has warned that encyclopaedic endeavours tend to defy any separation into distinct disciplines. Occasionally, new knowledge is created through arranging information into new contexts.[34] Lexicography, for example, where the need for systematic explanations of exotic words was supplemented by additional information surrounding the word, aspired to a near-encyclopaedic completeness.[35] Viewed from this angle, paradoxography was only one of many disciplines covered by Callimachus'

[32] Fr.43, cf. Schmid 1947, 55-64.
[33] Tib.2.5; Ov.*Met.*3.1-130 (Thebes), 9.447-49 (Miletus), 9.633-34 (Caunus), 15.9-59 (Croton).
[34] Jacob 1998, 20, 24-27; Jacob 1996.
[35] Hatzimichali 2013, 76.

encyclopaedic effort, but its reception in later Greek literature meant that it was continued as an independent genre after Callimachus produced its first example.

2. Overview of relevant paradoxographical texts

Since the paradoxographical texts do not belong to the most current set of texts familiar to every Classicist (in contrast to the rather prominent sources they rely on), we list the main texts qualifying as paradoxography. Due to the great numbers and variety of texts that could be counted as paradoxographical, the following list has to remain incomplete. It endeavours, however, to represent a helpful overview of the most important texts and to contain only those which are relevant to the present topic.

a) Pseudo-Aristotle's Περὶ θαυμασίων ἀκουσμάτων

Arguably the most famous paradoxographical text, even in antiquity soon after Aristotle's death it was acknowledged not to be his own creation, but that of the Peripatetic school.[36] One should reserve any judgement on whether a 'serious' scholar like Aristotle would have engaged in paradoxography, but should stress that the Peripatetic method of collecting information seems to have represented an almost all-comprehensive desire for knowledge that would not necessarily have stopped before paradoxography. This text, however, is peculiar and has most likely nothing to do with Aristotle considering that multiple passages are lifted from his *Historia Animalium.* Several bits could not have been written before the 3rd century BC.[37] Frequent sources are Theophrastus, Timaeus, and Theopompus. Remarkable is the rather large section about Italy and the Western Mediterranean.

[36] Diogenes Laertius does not feature it among Aristotle's works.
[37] Ziegler 1949, 1151.

b) Antigonus of Carystus

The Heidelberg Codex Palatinus Graecus 398, which hosts Apollonius, Philo of Byzantium, and Phlegon of Tralles next to more mythographical texts such as Pseudo-Plutarch's *De Fluviis*, Antoninus Liberalis, Parthenius, and geographical treatises such as Hanno's *Periplus*, also contains this important paradoxographical collection.[38] Antigonus' text itself is divided into five larger sections, which are either dedicated to one subject or delineated by his primary sources. The spurious book IX of Aristotle's *Historia Animalium* as well as a compilation of Callimachus' *paradoxa* are two of his major sources.

With Antigonus' collection we face a major problem of dating. Wilamowitz-Moellendorff had identified its author with Antigonus of Carystus, one of the polymaths at the Pergamene court in the second century BC.[39] The text was identified as that of the Carystean by Stephanus of Byzantium in the 6th century whose entry on the island Gyaros is connected with Antigonus of Carystus and worded very similarly. This identification is rejected, for example, by Nebert who believed that Stephanus drew the local epithet from its opening section, while otherwise the paradoxographer is merely called Antigonus without an epithet.[40] Other reasons commonly used are that his paradoxographical writing style was

[38] Musso 1976, 4-5 offers a description of its content.

[39] Wilamowitz-Moellendorff 1881, 24. The fact that intensive scholarly activity was happening in Pergamon which was familiar with Callimachus' scholarship, is shown by Antigonus' collection and Dionysius of Halicarnassus who knows a Pergamene Πίνακες (*Din*.11.99).

[40] The opinion of Nebert 1895, 363-75 and 1896, 773-80 stands relatively isolated, apart from Susemihl 1891, 468ff. Without epithet in Tzetz.*Schol.*Lyc.*Cass*.387, Hsch.s.v.κειρύλος, *Schol*.Ar.*Av*.299, *Schol*.Theoc.7.57, Phleg.28, *PV*.12. Despite the heavy controversy surrounding this author, the paradoxographer may be roughly dated through the mention of Aristocles' disciple Timon (fr.169.2: Τίμων δὲ ὁ κιθαρῳδὸς εἶχεν καὶ ἐπεδείκνυεν πολλοῖς, φάσκων αὐτῷ τὸν διδάσκαλον Ἀριστοκλῆν δεδωρῆσθαι, εἶναι δ᾽ αὐτῶν τὴν ἀφὴν ἐν τῇ χρείᾳ σκληράν. The author even jumps to the imperfect tense). This would date the Ἱστοριῶν παραδόξων συναγωγή to shortly after Callimachus' own in the mid 3rd century BC, which would be backed up by the fact that both Antigonus and Callimachus use Timaeus, but not Myrsilus, cf. Wilamowitz-Moellendorff 1881, 24 and Nebert 1895, 373. Combined with the faithful transcriptions which have only been corrupted through transmission, we can relatively confidently place the author in the 2nd century BC even if a final identification with the Carystean is not possible. Dorandi 1995 + 1999, xi-xxxii identifies Antigonus of Carystus with the sculptor but rejects his authorship of the *Mirabilia,* following Musso 1976 who argues for the collection's authorship by the Byzantine Porphyrogenitus. Hesychius.*Lex*.s.v.ἴληοι had spoken of a wonder also contained in our paradoxography (Antig.*Mir.*18) as being sourced from Antigonus of Carystus' Περὶ ζῴων which also served as a model for Stephanus of Byzantium, cf. Köpke 1862, 15-16. Dionysius of Halicarnassus I.6 knew a historian Antigonus who operated very similarly to a paradoxographer: ἕκαστος ὀλίγα καὶ οὐδὲ ἀκριβῶς αὐτῷ διεσπουδασμένα, ἀλλ᾽ ἐκ τῶν ἐπιτυχόντων ἀκουσμάτων συνθεὶς ἀνέγραψεν.

judged to be inferior to the rest of his compositions. Considering that most paradoxography seems to be written in relatively plain terms, one should discount this argument. Further, chapter 78 and 84 quote phenomena covering local Carystian phenomena. These are exactly those passages which do not cite an alternative source for their claims, which indicates that Antigonus of Carystus was the one who made these observations.[41] This is not unlike Callimachus who included his own observations about his hometown Cyrene in his poetry or integrated stories narrated by natives in his poetry. Furthermore, Antigonus' text mainly relies on Callimachus and Aristotle's *History of Animals* and uses no later author than Archelaus of Chersonesus who was a contemporary of Callimachus, which makes it likely that he lived during the second century BC.[42] His sources are very similar to that of Pseudo-Aristotle.

c) Archelaus of Chersonesus

Depending on one's definition of paradoxography, one may include Archelaus of Chersonesus, a poet also based in the Museum, in the list of paradoxographers. He is mainly known for his paradoxographical epigrams about exotic animals. All of them are preserved exclusively by Antigonus who cites them in his text (albeit outside of the Callimachean section). These three epigrams most likely stem from his Ἰδιοφυῆ, a title known from Diogenes Laertius (II.19) and the Scholia to Nicander's Θηριακά 823, if we reject the argument for the Ἰδιοφυῆ as a prose work.[43] Archelaus, of course, could have also written both in prose and verse. Antigonus' presentation of Archelaus (ch.19) implies that he shared an unspecified closer connection with the Ptolemaic ruler: καί τις Ἀρχέλαος Αἰγύπτιος τῶν

[41] Ziegler 1949, 1146. Other places about which he seems to have deeper knowledge are Crannon in Thessaly (15), Elis (13), Boeotia (6, 10).
[42] Fraser 1972, II.657-58n.62; Ziegler 1949, 1145-9.
[43] Fraser 1972, I.778; Berrey 2017, 61-62.

ἐν ἐπιγράμμασιν ἐξηγουμένων τὰ παράδοξα τῷ Πτολεμαίῳ περὶ μὲν τῶν σκορπίων οὕτως εἴρηκεν (it follows a citation of one of the epigrams).[44]

d) Philostephanus

According to Athenaeus, Philostephanus was also from Cyrene and Καλλιμάχου γνώριμος.[45] He wrote a treatise περὶ παραδόξων ποταμῶν from which several secondary sources quote. A short epigram cited by Tzetzes about a Sicilian lake permits the deduction that this work was actually composed in verse or was a collection of epigrams on a paradoxographical theme.[46]

e) Myrsilus of Lesbos

A historian and paradoxographer operating during the reign of Ptolemy Philadelphus (283/2 to 246 BC) who seems to have introduced the category of anthropological wonders into paradoxography.[47]

f) Nymphodorus of Syracuse/ Amphipolis

Clearly a Hellenistic local historian or geographer who wrote περὶ τῶν ἐν Σικελίᾳ θαυμαζομένων. The scholia to Apollonius of Rhodes name a Nymphodorus as the author of a Νόμιμα βαρβαρικά.[48] It is unclear whether the author from Syracuse is the same as the Amphipolean.

[44] The assignment of one Ἰδιοφυῆ to an unspecified Ptolemaic king in the *Vita Arati* seems faulty. cf. *FGE* pp.84-5, *SH* 712.
[45] Ath.VIII.331d.
[46] Tzetz.*H.*VII.670ff.
[47] Stramaglia 1999, 53, cf. *FGrHist* 477; Jackson 1995.
[48] *Schol.*A.R.II.1010*;* Höfer 1904.

g) Polemon

Polemon of Ilion is probably the same man as Polemon of Athens, who also died there. The Stoic philosopher wrote a *periegesis*, which later served Pausanias as a model for his *Tour of Greece*, which has paradoxographical characteristics.[49] From him remain a hundred fragments, thirty-eight of which are periegetic. His nickname Στηλοκόπας implies that he used a lot of evidence from material objects such as inscriptions or public monuments for his works on Italian and Sicilian cities.[50] It is unclear whether his περὶ θαυμασίων merely describes one of these works or is a separate paradoxographical treatise.

h) Bolos of Mendes

Speculations vacillate about the mysterious Bolos from being a minor figure to being perhaps one of the authors who inspired Callimachus to his paradoxography. According to Stählin and Schmid, Callimachus responded to Bolos' Περὶ τῶν ἐκ τῆς ἀναγνώσεως τῶν ἱστοριῶν εἰς ἐπίστασιν ἡμᾶς ἀγόντων (*About Things from our reading of History that impel us to make enquiries*).[51] He was apparently a Greek neo-Pythagorean philosopher active in the early 3rd century BC Ptolemaic Egypt, but there is also a case for placing him in the 2nd century BC.[52] The Suda mentions a Pythagorean philosopher of Mendes in Egypt who wrote about marvels and astronomy, but also a Bolus who was philosopher of Democritus' school,[53] which according to Columella has to be the same person.[54]

[49] Bencker 1890. For Pausanias see Cundy 2016.
[50] Ath.VI.234d; Susemihl 1891, 665-76.
[51] Christ/Schmid/Stählin 1920, 237, 127.
[52] Węcowski 2007.
[53] *Sud.*s.v.Βῶλος.
[54] Col.VII.5 cf. Stob.*Serm.*51.

i) Apollonius

Each of Apollonius' fifty-one Ἱστορίαι Θαυμάσιαι tend to be longer and more detailed than any given by other paradoxographers. Curiously the manuscript (Codex Palatinus gr.398) contains between the title and the main body of the text a truncated sub-heading with only the word Βώλου remaining. This hints at a closer relationship to Bolos. The sources cited in his text are roughly similar to those in Callimachus, apart from the smaller local historians which are based on his own individual selection. Nothing is known about Apollonius besides that he must have compiled his work around the 2nd century BC. An Oxyrhynchus papyrus dated to the 2nd century AD preserves a tiny section of his Ἱστορίαι Θαυμάσιαι.[55]

j) Nicolaus of Damascus

The Jewish historian and philosopher[56] who was born around 64 BC and later moved to Rome, wrote a universal history in 144 books. He seems to have tried his hand at ethnic or anthropological paradoxography with his παραδόξων ἐθῶν συναγωγή and worked in the spirit of the Peripatetics.[57]

k) Isigonus of Nicaea

Isigonus also sometimes called the 'Paradoxographer' lived in the 1st century BC or AD. He showed an interest in rivers and springs.[58] He is disproportionally often mentioned as a source in the *Paradoxographus Florentinus* and was used by Pliny.

[55] Inv.7 1B.7/J (b) discussed in Pajón Leyra 2014, 304-05 containing *Mir.*49.1.1-6.
[56] Translation from Syriac by Drossaart Lulofs 1969.
[57] Laqueur 1936, 364, 400-401, 423-24.
[58] Susemihl 1891, I.480-1; Öhler 1913, 162; Giannini 1966, 146-48.

l) Sotion

According to Photius, Sotion's paradoxographical work was exclusively dedicated to water,[59] like the *Paradoxographus Florentinus*. The probably Peripatetic philosopher working under Hadrian[60] can perhaps be identified with the Sotion mentioned by Aulus Gellius to whom is attributed a book comprised of different themes called Κέρας Ἀμαλθείας.

m) The Romans: Cicero, Varro, and Pliny

Both Cicero and Varro have been credited with a work called *admiranda.* Yet while Varro's engagement with encyclopaedia does not surprise us in the list of recipients of paradoxographical material, it is relatively surprising to find Cicero in this list. Naturally inclined to approach every topic with scepticism and be prepared to argue both sides of an argument, it is remarkable that Cicero should have endorsed paradoxography which worked with the complete dispensation of explanations. Perhaps it was connected with the geography his friend Atticus urged him to write. Priscian knows of a *Chorographia* by Cicero.[61] Potentially, his paradoxographical work was therefore in the geographical tradition. The two *paradoxa* that are directly attributed to his *Admiranda* interestingly both deal with water. Other *paradoxa* which are not connected to a title, deal with the malicious glances of women, as well as historical, zoological, and botanical material. Varro definitely drew on paradoxography probably for the purposes of his encyclopaedia. Pliny the Elder is probably one of our best points of information in order to reconstruct the authors of paradoxography. Allusions to them are scattered across his whole oeuvre.

[59] Phot.*Bibl.*189.145b28: Σωτίωνος τῶν σποράδην περὶ ποταμῶν καὶ κρηνῶν καὶ λιμνῶν παραδοξολογουμένων.
[60] Tzetz.*Ad Lyc.*1021.
[61] *Att.*7.2.1; Prisc.*GLK.*2.267.5.

n) Pseudo-Plutarch's *De Fluviis*

Although traditionally not counted among the paradoxographical texts, it contains some paradoxographical features.[62] Overall, it lists twenty-five items usually structured around a river. For each river, the author names a mountain, a stone, and a plant found in the area around the river. At first glance, the geographical distribution of these wonders equals that of our paradoxographical texts with some excursions into exotic countries such as India, but also the occasional mention of places in the Greek heartland. Often more mythography than paradoxography, the rivers and mountains are located in the landscape through their relation to Greek myth. Plants and stones are often described for their medicinal purposes, thereby exceeding the normal scope of paradoxography. The text cites its sources as meticulously as paradoxography does, but half of the names cited are unknown to us. It has been suggested that these authors are invented names. Against this opinion, which is mostly founded on the uncertainty surrounding this text, speaks the fact that the other half were authors regularly exploited for paradoxography such as Ctesias, Aristotle, or Aristobulus. One might suspect based on the simple titles of its sources (Περὶ ποταμῶν, Περὶ λίθων etc.) that these are mainly either chapters of a larger treatise or paradoxographical excerpts taken from more extensive originals.

o) Phlegon of Tralles

Phlegon's Περὶ θαυμασίων[63] probably from the 2nd century AD mainly deals with transformations and wonders of human bodies, which is not a typical subject of paradoxography.[64] Phlegon's technique, however, is paradoxographical: he gives locations, occasionally even dates, as well as sources, while his subject matter is wildly fantastic. Of

[62] Schepens/Delcroix 1996, 380-99 for an overview of paradoxography's typical features.
[63] *FGrHist* 257; Giannini 1966, 169-219.
[64] Hansen 1996, 11. The difference between Phlegon of Tralles and earlier paradoxographers has been first elaborated by Kazantzidis 2018 who perceived a shift through the influence of the Hippocratic corpus.

the original text perhaps a third is missing to us.[65] The author of the Ὀλυμπιάδες was a freedman of Hadrian and perhaps dedicated his work to the emperor.

p) *Paradoxographus Florentinus*[66]

The *Paradoxographus Florentinus*[67] is one of the most revealing texts when it comes to Callimachus' original paradoxography even if dated to the 2nd or 3rd century AD. It preserves several of Callimachus' original *paradoxa*. It exists in several versions all of which derive ultimately from the codex *Laurentianus Graecus* LVI dated to the 13th and 14th century. It consists of forty-three *mirabilia* all of a hydrographic nature and often very close to Sotion's wonders. In the codices it appears under the clumsy title: Κρῆναι καὶ λίμναι καὶ πηγαὶ καὶ ποταμοί, ὅσοι θαυμάσιά τινα ἐν αὐτοῖς ἔχουσιν.

q) *Paradoxographus Vaticanus*

This text contains hydrographic, zoological, as well as ethnographical information, which is probably owed to its ultimate source Nicolaus of Damascus. Yet neither he nor Antigonus, who was also used as a source, are mentioned.[68] If the authorship of Nicolaus should prove correct, we might assume a date around the 1st century AD.

r) *Paradoxographus Palatinus*

This catalogue of twenty-one marvels of hydrography, animals, and plants is preserved by several codices contained in the Vatican Library,[69] which contain two different versions, one of the first eight items, the older comprising all twenty-one items. The paradoxographer cites

[65] Stramaglia 1995, 191-98.
[66] Just like the *Paradoxographus Vaticanus* and *Palatinus*, the *Paradoxographus Florentinus* was not included in Westermann 1839. Giannini 1966 included them after their discovery.
[67] Öhler 1913 is still the most comprehensive treatment.
[68] Pajón Leyra 2011, 164.
[69] Giannini, 1966, 353.

some more unusual names previously unknown in connection with paradoxography such as Athenaeus.

s) Mythography

It will be helpful to observe the rise and development of paradoxography in parallel to another prose genre, namely mythography. Mythography offers perhaps one of the closest correspondences and occasionally even blends into paradoxography, which makes it hard to disentangle one from the other. It is occasionally used as a source for paradoxography and relies on similar sources. Furthermore, it is also written in a factual prose style and rose to popularity in the 4th century BC in parallel to the increasing number of scattered references to wonder in Greek literature. In a wider definition of paradoxography, which includes fantastical stories, the two genres blend together. Mythography seems to have become more popular again in Imperial Greek literature as for example in Περὶ ἀπίστων, the paradoxographical title of both Heraclitus the Paradoxographer and Palaephatus.

3. Terminology

a) Variable vocabulary

When confronted with a signal word such as θαυμάσιος and παράδοξος, we first have to ascertain whether these are mainly due to a general 'discourse of wonder' which is very common in Greek literature or are mentioned as part of a systematic writing about wonder as we find in paradoxography. This ultimately means that one cannot rely on signal words alone: The adjectives θαυμάσιος and παράδοξος feature in equal measure in our Hellenistic

sources, while late antiquity leaned increasingly towards the latter.[70] What the Greeks termed *paradoxa*, finds its equivalent in the Roman *mirabilia.* One paradoxon or *mirabile* is the *Mikrotextsorte* of a whole paradoxographical text, to follow Wenskus' phrasing.[71] A paradoxographical text is therefore a collection of *paradoxa* and never one continuous text. Because the *paradoxa* were so compartmentalised they were easily lifted from their original context, reorganised, or used individually. Of course, θαυμάσιος and παράδοξος are not the only terms used to speak about wonder. Since wonder could be expressed in manifold terms in the Greek language, paradoxographical terminology can be occasionally diffuse. Possible variants are ἴδιος[72] as in Archelaus' possible title Ἰδιοφυῆ or ἄπιστος 'incredible'. Otherwise ξένος 'alien' (Antig.65), or τέρας[73] with the adjective τερατώδης[74] are also used. It can also lurk, however, in unexpected phrases such as here in Aelian who says of Theophrastus: δαιμονιώτατα λέγει.[75] Within the paradoxographical texts themselves we see a surprising lack of coherence in its expression of wonder.

Unlike most paradoxographers, Antigonus does include expressions for wonder in his rather plain text. The range of terms is large: Antig.*Mir*.9.2: τερατωδέστερον; 15: ξένον; 20: θαυμάσια; 22: τερατῶδες; 25: θαυμαστά; 25: θαυμαστόν; 105: θαυμασιωτάτην; 128: τερατωδέστερον. In 105 we are fortunate to be able to prove that in this case he copies the expression of wonder already found in the original: Ἡ δὲ τῶν μυῶν γένεσις θαυμασιωτάτη from Aristotle's *Historia Animalium* 580b10–14.[76] It is particularly striking that these words expressing wonder exclusively occur in the former part of the collection, which includes a fair bit of Aristotle's *History of Animals,* but not the substantial Callimachean section. Either Callimachus did not include these terms in his initial paradoxography or alternatively

[70] Ziegler 1949, 1137.
[71] Wenskus 2000, 309.
[72] Timaeus used ἴδιος interchangeably with παράδοξος, cf. chapter II.
[73] Antig.*Mir.*136, Phleg.2.
[74] Antig.*Mir.*128.
[75] Ael.*NA.*V.27.
[76] Leigh 2013, 187.

Antigonus' copy of Callimachean *paradoxa* (the ἐκλογή of ch.129) had by Antigonus' time deleted all expressions of wonder contained in Callimachus' original. It would be hard to construct an argument according to which Antigonus kept these wonder evaluations for the Aristotelian section only to drop them in the Callimachean part. It is nearly impossible to make any reliable inferences about the intermediary ἐκλογή, but it is likely that Callimachus himself did not include them in his prose collection. His prose collection was of course not necessarily Callimachus' end product, as the poet could insert expressions of wonder subsequently if he wished. Within the collection it is redundant to repeatedly refer to thaumatographical material, whereas in poetry it would be needed to signal a wonder. Mentions of wonder are relatively rare in Callimachus' poetry and are too rare to form a coherent picture of Callimachus' use of these terms.

b) The term 'paradoxography'

Paradoxography as a term describing a particular ancient way of writing about wonder is highly problematic as it tries to capture a diffuse textual category. Rather than being a label from antiquity, it stems from the 12th century Byzantine grammarian John Tzetzes.[77] For Byzantine scholars paradoxography apparently consisted of a sufficiently large body of text to justify a common label. This fact is very valuable to us considering that no ancient treatise groups together these texts to treat them as one category. At the same time their presence is so overwhelming in Greek and Latin literature that scholarship was under pressure to find a common term for these texts. In 1839 Westermann reused Tzetzes' mention of παραδοξογράφοι and coined this particular way of writing as paradoxography. A new albeit long neglected discipline was born. The Greek word παράδοξος as describing something contrary to expectation already had this meaning in antiquity, although so far, we lack any

[77] Tzetz.*H*.II.35.154. This is its only occurrence although VII.144.634ff. features a list of paradoxographers.

evidence that Callimachus ever used this term himself.[78] Despite its relatively modern designation we are fairly certain that something approximating a paradoxographical genre existed even if titles are often all that remains of them. Where we have a title that resembles περὶ … παραδόξων or περὶ … θαυμασίων, we can be certain that the text at hand was written in the paradoxographical spirit.

c) Titles of paradoxographical collections

At times, the titles of paradoxographical works more resemble chapter headings than titles of full paradoxographical collections, which is why we often cannot be sure whether we are dealing with independent works or books that formed part of a greater work. At times titles seem to be mere descriptions of the themes under discussion, for example, if one is confronted with a phrase like περὶ ὀρνέων. Yet it could also be the title of a full book for which we have no guarantee. In the meantime, we are reliant on the phrases used by later commentators to make it clear what the full paradoxographical titles were. Every author seems to have had a different opinion of what constituted complete citations, which leads to a great deal of confusion when it comes to paradoxographical titles. Macrobius, for example, provides the full title of Polemon's paradoxographical work: *Polemon in libro qui inscribitur* περὶ τῶν ἐν Σικελίᾳ θαυμαζομένων ποταμῶν.[79] This has to be compared with Athenaeus who cites it slightly more incompletely as περὶ τῶν ἐν Σικελίᾳ ποταμῶν.[80] This episode where Macrobius inserts a Greek title into a Latin text is on the one hand one of the few occasions where the title can be assumed to be correct, but on the other demonstrates how easy it is for words to drop out. Ziegler offers an alternative explanation for Athenaeus' brevity by taking Macrobius' title as a chapter heading belonging to a larger work which

[78] Only Antigonus in his selection of Callimachus' wonders mentions an ἐκλογὴν τῶν παραδόξων, but this says more about Antigonus than Callimachus.
[79] *Sat*.V.19, 26.
[80] Ath.VII.307b.

also contained non-paradoxographical treatments of Sicilian rivers.[81] Rather than assuming that Polemon described Sicilian rivers through different approaches of which paradoxography was one, it is more likely that the transmission of these titles was just faulty. The wide-ranging topics are probably nothing more than several sub-sections or books contained within a larger paradoxographical work, which were only counted separately. For each paradoxographical title we have to analyse anew how it has to be interpreted, while we should constantly be aware of the fact that these titles have constantly been in flux in antiquity. For Callimachus we cannot even be sure that he himself fixed a title for his paradoxographical collection.[82] Still, the working titles given by later readers often paraphrase the content, wherefore it is worth discussing the titles at greater length as aids in order to better understand the structure of the paradoxographical treatises as a whole.

4. The Sources of paradoxography

Paradoxographical items nearly always give an indication whence their information is taken. Therefore, paradoxography's essential characteristic is its constant documentation of its sources, which betrays a keen desire for credibility.[83] Roughly seventy-five percent allude to specific literary sources, while the rest are either attributed to unidentified local inhabitants, which leaves the matter unsatisfactorily vague, or dispense with naming their sources altogether.

The range of sources Callimachus displays in his fragments is indeed broad. The fundamental challenge exists in evaluating the criteria by which Callimachus lifted curious

[81] Ziegler 1949, 1149.
[82] Jacob 2000, 93 provides a concise overview of how the same texts were given different titles. For Blum 1977, 192-93 the long title transmitted by the *Suda* was not a Callimachean invention.
[83] Schepens/Delcroix 1996, 382-9.

anecdotes out of literary texts. Whether these might be specific indications such as signposting words like παράδοξος or θαυμάσιος, which signal a following remarkable tale, or perhaps only a vague notion of something sounding marvellous, the question is worthy of study. Our analysis is hindered significantly by the fact that most of Callimachus' sources themselves are not extant. Occasionally, they are known second or third hand through the report of a later author, which often does not help to put our assumptions onto any more stable footing. Still occasionally, the effort is worth the result especially when it helps to reconstruct less well-known authors. In Antigonus, he cannot be safely assumed to reflect Callimachus' original wording. Hence, this study will usually shy away from analysing the specific usage of words but evaluate how much of Callimachus' original content including his sources can be salvaged. This should provide further insights into Callimachus' methods and principles that guided his paradoxographical composition. We will also carefully strip away the impression left by Antigonus' filter in order to lay bare what is retrievable from Callimachus' original ἐκλογή. Antigonus seems to have been proud of his own achievement and repeatedly compares his own work with that of Callimachus, which occasionally helps us to place him better and throws the relationship of the Pergamene scholar with Alexandrian scholarship into relief, cf. ch.126: δόξαι δ'ἀνεξέταστόν τι ἔχειν καὶ δυσπαρατήρητον ἡ ἐκλογή (Antigonus' term for Callimachus' collection).[84]

There is no denying that paradoxography is a source-based phenomenon and formally initiated by a scholar whose literary technique consisted of receiving, synthesizing and innovating on previous literature.[85] Still, when studying paradoxography one should not restrict oneself to the sources for paradoxography: 'Attempts made at delineating paradoxography from other forms of literature in terms of the particular subject matter

[84] '*The selection might seem be to lacking in inquiry and care*', cf. Nebert 1896, 779.
[85] Westermann 1839, X-XI.

treated in it (Ziegler 1949) or by exploring its roots in Greek epic, historiographical, scientific and philosophical literature (Giannini 1963) do not really explain what paradoxography is all about.'[86] Paradoxography, for example, is not scientific simply because it reuses scientific facts. It is never an attempt at getting a systematic set of scientific information. A lot of 'scientific' facts concerning animals or rivers are taken from historiographies or poetry, which is not to say that these too did not often convey scientific information in antiquity. There is no correlation between the type of text paradoxographical information is taken from and the character of the paradoxographical end text which normally places diversity over coherence.

A further elementary clarification has to be made for the different stages of paradoxographical texts. The source text itself qualifies only rarely as paradoxography (which is different from containing paradoxographical elements), whereas the excerpts resulting from non-paradoxographical sources are condensed into proper paradoxography. Examples for texts exploited for content without being paradoxographical range from Homer to scientists like Eudoxus and local historians or poets such as Pindar. At times this distinction will be difficult to draw – as we will see in the case of Herodotus whose historiographical digressions could have inspired the first attempts at paradoxography, but who has never consciously committed himself to a paradoxographical programme or even a systematic writing about wonder. The most frequent reason for why we cannot ascertain whether these source texts counted as paradoxography or not is their insufficient textual transmission as is especially the case for Timaeus and Ctesias. Many indications point towards them both occupying a liminal place situated between historiographical and paradoxographical writing. These 'original' texts then were cut and epitomised in order to

[86] Schepens/Delacroix 1996, 380.

make up a collection of wonders taken from a wide range of primary sources.[87] This is roughly the stage where one should locate Callimachus' role i.e., as someone who compiled paradoxographical lists, but consulted the original sources.

The later we move temporarily, the less is a paradoxographical text likely to rely on a primary text, which means that later paradoxographers merely resort to using earlier paradoxographical collections as a secondary source rather than look for their own texts to extract wonder from. Here the compiler would solely rely on purely paradoxographical sources and create his own individual selection with his own agenda. The paradoxographer in this case does not check the validity of the information in the primary source, but reuses it as given in the paradoxographical selection. Later paradoxography therefore involved less reading across literature and dispensed with access to extensive libraries. Occasionally, one sees a mix of first-hand *paradoxa* and those extracted from other paradoxographers' collections, so a mix of first-hand and second-hand sources. Considering how subjective the paradoxographical method is, every new paradoxographical collection was effectively a repurposing of its original material and a clear departure of the original intention. While paradoxographers are 'no original thinkers', but 'consumers of the ideas of others',[88] we should still endeavour to understand the criteria according to which paradoxographers organised their material, which remains a task for the future especially considering the rapid growth of the phenomenon in Imperial and Byzantine times.

There seems to be some confusion about this transmission in the case of the Peripatetic sources. A large percentage of our paradoxographical notes seem to be Peripatetic in origin or are ascribed to Aristotle or Theophrastus directly. Yet the Peripatetic interest in

[87] Schepens/Delcroix 1996, 394.
[88] Schepens/Delcroix 1996, 409.

paradoxography lies in obscurity also when it comes to one of its most abundant texts, the Pseudo-Aristotelian Περὶ θαυμασίων ἀκουσμάτων, which had a doubtful status even in antiquity. It cannot be proven how many of the *mirabilia* directly derive from Peripatetic texts and how much has run via different channels. Thus, it is unclear whether the Peripatetics were among the originators of the paradoxographical production or only among its most frequently cited sources. Within paradoxography we are constantly confronted with later texts which tend to be more numerous but skew our sense of what the aims were of early paradoxography. Due to the 'washing' of sources, *Quellenforschung* in paradoxography is made harder than usual.

5. Callimachus' paradoxography

Callimachus' poetic persona is that of a literary scholar who constantly wonders about the world. He is thirsty for a constant stream of new knowledge, an attitude which is specifically manifest in the *Aetia,* his 'poem of knowledge'.[89] Wonder in the *Aetia* is the incentive to ask questions and a desire to understand. In contrast, wonder in his *Iambi* as far as we can tell from their fragmentary state appears in a different guise. Naïve wonder is deconstructed and analysed as a literary technique much more so than in his *Aetia*. This contrast would be even more pronounced, if we had access to the entirety of his work. For the moment this thesis attempts to rise to the challenge of analysing these varying treatments of wonder based on Callimachus' engagement with paradoxography. This applies by extension also to other Hellenistic poets such as Posidippus or Apollonius of Rhodes who occasionally verge on paradoxography and who interacted either personally or through the written medium with

[89] Hutchinson 2003.

Callimachus. Paradoxography - as will be argued - was a distinct way of writing that would have been recognised as such by its contemporaries.

The treatment of Callimachus' role in the creation of paradoxography has been largely overlooked considering that he is widely acknowledged as its inventor. In Antigonus of Carystus' Ἱστοριῶν παραδόξων συναγωγή there exists a paradoxographical text which records forty-four Callimachean *paradoxa* together in one place. Antigonus' very last section is fairly self-contained and subdivided into themes such as rivers, lakes, and springs. It is introduced by the words: Πεποίηται δέ τινα καὶ ὁ Κυρηναῖος Καλλίμαχος ἐκλογὴν τῶν παραδόξων, ἧς ἀναγράφομεν ὅσα ποτὲ ἡμῖν ἐφαίνετο εἶναι ἀκοῆς ἄξια (*Mir.*129).[90] Antigonus here implies that all the following *paradoxa* are reported by Callimachus and credits him as an intermediary. With this statement Antigonus gives Callimachus a more important role than normally allotted to compilers of paradoxography. Nearly every *paradoxon* details where its information was taken from. This is representative of paradoxography as a whole as individual paradoxographical sections normally name the ultimate source from which they are derived rather than the person who transmitted this piece of information. But for Antigonus' explicit acknowledgements, it would be impossible to know that he compiled the collection. Normally Callimachus' name would be superfluous if he had not been an authority in his own right – namely as the founder or πρῶτος ἑυρετής of the paradoxographic genre and Antigonus' immediate intellectual predecessor.

We can be certain that the latter end of Antigonus' text really does derive from Callimachus. In chapter 26 Antigonus had announced the following *paradoxa* to stem from Aristotle. Since the vast majority of Aristotle's corpus is extant, we can tell that the items collected in chapters 26 to 115 really derive from Aristotle's text. Hence, we can put some confidence

[90] '*The Cyrenean Callimachus has also made for himself a selection of wonders, of which we are listing as many as once to us seemed worthy of hearing*.' The medium could imply Antigonus to have thought that Callimachus prepared this selection for his own purposes.

into Antigonus' ascription of sections 129-173 to Callimachus. This is a very important point since this constitutes the main body of Callimachean paradoxography we will be working with. This differs from the *Paradoxographus Florentinus* where such a firm ascription is not possible. It repeats some of the Callimachean wonders found in Antigonus. Yet since the Carystean produced a subjective and largely unsystematic selection which does not reflect the entirety of Callimachus' paradoxographical output, we have no way of telling which of the other *paradoxa* in the Byzantine text are Callimachean because this time the unknown author dispensed with the mention of Callimachus as intermediary and only named the ultimate sources for the information.

It remains to be asked exactly why Callimachus decided to embark on paradoxography. The reasons will lie in the contemporary world but also in the literary tradition. For his immediate surroundings, we can cite two of the standard features of the Hellenistic world, which will have had immediate repercussions on the literature. One of them is the disclosure of new disciplines through an increase in cultural connectivity as well as the new spaces conquered by Alexander, which offered new intellectual challenges. The other is the move from an oral culture to a 'book culture'. Literary reality was suddenly at odds with external reality as the ideas about exotic countries differed from the latter and the literary world had propagated its own ideas about geographies. This gap between perceived and lived reality was prime material to be codified in the nascent genre of paradoxography.

Paradoxography includes not only the ideas circulating during Hellenistic times but also those entertained by previous generations. The broad majority of all sources employed by paradoxographers date to the 4th century. Callimachus as antiquarian and poet responded to literary and intellectual trends by recycling them throughout his works. This study selects those sources relevant to his conception of paradoxography and hopes to throw some hitherto

underestimated literary influences for Callimachus into sharper relief. Callimachus' move to include paradoxography in his poetry and dedicate at least one prose treatise to this subject will have to do with the fact that he found an increasing number of marvellous stories in historiography and poetry. On the historical side this applies especially to Ctesias, Herodotus, Timaeus, and Theopompus, while a surprising one is Philetas of Cos: rarely appearing as a source for paradoxographical material, his poetry appears prominently in Antigonus' collection. The range of authors and genres which represented Callimachus' sources is huge. All this together with the Peripatetic enthusiasm for collecting information in lists would have contributed to Callimachus' conception of paradoxography.

The extensive body of prose works credited to Callimachus both helps and obscures our research. Its most famous example, the Πίνακες, can perhaps serve as a useful model for how Callimachus selected and systematised information. Charged with the systematisation of the titles contained in the library of Alexandria despite not holding the prestigious position of head librarian,[91] Callimachus commenced on an organisational challenge, which occupied him for a substantial part of his life. The end product of his activity consisted of the Πίνακες, the library catalogue which sorted titles according to author, title, incipit, and very importantly genre, with the full title: Πίνακες τῶν ἐν πάσῃ παιδείᾳ διαλαμψάντων καὶ ὧν συνέγραψαν ἐν βίβλοις κ καὶ ρ. The few remaining fragments of the Πίνακες[92] reveal a distinctly prosaic character just like Callimachus' table of dramatic poets and their works.[93] These texts exhibit a desire to record information in an as all-encompassing and neutral way as possible. It is easy to imagine Callimachus' original paradoxography in the same style. Indeed, what remains in Antigonus of Carystus and the *Paradoxographus Florentinus* suggests such straightforward prose.

[91] Blum 1977, 179+190-91 for a nuanced discussion of this much discussed matter.
[92] Frr.429-53.
[93] Πίναξ καὶ ἀναγραφὴ τῶν κατὰ χρόνους καὶ ἀπ᾽ ἀρχῆς γενομένων διδασκάλων (frr.454-56).

The basic problem when dealing with Callimachus' paradoxography is that we cannot be sure what form his paradoxographical writings really took, which has implications for the titles we can attribute to his works. Transmitted are quite a number of titles which could be paradoxographical, but since a title as περὶ ὀρνέων could designate a chapter, a full book, or a disjointed paradoxographical collection, the great number of titles is problematic.

Next to the Πίνακες we also know of prose works with the titles Περὶ ἀγώνων (fr.403), Κτίσεις νήσων καὶ πόλεων καὶ μετονομασίαι (fr.601), Περὶ ὀρνέων (frr.414-28), Περὶ ανέμων (fr.404), Βαρβαρικὰ νόμιμα (fr.405), Ἐθνικαὶ ὀνομασίαι (fr.406), and Περὶ νυμφῶν (fr.413). We cannot be sure whether all these titles stood for independent books or whether they were subsections of one and the same book. A work which could have encompassed most of these subjects is θαυμάτων τῶν εἰς ἅπασαν τὴν γῆν κατὰ τόπους ὄντων συναγωγή, a title which is transmitted by the *Suda* and often assumed to be the name of Callimachus' collection of wonders. In Pfeiffer it covers fragment 407, which contains Antigonus' wonders, and fragments 408-411. The title, of course, has to remain speculation, but nothing speaks against the fact that Callimachus made systematic prose compilations of a wide range of wonders. This taxonomy could be easily extended to other topics such as marvellous animals, stones, or plants. Considering that Callimachus covers a lot of ground in his poetry, we will be analysing how Callimachus' poetry and contemporary Hellenistic poetry overlapped with the prose treatment of such niche themes as birds, city foundations, or nymphs. [94] These topics are addressed in his transmitted titles (Περὶ ποταμῶν, ἀνέμων, ὀρνέων, ἀγώνων), which demonstrates that paradoxography was only one of many prose collections integrated into poetry.

What we can deduce from the titles is that Callimachus' paradoxography was framed by their geographical locations i.e., the *paradoxa* were arranged according to geographical

[94] Prioux 2008 first considered these thematic overlaps more closely.

location. This is obvious from titles such as his alleged main paradoxographical work as well as Περὶ τῶν ἐν Πελοποννήσῳ καὶ Ἰταλίᾳ θαυμασίων καὶ παραδόξων. His pupil Polemon likewise subsumed his paradoxography under titles betraying a geographical organisation. Yet we know of no other obvious paradoxographical texts written after Callimachus or Polemon whose titles mention any geographical particulars. Therefore, a fundamental shift in the organisation of paradoxography seems to have occurred in the generation after Callimachus. Perhaps this shift was precipitated by the focus on particular categories such as rivers, springs, lakes, etc. as can be seen in Antigonus' excerpt in Callimachus or the way that Callimachus' titles could have easily represented separate treatises: now the geography appears subsumed under the thematic arrangement as generic geographical descriptions moved from the chapter heading into the individual chapters or sections unless they already contained a precise indication of space.

Next to the geographical focus, we will extend our examination to the type of works described by these titles. We are not helped by the fact that titles recorded in the *Suda* tend to be faulty or slightly changed. Otto Schneider has analysed possible changes in profound detail, which I will briefly set out at this point. He highlighted the differences indicated by the word συναγωγή as found in the *Suda* and the term ἐκλογή, which Antigonus used to describe Callimachus' text. They denote highly diverging concepts.[95] In paradoxography we have to distinguish between different levels of epitomisation. Callimachus' kind of epitomising is very different from that of later paradoxographers. Whereas the poet extracted his *paradoxa* exclusively from literary and scientific texts, in the generation after Callimachus there developed presumably two types of paradoxographical treatises. The συναγωγή exclusively gathered *paradoxa* that were subjectively interesting to the paradoxographer and collected them together in a new work that recorded all the original

[95] Pajón Leyra 2011, 86-88 for a brief discussion.

sources. The συναγωγή is probably best translated as 'compilation' which implies some level of structure and organisation in its compilation.[96] This is the case for the collection of Callimachus' *paradoxa* which Antigonus relied on.

By contrast, Antigonus in his introduction to the Callimachean section calls the source for Callimachus' works an ἐκλογὴν τῶν παραδόξων. Westermann had assumed it to be identical with the *Suda*'s συναγωγή.[97] Schneider objected to this and claimed that ἐκλογή might most usefully translate as 'selection'. An ἐκλογή technically could have been solely an excerpt of Callimachean paradoxography or used other paradoxographers or primary sources, even if that does not apply in Antigonus. Schneider came to his conclusion because the *paradoxa* were no longer arranged geographically but thematically, signifying an additional level of abstraction.[98] In this case, one might be inclined to infer that the temporal gap between Callimachus and Antigonus was even wider than is generally assumed. Yet there are some signs that paradoxography was picked up very quickly in educated circles, which means that further developments in the field could have happened relatively quickly. Should there really have existed both the compilation and the subsequent individual selection, it would help to explain how Callimachus' original geographical organisation was changed to a thematic one. In this case the move from geographical to thematic organisation was purely an editorial choice by the excerptor, but it seems more likely that it was Antigonus who imposed the thematic order considering that this aligns with the organisation of the first part of his συναγωγή.

Interesting in this context are the Θαυμάσια occasionally attributed to Theopompus, a text which is sometimes considered as one of the first paradoxographical texts even if it is neither fully transmitted nor clearly dated. A minority of scholars ascribes it to Theopompus, while

[96] Schepens 2009, 270.
[97] Westermann 1839, X.
[98] Schneider 1873, 14.

the majority sees it as a condensation of the 8th book of his Φιλιππικά by an anonymous author.[99] Theopompus is used frequently as a source in paradoxographical texts, but we cannot ascertain whether this derives from paradoxographical sections in his larger oeuvre or only from the Θαυμάσια. Considering that Herodotus had also dealt with wonders in digressions as will be discussed later on, it is not unlikely that Theopompus addressed wonders throughout his work. Indeed, Theopompus was also the first to make an epitome of Herodotus. Theopompus' epitome presumably worked exactly like Callimachus' ἐκλογή apart from the fact that the former distilled a historical text which was particularly dense with miraculous phenomena, while the second already exclusively consisted of wonders. In Callimachus and Theopompus we have two early authors who were interested in *paradoxa*. The challenge consists in ascertaining how systematic this interest was. Accordingly, a thorough study of Callimachus can also have major consequences for other writers of paradoxographical texts and give valuable insights.

6. Previous Scholarship

The disservice that has been done to this branch of literature consists in the fact that these texts are not neglected per se – even if they deserve to be better known-, but that in the past they were simply mined for the information they delivered but not considered as literary texts in their own right. Cuypers' comments on the inadequate attention paid to Hellenistic prose literature in contrast to Hellenistic poetry equally apply here:[100] paradoxography has shared the fate of the rest of Hellenistic science as a plain prose genre with little literary appeal all without being of interest to historians of science.

[99] Christ 1993, 49n.11 on the debate whether it formed part of the Φιλιππικά or not.
[100] Cuypers 2010, 317-18.

The problems posed by paradoxography are the following: firstly, it confounds expectations: it is neither high literature nor do we have a statement of intent as we normally can read in introductions to literary texts. Even Antigonus of Carystus who frequently intercuts his text with authorial information, seems not to have supplied his text with an introduction. Accordingly, it appears like a rather random accumulation of encyclopaedic knowledge without being all-encompassing. Most paradoxographical works are impossible to date, with the majority only deriving from the Heidelberg Codex, the Byzantine compilation of earlier material. Overall, these were not favourable circumstances for the study of paradoxography, which is why Callimachus' paradoxography has been so grossly neglected.

In previous years an increasing number of studies have looked at wonder in general or paradoxography as a whole. The ideal starting place remains Ziegler's entry in *Paulys Realencyclopädie* on the *Paradoxographoi,* which is still one of the best summaries on the topic. Giannini has edited most of the paradoxographical texts from Callimachus onwards, which is the go-to edition after Westermann.[101] Hunzinger especially has advanced the study of early attitudes to wonder significantly but stopped before Hellenistic times. Pajón Leyra's treatment despite its profound analysis almost completely skirts around the issue of Callimachus' invention of paradoxography even if it is otherwise an invaluable study of paradoxography.[102] Schepens and Delcroix recognised the massive difference between the Hellenistic conception of wonder and that entertained in Roman times. They have split their study accordingly, but firmly assigned paradoxography to the realm of consumerist literature.[103] The split between Hellenistic times and Roman literature is symptomatic of how paradoxography is mostly approached today: single Hellenistic paradoxographers are analysed without regard to how they are received in Roman texts, while allusions to wonder

[101] Westermann 1839; Giannini 1966.
[102] Pajón Leyra 2011.
[103] Schepens/Delcroix 1996.

in the latter are explored without understanding of the previous trends in Hellenistic paradoxography which have shaped this literary treatment.[104]

One would have expected more engagement with Callimachus' interest in wonders considering we have this rich body of text. A possible reason for this failure thus far is that the word θαῦμα and its cognates, frequent indicators of paradoxography, do not stand out with an overbearing presence in Callimachus' remaining poetry.[105] Thus, there was no immediately obvious link which might have led to a closer study. Further, it is disconcerting that paradoxographical collections cite Theophrastus, Timaeus, or Theopompus much more often than Callimachus, but then Callimachus only functioned as an intermediary for these sources. Indeed, we are lucky that Antigonus of Carystus even credited his own source in Callimachus so meticulously.

Callimachus' wonder books have so far only been dealt with in a few articles with a view to Callimachus' entire prose oeuvre. Evelyn Prioux has at least pointed out the thematic correspondences between Callimachus' *Aetia* and his paradoxographical texts with a focus on hydrography.[106] A praiseworthy study of Hellenistic paradoxography is contained in Fraser's work *Ptolemaic Alexandria* even though this is of course not the focus of the book.[107] Blum and Krevans have dedicated a few pages to the question of the paradoxographical texts in relation to the rest of Callimachus' prose books.[108] Blum is a valuable resource for looking at Callimachus' prose oeuvre and especially the Πίνακες. Yet

[104] Hardie 2009 on Augustan poetry, cf. Myers 1994, 146-59 who better understands the relationship.
[105] There are four mentions of θαῦμα in Callimachus' remaining poetry: θάμβος fr.43.85, ἔταφες *Dian*.103. *Del*.67, 232 mention Iris as daughter of Thaumas. Perhaps also fr.800 Θαυμακίης ἱερὸν Ἀρτέμιδος. Pfeiffer 1927, 40-41 points out that the *Suda* (s.v.Σέβας) describes Callimachus' wonder as an equivalent of σέβας 'awe': σέβας τιμή, ἔκπληξις: παρὰ δὲ Καλλιμάχῳ τὸ θαῦμα: τό δ' ἔχω σέβας. Kapp 1915, 82 first ascribed this θαῦμα to the context of the *Hecale*.
[106] Prioux 2008.
[107] Fraser 1972, I.453-55, 764-75.
[108] Blum 1977, Krevans 2004 + 2011.

despite presenting an admirable number of hypotheses based on the scanty remains we have, Blum has not tried to connect his theories with the poetry remaining in larger quantities. The present discussion differs from previous work by focusing on Callimachus' paradoxography and analysing the topic from different angles. This study will not only open up new strands for the study of Callimachus' paradoxography but also a chance to better understand Callimachus' poetry and especially its organisational principles.

My thesis is based on the premise that Callimachus was not only the author of these countless treatises but that he used this systematically acquired knowledge in a productive fashion throughout his poetry. His references to birds, water, and cult statues about which he compiled systematic lists are scattered throughout his text in the same way as his paradoxographical material is.[109] His paradoxographical material offers itself as an object of study because it represents the largest amount of Callimachus' preserved prose material even if not in direct quotations. It is one of the few possible ways of ascertaining how Callimachus employed prose literature in his poetic oeuvre, especially considering that many of the literary texts cited in the paradoxographical texts have irrevocably been lost themselves. Additionally, wonder implies a state of mind on top of the object of wonder, which makes it a more pervasive issue in Callimachus' poetry than say, for example, the regular allusions to specific names of winds or birds. Wonder contributes significantly to his poetic self-fashioning.

[109] Öhler 1913, 8 recognised early that Callimachus inserted water *paradoxa* into his *Hymns* and other works.

7. Chapter outlines

Chapter II will delve into the question of sources employed by Callimachus in contrast to other paradoxographers. As someone with access to almost the entirety of the known literature of the ancient world, Callimachus was in a nearly unique position for the compilation of data. This fact is reflected in the plethora of sources appearing in our paradoxographical lists. While his most popular sources seem to have been local histories, which themselves exhibited a tendency to include wonders, some of his sources are of a scientific nature such as Aristotle, Theophrastus, and Eudoxus, others poetical such as Pindar and Stesichorus. Some sources found their way into the paradoxographical texts for their local expertise. The Alexander historians are underrepresented considering that they have written extensively about natural phenomena in the East, while Peripatetics such as Theophrastus or Aristotle are preferred. It is surprising that Herodotus who had a profound interest in wonders, has not contributed as many *paradoxa* as one might have initially assumed. Within the sources there is a distinct cluster of 4th century sources, which on the one hand speaks for greater availability of these sources, but also reflects a trend towards paradoxographical anecdotes in the historiography preceding Callimachus' lifetime. This thesis will somewhat schematically dissect the constituent parts of paradoxography. It will analyse the distribution of its origins while recognising that the *Quellenforschung* for its geographical, historical, and Peripatetic sources does not always allow for this. The ancients did not distinguish all genres as neatly as modern scholarship does with its taxonomical obsession with fitting complex matters into narrow categories. Still, there are patterns to be observed in the selected sources which reveal a lot about Callimachus' methods in compiling this collection, which will be thrown into even sharper relief by a comparison with Antigonus and how he deals with his sources. Furthermore, in this chapter we will look further at the

selection process employed by individual paradoxographers, which usually takes the shape of an ἐκλογή ('selection') rather than a συναγωγή ('compilation').

Chapter III will turn to the geographical organisation of Callimachus' original paradoxography. Nearly every *paradoxon* is connected to a topographical location, which applies both to early Callimachean paradoxography and the latest exponents of the genre. Yet while the titles of early paradoxographical treatises pay homage to this trend since their titles (or maybe their chapter titles) contain geographical indications such as Polemon's περὶ τῶν ἐν Σικελίᾳ θαυμαζομένων ποταμῶν, later paradoxographical treatises forego geographical organisation. This is already signalled by Antigonus who moulds Callimachus' *paradoxa* into thematic categories. Internal comparisons within each of these categories can still reveal more about Callimachus' original selection of wonders and how even he probably had some thematic ways of organising paradoxographical information within geographical frames. There is relatively sparse information about exotic countries, which one might have expected in a work assembling marvels. If exotic wonders appear, they seem to do so for the purposes of comparison. In Callimachus' paradoxography there is a distinct lack of paradoxographical material about Egypt, while some areas received a remarkable amount of attention such as the rivers of Sicily or the Peloponnese. Crucially, the horizon of Callimachus' paradoxography seems to overlap with that found in his poetry, which will be demonstrated through a few examples.

The following chapter IV will be dedicated to the questions paradoxography asks about the nature of truth and Callimachus' relationship with Herodotean wonders. Herodotus looms large in paradoxography but paradoxically his own material is barely ever represented in the collection. Paradoxography occasionally approximates the working mechanisms of Ionian historiography in phrases such as Antigonus' ἀκοῆς ἄξια. Paradoxography seems to imply

an acoustic process, while historiography is usually based on eyewitness accounts. Although paradoxography integrates oral sources, it eschews ethnography at the same time. Further, we will delve into mythography which shares a few similarities with paradoxography with the boundaries between the two seeming fluid. This chapter will distinguish further between paradoxography which is inherently static and that of mythography, which, similar to aetiology, implies a process. A few isolated *mirabilia* survive in Antigonus' recension of Callimachus which are mythographical in character and do not seem to fit in with the rest. They potentially derive from other non-paradoxographical works by Callimachus, which were mixed up with his proper paradoxography.

The next chapter V will inquire how far paradoxography can really be called an Alexandrian invention considering that its organisational aspects and subject matter closely align with that of the Peripatetic school. Aristotle and Theophrastus are not only frequent sources for paradoxography but also seem to have shared the same interest in the natural world as paradoxography did, albeit with a lesser concentration on water bodies than Callimachus. Although this line of inquiry has been repeatedly rejected by modern scholarship on Callimachus,[110] there are several obvious links between Athens and Alexandria. One of them is on the personal level with new evidence emerging for Callimachus' temporal presence in Athens, which would fit his general interest in atthidography. Additionally, Demetrius of Phalerum is considered to have had a fundamental influence over the organisation of the budding library in his time. On a textual level, closer analysis of paradoxography's sources reveals less reliance, for example, on Timaeus than generally assumed but more on Peripatetic sources, which only rarely had been acknowledged so far. Aristotle's *Historia Animalium* seems to have been hugely influential in the paradoxographical discipline and

[110] Pfeiffer 1968, 150-51; affirmative is Fraser 1972, I.454, 721ff., 766ff.

some space will be dedicated to Pseudo-Aristotle's Περὶ θαυμασίων ἀκουσμάτων. The so-called ὑπομνήματα, which are notes in lecture note style, will be an important example for the presence of Peripatetic techniques in Alexandria.

Chapter VI is closely tied up with the ultimate purpose of paradoxography and its final shape in either poetry or prose. Since we mostly only retain examples of the latter, our idea of its original appearance is distorted. But Hellenistic poetry was particularly fond of versifying complicated subject matter as seen in Aratus' Φαινόμενα and Nicander's Θηριακά. Callimachus tended to include prose material in his already dense poetry. The fact that paradoxography could be split up into a large number of *paradoxa* meant that it offered itself for redeployment. These *mirabilia* appear to have served later as material for especially Latin encyclopaedic collections as those by Varro or Pliny. A poetic version of easily moveable *paradoxa* could have been Archelaus' zoological epigrams which in Antigonus stand almost side by side with other prose *paradoxa* and illustrate their content. After analysing its possible shape and origins, I will discuss the environment around Callimachus' conception of paradoxography represented by other poets. Posidippus has included a few epigrams of paradoxographical character in his epigram collection. The confusion about Philostephanus i.e., whether he wrote his paradoxographical treatise in prose or verse, lets us infer that the conversion from one medium into the other seems to have happened smoothly. There is a parallel perhaps in the prose lapidaries which develop a similarly late prose tradition, which very much resembles that of paradoxography. Through its itemised nature these Λιθικά were easily transferrable into poetry. In the early stages, paradoxography was primarily material for poetry, which applied to Callimachus and the scholars in Alexandria. Soon paradoxography became its own autonomous genre with its own textual tradition. Later in the 2nd century AD the Greek novels reuse significant amounts of paradoxographical

material and might give some indications as to the potential later readership of the genre. All the while, one will have to keep in mind the ever-changing nature of paradoxography.

Returning to Callimachus, the poet from Cyrene was also responsible for the creation of 'other' wonders, namely the *Seven Wonders* as will be discussed in the last chapter. While Callimachus' prose paradoxography is composed of natural phenomena, the *Seven Wonders* are undeniably man-made. Scattered across the far reaches of Alexander's former empire, their geographical arrangement is certainly significant. Even though they did not form part of the type of paradoxography as defined in this chapter, their existence is arguably important within Callimachus' paradoxographical oeuvre. The discussion in the last chapter attempts to draw together the larger challenges one faces with paradoxography. Discussed will be not only the relationship of the *Seven Wonders* with paradoxography but also in which form they could have appeared in his poetry or paradoxographical writing. A comparison with paradoxography is warranted by the existence of the 2nd century BC *Laterculi Alexandrini* papyrus in Egypt, which not only followed similar taxonomic principles as encountered in Callimachus' paradoxographical oeuvre but also mentions the *Seven Wonders*. An attempt will be made at establishing Callimachus' source for said hebdomad, which seems to be the local Babylonian historiographer Berossus. This would follow the method of the rest of his paradoxographical writings. So far no one has teased out the connections between paradoxographical writing and the existence of this list, which is surprising given the cultural prominence of the hebdomad. They formed an essential part of Callimachus' manifold writing about wonder, which is overall rooted in Herodotus' conception of wonder.

II. The range of Callimachus' sources in his paradoxography

The characteristic which sets paradoxography apart most strongly from contemporary literature is its handling of sources, which is what this chapter will focus on. One should seize the unique opportunity in the Callimachean part of Antigonus, which reflects the sources that Callimachus selected first-hand in contrast to later paradoxographers who mainly copied second-hand references.[111] As a scholar whose literary method consisted in receiving, synthesizing, and innovating on previous literature, his choice of texts for inclusion may provide us with a unique insight into the working methods of Alexandrian poets, which we are normally only left to deduce from their poetry. This chapter will attempt a systematic analysis of the complete set of Callimachus' direct sources before later chapters focus on some of paradoxography's specific literary models. Such a study reveals Callimachus' sources both as reservoirs for knowledge as well as previously underestimated literary models. The focus on literature preceding Callimachus will also diminish the risk of importing the preconceptions of later (potentially Byzantine) paradoxography into an earlier text and especially one so unusual as Callimachus'.

The faithful citation of sources as one of the defining features of paradoxography can be safely assumed to be an innovation by Callimachus who enjoyed the status of a πρῶτος ἑυρετής in this regard.[112] Callimachus famously cited for the first time a prose author in poetry. Yet his influence in this regard should be judged rather on what remains of the paradoxographical genre where the citation of sources became one of the defining features of the genre, more consistently than in historiography. His consistency in providing his sources puts him on the same level as mythography even if that included many bogus

[111] Pajón Leyra 2011, 270.
[112] Cameron 2004, 26-27.

citations.[113] Callimachus' inclusion of sources also sets him apart from the Περὶ θαυμασίων ἀκουσμάτων, which largely eschews them.

If included, the source indications in paradoxographical notes are usually placed at the *paradoxon*'s beginning. A placement at the end is rare, but does occur a few times, for example, in Apollonius (*Mir*. 22, 35, 47) and especially often in the late *Paradoxographus Florentinus* (7, 8, 18, 21, 27, 30, 40, 43).[114] In Callimachean paradoxography if the author is named, he usually occurs near the beginning. The only exceptions are the postscripts 140,[115] 145,[116] and 170[117], where Antigonus seems to have added authors to Callimachus' original ones.[118] Should we attach any significance to the sources' prominent placement? One would assume the compiler of the Πίνακες to be naturally inclined to make the bibliographical information prominent in case he might wish to look up the source text, but considering how short these notes are, it does not seem to make a substantial difference. As Callimachus' text is filtered through Antigonus, we should not overinterpret the formal presentation and position of his sources in our text.

This probably also includes the sources' citation. Among Antigonus' additions feature Theopompus and Timaeus of which we know that Callimachus consulted them himself, but also Philon and Megasthenes who stand out for being the only ones cited together with their book titles. For a Callimachean catalogue, one would have assumed a higher coverage of book titles than only those supplied by Antigonus. Ancient book titles, of course, were fluid and subject to change, which meant that Callimachus' cataloguing activities in Alexandria often primarily consisted in giving titles to nameless texts. Still, the lack of precise details about the works he used is surprising especially considering that later paradoxographical

[113] Cameron 2004, 124-63 for bogus citations in mythography.
[114] Pajón Leyra 2014, 315.
[115] τοῦτο δ᾽ἱστορεῖ καὶ Τίμαιος.
[116] τοῦτο δ᾽ἱστορεῖ καὶ Φίλων ὁ τὰ Αἰθιοπικὰ συγγραψάμενος.
[117] Περὶ δὲ Θεσπρωτοὺς ἐκ τῆς γῆς ἄνθρακας ὀρύττεσθαι δυναμένους κάεσθαι Θεόπομπόν φησιν καταγράφειν.
[118] Nebert 1896, 777.

texts like Pseudo-Plutarch's *De Fluviis* consistently included book titles and even invented sources by filling in spurious names and titles of books next to well-known ones. Yet whereas the latter inserted partially spurious references in order to bolster the reader's confidence in his claims, Callimachus obviously did not feel the need to do so considering that his excerpts were made directly from the original text.

We shall now proceed to the analysis of the texts Callimachus deployed as sources. Most of them are not transmitted to us, which complicates our understanding of Callimachus' criteria for his excerpts. Ancient excerptors tended to extract especially surprising or entertaining anecdotes, which renders the tone of paradoxography particularly sensationalistic. The bias in the selection towards fantastical stories lets these source texts appear richer in paradoxographical material than they originally were if we are relying on a limited range of fragments. Duris of Samos is a case in point as he has repeatedly been described as an author tending to the fantastic,[119] even though this was judged only based on a few fragments.[120] Following Brunt's survey on epitomes, we should not expect to find genuine reflections of Duris' original style or verbal quotations in the text and can therefore not pass judgement on his material overall. The same applies to Callimachus' paradoxography, for whose style and wording possible insights are minimal. One of the only reliable indicators for direct citation is a preceding *oratio obliqua*, in which the quotation reverts to *oratio recta*.[121] Other formulations which would indicate an *ipsissima verba* translation such as γράφει κατὰ λέξιν, are basically non-existent in our paradoxographical texts. Consequently, we can neither expect Antigonus' collection to reflect Callimachus' original wording nor even Callimachus' original excerpt to provide an accurate picture of his sources. All that remains is to ascertain general trends among the texts Callimachus has selected, observe the range of deployed

[119] *FGrHist* 76T7f.
[120] Brunt 1980, 485.
[121] Approach by Brunt 1980.

texts, and in the few cases where we are so fortunate as to possess the originals, compare them with the *paradoxa* extracted from them.

1.Historians: Theopompus, Timaeus, Lycus of Rhegium

The first group of sources we will turn to are historiographers. Of the twenty-seven fragments contained in the Antigonus section derived from Callimachus, which adduce a named source, eighteen contain historical authorities, among them Theopompus, Timaeus, Lycus of Rhegium, and Ctesias. Mostly post-Thucydidean, they are made up broadly of local historians and those with ethnographical digressions. Part of the reason for the dominant presence of historians amongst Callimachus' sources, was that Hellenistic historiography demonstrated a willingness to accommodate fantastic material in its midst.[122] We will start with the ethnographers as this subgenre seems to hark back to a tradition started with Herodotus and Ctesias. Here we meet texts that functioned both as sources for paradoxography but also paved the way towards a more systematic writing about wonders.

a) Ethnographical digressions

Jacoby sees wonder as a category of ancient ethnography,[123] while Trüdinger identified it as a distinct sub-branch of ethnographical literature, calling the preoccupation with wonders 'θαυμάσια-ethnography' with Ctesias' Ἰνδικά as the earliest representative.[124] Our evidence from these early times of Greek literature is sparse – apart from Ctesias and the ethnographic inflections in Herodotus.[125] In Hecataeus and later 4th century historians a utopian character

[122] Walbank 1960; Murray 1972; Wiseman 1979.
[123] Jacoby 1913, 331-332.
[124] Trüdinger 1918, 45.
[125] Munson 2001, 234-235 about Herodotus' familiarity with a preceding ethnographic wonder tradition.

seems to have invaded ethnography, which shaped the genre especially in the 4th century. This is evident from what Strabo transmits about the Meropians from Theopompus.[126] Similarly, one could mention the island Panchaia in Euhemerus as well as the *City of the Sun* in Iambulus. But although paradoxography at times veers off into the ethnographical,[127] it usually steers well clear of the utopian and instead follows the Herodotean sense of ethnography, which still tries to root strange peoples in a firm geography and a defined time period. Herodotus is the earliest point at which the discussion of marvels occurs in Greek literature and the first in a row of historiographers to include thaumatographical material in ethnographical digressions.

In order to understand Callimachus' relationship to the 4th century historians, it is worth spending more time on the 'Father of History' and how his treatment differs from later historians in paradoxography. Herodotus is only mentioned twice as a source in all paradoxographical texts, once in Antigonus (*Mir*.21) and once in the *Paradoxographus Florentinus* (2nd AD), a text heavily drawing on Callimachean *paradoxa*.[128] For the majority of paradoxographical texts one gets the overall impression of material which sounds very Herodotean even though there is barely any Herodotean material in there. Water is a prominent incentive to wonder for both Callimachus and Herodotus. Herodotus, for example says about Scythia: Θωμάσια δὲ ἡ χώρη αὕτη οὐκ ἔχει, χωρὶς ἢ ὅτι ποταμούς τε πολλῷ μεγίστους καὶ ἀριθμὸν πλείστους.[129] This passage demonstrates well that Herodotus' observations on water focus on size[130] rather than properties which is what the paradoxographers including Callimachus were interested in.

[126] Str.VII.6.
[127] Giannini 1963, 263. For Barth 1968, 108 θαυμάσιος is an ethnographical term.
[128] Priestley 2014, 83.
[129] '*Yet, this land does not have any marvels but by far the greatest and most numerous rivers* (IV.82).'
[130] E.g., Lake Moeris II.149; Pontus.IV.85.

What about the few concrete cases of Herodotean material in Callimachus? The derivation of these Herodotean *paradoxa* is not acknowledged as such and there is a chance that Callimachus may have ultimately taken these from a source different from Herodotus. Callimachus' 'Spring of the Sun' (Antig.*Mir.*144), for example, differs from Herodotus IV.181 only in the timing at which the spring boils or grows cold,[131] but Antigonus attributes this story to Aristotle. Similarly, Callimachus credits Eudoxus with the story on the pitch-producing pool in Zacynthus (Antig.153), but this is already found in Herodotus (IV.195) who claimed to have seen it with his own eyes.[132] Callimachus' mention of fish existing in this lake does not occur in Herodotus, which makes it more likely that Callimachus here indeed exclusively relies on Eudoxus.[133] Still, the claim that anything dipped into the pool reappears in the sea nearby is remarkably close to the Herodotean text leaving open the possibility that Eudoxus himself adopted this from Herodotus.[134] The quasi-Herodotean wonders we encounter in Callimachus are not repeating material found in Herodotus' longer paradoxographical digressions, but are anecdotes extracted from all over the *Histories.* As we will go on to see later Callimachus imitates the mode of the Ionian historiographer without harking back too closely to the material itself. Rather than using Herodotus, Callimachus looked to historians closer to his own time.

In contrast to Herodotus, the 4th-century historian Theopompus of Chios frequently featured as a source for paradoxographical texts.[135] In Callimachus' paradoxography he appears eight times. Pfeiffer's fr.408, a note from Stephanus of Byzantium who cites Callimachus' paradoxographical work, should likely be counted as the ninth instance.[136] Due to the fragmentary nature of Theopompus' oeuvre it is not clear where exactly these *paradoxa*

[131] The spring reappears in D.S.XVII.50.4-5, Lucr.VI.848ff.
[132] Using this assertion, Herodotus underpins the same phenomenon happening on the island Cyrauis.
[133] Priestley 2014, 79-80.
[134] This story aligns strongly with Callimachus' general interest in underground connections of water bodies.
[135] E.g., Flashar 1972, 39: most of *Aud.*115-138 derive from Theopompus.
[136] Cf. Arist.*Aud.*126, Plin.*Nat.*X.31 where no source is indicated.

occurred in it. The paradoxographer Apollonius (2nd century BC) is the first to mention Theopompus' Θαυμάσια as forming part of the much longer Φιλιππικά,[137] but scholarship is split as to how the Θαυμάσια was generated: most agree that it was not an independent work but was taken either from books VIII and IX of the Φιλιππικά either in the 2nd century BC as Apollonius suggests or in Imperial times, when epitomisation was common practice.[138] Others suggest that it was a collection of passages gathered from across the whole Φιλιππικά.[139] Among the rest of his other works, the epitome of Herodotus is the most relevant for our question. There is a slight overlap in subject matter between the Herodotean epitome and the Θαυμάσια,[140] which is not surprising considering Theopompus repeatedly looked to Herodotus as a model.[141] We shall here mention two possible examples: Herodotus included marvels in his catalogue of worthwhile information whenever he moved his narrative on to a new geographical section. For the Θαυμάσια, Slobodan Dušanić also argued for a geographical organisation of Theopompus' wonders but merely based on two fragments (F67b and T20a), which is not sufficient proof.[142] What we can tell is that Theopompus was famous for extensive digressions in his text. From here it is only a small leap to assume that Theopompus' wonders occurred in these digressions just as they did in Herodotus. In this case, our wonders would be set pieces or extracts from these digressions. Whether these *paradoxa* were neatly aggregated in books VIII and IX or not, they seem to have lent themselves to extraction. It seems unlikely that a paradoxographer scanned through the entirety of Theopompus' extensive Φιλιππικά[143] in order to collect all the marvels

[137] *FGrHist* F67b. Diogenes Laertius (F69 +71) and Servius Danielis (F75b) know the title but do not connect it with the Φιλιππικά.
[138] Only one *paradoxon* derives with certainty from another book (XX) than VIII (Ath.IX.401b). Jacoby thinks it formed part of the Φιλιππικά. In favour of a later composition by an anonymous author are Ziegler 1949, 1144f.; Giannini 1964, 102-4; Shrimpton 1991, 15-20; Schepens/Delcroix 1996, 380n.18.
[139] Ziegler 1949, 1144-5; Dušanić 1977, 27-36.
[140] The overlap occurs in the Zopyrus story (F66) and maybe FF78-80 on Tempe.
[141] Christ 1993, 51.
[142] Dušanić 1977, 30. Christ 1993, 49n.11 criticises Dušanić for attributing the geographical organisation to the order of Theopompus' historical narrative.
[143] The *Suda* (s.v.Θεόπομπος) knows seventy-two books but is prone to exaggeration.

considering that most paradoxographical texts appreciated a variety of sources and did not limit themselves to the wonders discussed by one writer. Of course, paradoxography was particularly keen to convert previously unremarkable information into new marvellous information and one cannot rule out that our wonders were extracted from Theopompus' main text, but the sheer amount of his transmitted wonders in combination with his tendency to digress, makes it more likely that his wonders lent themselves to extraction by being somewhat separated from the main narrative. Most importantly, I would argue that these were set apart enough from the main narrative for Callimachus to recognise a pattern of how wonders were arranged in the ethnographical sections of historiography. Just as Herodotus' biggest influence on paradoxography consists in the idea of drawing attention to the cumulative nature of wonder, Theopompus continued this principle by extensively listing wonders in dedicated sections in his work. The Θαυμάσια is unusual in having circulated as an autonomous work quite early on (before the 2nd century BC if we believe this unknown Apollonius), but there is not enough to warrant the claim that it represented the earliest instance of paradoxography. Rather it seems likely that the Θαυμάσια were compiled when the full potential of a genre dedicated to wonders was already realised in the generations after Callimachus.

Theopompus appears as the main exponent of a 4th century historiographical trend, which is also exemplified by Ephorus. Just like Theopompus, Ephorus drew extensively on Herodotus[144] and is said –although according to the notoriously unreliable *Suda* – to have written fifteen books about paradoxography, whereas most scholars argue for two at most.[145] In analogy to Theopompus' Θαυμάσια*,* Ephorus' Παραδόξων τῶν ἑκασταχοῦ βιβλία[146] seems to have formed part of his larger thirty-book *Histories* and were perhaps identical with

[144] Jacoby 1913*,* 510.
[145] Pajón Leyra 2011, 100-101 assumes his real number of books to have been closer to two.
[146] *Sud.*s.v.Ἔφιππος (sic!).

books IV and V.[147] Giannini even detects geographical digressions on 'barbarian people'.[148] Although the paradoxographical vocabulary in pre-Callimachean ethnography and the faint influence of Herodotus on Callimachus would suggest that among the *mirabilia* we might find several of ethnographical nature, pure ethnographical wonders are entirely absent from Callimachus' paradoxography. Strange customs were likely treated elsewhere by Callimachus.

Yet the connection between ethnography and paradoxography seems to have been a popular one at the time, as it emerges also from other sources. The London papyrus PPetrie9, for example, by an anonymous author roughly dated to Callimachus' lifetime looked to Ephorus for inspiration.[149] Pajón Leyra identified it as a fragment of Nymphodorus of Amphipolis' lost ethnographic work. Its other similarities to Nicolaus of Damascus connect it to material contained in both Aristotle and the *Paradoxographus Vaticanus*, which demonstrates the general proximity of ethnographical historiography to paradoxography.[150] Amongst others, the papyrus reproduces stories known from the Alexander historian Onesicritus. It is arranged geographically with all peoples in the papyrus coming from Asia (albeit in a random order), which would fit in with the brief note in Clement of Alexandria: Νυμφόδωρος δὲ ὁ Ἀμφιπολίτης ἐν τρίτῳ Νομίμων Ἀσίας.[151] Asia was apparently one of the chapters of this Νόμιμα βαρβαρικά. Since a Νόμιμα βαρβαρικά is attested for Callimachus, he was clearly interested in barbarian customs. Still, he seems not to have blended the two categories but derived paradoxographical material out of ethnography where he could. Ultimately, they were different categories of texts for him.[152] This differentiation would not be unusual in a scholar working to systematically categorize stories and sources since the

[147] Pajón Leyra 2015, 264.
[148] Giannini 1964, 100-101.
[149] Reimann 1895, 656-57, 663-72.
[150] Pajón Leyra 2015.
[151] Clem.Al.*Strom.*I.21.106.6.
[152] Fr.405.

more one categorises, the finer become the criteria for each category. To sum up, the development I have hoped to trace is one moving from the inclusion of wonders in Ionic historiography in geographical order as part of ethnographical sections to longer digressions in 4th century historiography before a new interest in wonders leads to the wonders contained in these digressions becoming an independent category of texts.

b) Local historians

The 4th century also saw the rise of a different historiographical genre often represented by lesser-known authors (Amometus, Heraclides Ponticus, Nicagoras, Lycus of Rhegium, Phaenias, Xenophilus, and perhaps Philon) who seem to have written about places close to their own home or experience. We will now turn our attention to these more obscure writers, who are almost exclusively authors of local history, a body of literature dedicated to local stories with a tendency to elevate the status of its subject.[153] This historiographical genre was also a common setting for descriptions of natural wonders, a phenomenon we will discuss in more detail in chapter III for the Salmacis spring. Callimachus' engagement with local history has already been extensively analysed for his *Aetia* and the *Hecale*, which rely on a multitude of local historiographers and Atthidographers, respectively,[154] while studies of local historians as sources for Callimachus' prose remains are rare.[155] Only Gabba had rightly recognised that 'the materials of which paradoxographies were composed derive for the most part from local histories.'[156]

[153] Whitmarsh 2010, 402-3 for a summary of different local histories; more discussion focused on Atthidographers in Harding 2007.
[154] Overall: Greene 2011, 59-128. *Aetia*: Xenomedes in Huxley 1965. Atthidographers: Greene 2011, 101-116; Hollis 1990, 6-7; 1992, 4; D'Alessio 1996, 277n.3, 290n.29.
[155] An exception is Schepens 2009 on Nicagoras who contributed a *paradoxon* about a Cypriot lake.
[156] Gabba 1981, 60-62 esp.60.

During Callimachus' time and in the generation before him, local history or horography was the most common type of history practised;[157] of the 856 authors listed in Jacoby, at least 594 wrote local history.[158] Especially in the 4th and 3rd century local history advanced to become a ubiquitous phenomenon.[159] Jacoby perceived it as the 5th stage of historical literature in combining elements from previous historiography with a strong geographical focus and a readiness to include aetiology as well as ethnography.[160] There are some indications that local historiography also included marvels perhaps in digressions similar to those in Theopompus and Ephorus. An example is Nymphis of Heraclea (*FGrHist* 432) whose Περὶ Ἡρακλείας certainly contained ethnographical digressions.[161] As Callimachus' contemporary, he is a local historian Callimachus would have been able to consult. That his historiography contained paradoxographical material is shown by the title of one of Philo of Heraclea's lost works Πρὸς Νύμφιν περὶ θαυμασίων (*Reply to Nymphis Concerning His Wonders*), which survives because Stobaeus records the quote from the 3rd century CE Neoplatonic Porphyry.[162] It is not clear whether Philo here really responded to a paradoxographical digression of Nymphis' thirteen-book local history, or to his books on Alexander of Macedon and the Diadochi or all of them together,[163] but it implies that a literary debate was held on which wonders should be included in a given list. That Nymphis discussed wonders is supported by his *paradoxon* reported by Stobaeus about the Styx waters breaking everything apart from the Scythian horns dedicated by Alexander in Delphi.[164] Curiously, the Stobaeus passage contains the only explicit reference to Callimachus' work

[157] Whitmarsh 2010, 402 knows of eighty-five Hellenistic local histories next to the more prominent authors Ephorus, Theopompus, and Timaeus.
[158] Orsi 1994, 149-51.
[159] Orsi 1994, 160.
[160] Jacoby's conception of local history as secondary is problematic since the genre existed from the late 6th century onwards, cf. Benedetto 2007, 1062.
[161] Cuypers 2010, 310-20 comprehensively surveys Nymphis.
[162] *Anth.*1.49.52. Philon survives only in four citations and otherwise seems to have written about animal wonders in a περὶ θαυμασίων (and perhaps περὶ παραδόξου ἱστορίας).
[163] Ael.*NA.*17.3 mentions Nymphis writing about huge snakes among the Troglodytes in Book IX of his work on Ptolemy, which could have represented one such wonder.
[164] Stob.I.49.52.

Περὶ νυμφῶν and seems to be taken from it: ἐν τῷ Περὶ νυμφῶν συγγράμματι.[165] The story reappears as a Callimachean *paradoxon*[166] in Antigonus' collection albeit being credited to Theophrastus (and in a few later imperial authors).[167] Although Callimachus must have been aware of Nymphis' work since Apollonius of Rhodes consulted him,[168] it is not certain that Nymphis is behind this Callimachean *paradoxon.* Callimachus only referenced Theophrastus and the story was generally popular in antiquity. Since Philo and Nymphis as native Heracleans are arguing about a selection of wonders, one would expect that they mostly covered local phenomena, but this also demonstrates that in paradoxography the choice of wonders was a highly individualistic one and deeply subjective. This episode shows that the topics of local historians represented suitable *paradoxa.*

According to Stobaeus the Styx story was contained in Philo's response to Nymphis' local history, which lets us assume that it was also mentioned by Nymphis himself. Yet for both the Styx was not a local phenomenon. It is remarkable that the Arcadian river is one of the only fragments we can connect with Nymphis rather than a local story. We will encounter a similar phenomenon in Ctesias who included an Ethiopian fountain among his Indian springs probably to compare their characteristics. The number of excerpted *paradoxa* which are set in a place different to that which the local historian covers in his main work and therefore has eyewitness-authority for, is comparatively high in Callimachus' paradoxography. Rather than opting for 'reliable' sources who knew the area they were describing, it did not seem to matter too much for Callimachus' paradoxography whether a *paradoxon* was covered by this authority or not. Local historiography was therefore clearly not exclusively selected by

[165] Stob.I.49.51 quoting from Περὶ νυμφῶν: Στὺξ ἐν Νωνακρίνῃ τῆς Ἀρκαδίας ὕδωρ ἐστὶ τὸ διακόπτον πάντα τὰ ἀγγεῖα πλὴν τῶν κερατίνων. Περὶ νυμφῶν therefore partly overlapped with Callimachus' paradoxographical studies.
[166] Antig.*Mir.*158.
[167] Thphr.fr.160 περὶ ὑδάτων. Plin.*Nat.*XXXI.26 cf. Sen.*QN.*III.25.1; Vitr.VIII.3.16; Paus.VIII.17.6.
[168] Desideri 1967.

Callimachus for its local perspectives. This contrasts somewhat with the Peripatetic school which preferred to use local sources which knew the area well.[169]

Despite this occasional exception to the rule, Callimachus still focused on areas which largely agreed with the places these historiographers came from. Sicily was covered extensively by numerous local historiographies (the Σικελικά)[170] and looms large in our paradoxography as a place of interest. Lycus of Rhegium for example, Callimachus' most frequent source after Ctesias,[171] wrote a local historiography on Sicily (περὶ Σικελίας), whose fragments have a paradoxographical character. Lycus also emerges as a frequent source for Pseudo-Aristotle's Περὶ θαυμασίων ἀκουσμάτων: Müllenhoff had argued that the citations of Hanno (ch.37), Xenophanes (ch.38), Polycritus (ch.112), Callisthenes (ch.132) and Φοινικικαὶ Ἱστορίαι (ch.134) are indeed all second-hand citations originating with Lycus. How popular he was as a source is shown by the fact that his story about a Sicilian spring covered by an oil film is reflected in four authors, albeit each time phrased slightly differently: besides Callimachus (Antig.*Mir.*139) and Pseudo-Aristotle (113+114), in Athenaeus and Vitruvius.[172] A direct comparison of these passages shows that the Callimachean passage pays supreme attention to detail.[173] Lycus' inspiration in turn for several of his wonders was ὁ Πολύκριτος ὁ τὰ Σικελικὰ γεγραφὼς ἐν ἔπεσιν.[174] Polycritus is behind Περὶ θαυμασίων ἀκουσμάτων chapters 112-114 and 130 and at least once forms part of Callimachus' poetical sources (ch.135). That Polycritus' influence on Alexandrian scholarship was deeper than initially thought based on the single mention in Callimachus, also emerges from Callimachus' pupil Philostephanus who created a poetic *paradoxon* about

[169] Fraser 1972, I.766-68.
[170] By contrast, Magna Graecia is surprisingly rarely covered.
[171] Antig.*Mir.*133, 139, 154, 159, 172.
[172] Ath.II.43a, Vitr.VIII.3.8. Müllenhoff 1870, 436-37.
[173] Müllenhoff 1870, 436. Also, in Plin.*Nat.*XXXV.51; Solin.5.23.
[174] *Aud*.112.

the pond that was mentioned in chapter 112 and perhaps in Callimachus in a wonder mentioned in passing and derived from Ctesias (Antig.*Mir.*150):[175] previously, this story appeared in both Lycus and Polycritus of which the latter is chronologically senior. Philostephanus and his teacher Callimachus could have encountered Polycritus on his own or via Lycus' material, but the prose historian Lycus seems to have offered more material for Sicily than the poet Polycritus. Sicily indeed appears in both Alexandrian paradoxographical poetry and prose deriving from both prose and poetic sources, which means that we should extend the definition of local historiography also to poetry, but more on this later.

For the moment, let us return to the most prominent Sicilian local prose historian, Timaeus, who appears five times in Callimachus (133, 139, 154, 159, 172) and once before in Antigonus (60). Further, Flashar's detailed analysis has shown that Pseudo-Aristotle's Περὶ θαυμασίων ἀκουσμάτων draws extensively on Timaeus even if he is not quoted by name.[176] Besides Timaeus' paradoxographical material, what remains of his style still betrays paradoxographical features: Trüdinger has pointed to familiar paradoxographical vocabulary in the later recensions of Timaeus.[177] His analysis of Diodorus has shown that Posidonius followed Timaeus stylistically and reproduces his paradoxographical vocabulary such as ἴδιον or παράδοξον[178] or combined as ἴδιον καὶ παράδοξον. The same words do not occur in Diodorus' excerpts of Agatharchides, Hecataeus, or Iambulus which is why this seems a legitimate method of distilling Timaeus' vocabulary.[179] Due to the fragmentary state of Timaeus' work it is not possible to draw any further conclusions. He concludes our section on historiography which represents most of Callimachus' sources. Among the

[175] Giannini F8, cf. *PF*.30; Müllenhoff 1870, 437.
[176] Flashar 1972, 39ff.
[177] Trüdinger 1918, 105-08.
[178] Timaeus in true paradoxographical fashion used ἴδιον basically synonymously with παράδοξον, D.S.V.22.3 cf. Geffcken 1892, 117; Antig.*Mir.*7, 15, 19, 85, 89.
[179] Trüdinger 1918, 106.

historiographical sources ethnographers and local historians seem to inhabit similar status – at least for Callimachus. The boundaries between the two genres appear exceptionally fluid in Callimachus' paradoxography so that Shrimpton's definition of ethnography as 'local history of a non-Greek people' fits especially well here.[180] Hellanicus of Lesbos (*FGrHist* 4F72) who wrote about Attica as a place far from home but is generally classified as a local historian, is one such author who further collapses the distinction that has been drawn in this section and modern scholarship. This artificial differentiation seems more important to us than it was for Callimachus who was content relying on any literary source irrespective of the author's origin, a theme we will repeatedly come back to in this chapter. Let us turn to an even more elusive genre of texts, which is equally hard to aggregate into a group.

2. Science: Theophrastus, Aristotle, Eudoxus

a) Paradoxography as Para-Science

The realm of science and natural philosophy is the second-biggest source of Callimachean *paradoxa*. Yet the notion of paradoxography as a popular genre mainly interested in trivial anecdotes is somewhat at odds with the serious nature of its sources.[181] For a long time scholarship had conceived of the relationship between science and the irrational with its expressions in magic or paradoxography as one of development 'Vom Mythos zum Logos' by following Wilhelm Nestle.[182] Bruno Snell and William Guthrie endorsed this division

[180] Shrimpton 1997, 147, cf. Harding 2007.
[181] Gabba 1981, 53-54.
[182] Nestle 1940. Morgan 2000, 30-37 discusses how the early philosophers called anything myth from which they wanted to disassociate themselves, leading modern scholarship to fall into the same trap.

between the two with science thought to win out over the irrational. A more balanced approach came 1951 with Dodds who proposed not to treat myth and reason as separate but rather to acknowledge the co-dependence of one on the other. Others conceive of the rise of *mirabilia* in Alexandria as accompanying the decline of science.[183] Buxton rightly stresses one should rather appreciate the productive interchange between the two,[184] while Giannini put forward the significant observation that paradoxography came to the surface just when scientific research reached new heights in its various disciplines.[185] Put differently, Kathryn Gutzwiller remarks: 'It is not surprising that an age fascinated with scientific reasoning and experimentation should also feel, at times, the need just to marvel at the unexplainable and unverifiable.'[186] Accordingly, we should see paradoxography as a pseudo-scientific genre flourishing on the groundwork laid by science.

Few other places presented such a rich breeding ground for para-scientific literature as Alexandria. The culture clash in this highly diverse city also produced the earliest examples of alchemistic and hermeneutic literature, which synthesised the rich traditions of several different cultures. Schepens accordingly conceives of this turn towards the wonderful as a reaction towards the cultural upheaval a lot of Greeks living in Egypt would have experienced.[187] The reactive quality of the paradoxographical genre is not surprising considering that it feeds off previous literature rather than creating its own original content. For the Περὶ θαυμασίων ἀκουσμάτων it is obvious that it is building on earlier Peripatetic material, but the separation between science and pseudo-science is not particularly easy as 'ironically, the scientific works of Aristotle and Theophrastus on natural subjects became

[183] Cf. Naas 2011, 67.
[184] Buxton 1999, 5.
[185] Giannini 1963, 247.
[186] Gutzwiller 2007, 167.
[187] Schepens/Delcroix 1996, 402, 408. Similarly, Dodds 1951, 245ff. suggests that the irrational beliefs underlying the proliferation of 'pseudo-scientific literature' arose from 'the fear of freedom—the unconscious flight from the heavy burden of individual choice which an open society lays upon its members', cf. Gabba 1981, 55.

mines for later, and far different, paradoxographical and pseudoscientific writers on nature.'[188]

A pseudo-scientific genre like paradoxography imitated science not only in material but also in language. Pseudo-science shares the brief matter-of-fact tone with science, which is supposed to awaken the impression that pseudo-science contains reliable arguments to the same degree as science does. Conversely, in some scientific passages of the late 4th century it is obvious that even science leaned towards language we might have expected in paradoxography. Theophrastus is a case in point here.[189] In Theophrastus' Περὶ φυτῶν αἰτιῶν (II.17.1) his comment 'θαυμασιώτατον δ'ἄν δόξειε καὶ ὅλως ἄτοπόν τι καὶ παράδοξον εἶναι' combines three key words of paradoxography. Early paradoxography such as that of Antigonus seems to avoid using these words of subjective judgement in order to sound more scientific, while scientific texts include them as part of their tools in order to configure the significance of an observation in a larger context.

b) Scientific Geography and Historiography

From the beginnings of Greek literature, scientific analysis formed part of historiographical inquiry, a phenomenon which can also be observed in Callimachus' sources and therefore makes it harder to divide them into distinct categories. A case in point is Nicagoras of Cyprus, a particularly elusive figure joining the long list of 4th century authors deployed by Callimachus. Judging from the single *paradoxon* contained in Callimachus[190] one would have assumed him to be a local historian due to his knowledge of a local Cypriot lake. A

[188] Myers 1994, 29.
[189] Trüdinger 1918, 78 on Thphr.*CP*.II.17.1; II.17.4; IV.2.1; 2.11; 3.1;.4.1-3; 4.5.
[190] Antig.*Mir*.157: Περὶ δὲ τὴν ἐν Κιτίῳ φάσκειν Νικαγόραν, ὅτι ἀνιμηθείσης ἐπ' ὀλίγον τῆς γῆς ἅλες εὑρίσκονται.

closer analysis by Schepens, however, reveals that this *paradoxon* was extracted from a completely different text focusing on water bodies with a distinctly scientific nature: the pseudo-Aristotelian book on the Nile.[191] Schepens demonstrates Nicagoras' outstanding reputation in antiquity as being the first to explain the Nile flooding with heavy rainfalls in the Southern hemisphere and describe sweetness as a property of the Nile water. Apparently, the story about the salt lake in Cyprus was discussed as an antithesis to the sweetness of the Nile.[192] Thus the only reflection of Nicagoras' work in Callimachus is a *paradoxon* which was originally a point of comparison rather than the main subject of the book. Meanwhile, the only straightforward Callimachean *paradoxon* about the Nile's characteristics cites Eudoxus rather than Nicagoras.[193] This example continues our previous observation that the paradoxographers' selection process was not straightforward insofar as it preferred circumstantial information to main points. Nicagoras is a chance survival but indicates that a scientific text was subjected to the same method of extraction as a historiographical one.

Let us move on to a more straightforward example. Eudoxus of Cnidus is mentioned five times in Callimachus (129, 138, 147, 153, 162, perhaps 163) and once by Antigonus, who adds a Coan *paradoxon* 'missing' from both Callimachus and Eudoxus (161):

> Εἶναι δὲ παρὰ τοῖς Κῷοις[194] καὶ ἄλλο τι ῥευμάτιον, ὃ πάντας τοὺς ὀχετούς, ὅθεν διαρρεῖ, λίθους πεποίηκεν. Τοῦτο δὲ καὶ Εὔδοξος καὶ Καλλίμαχος παραλείπουσιν, ὅτι ἐκ τοῦδε τοῦ ὕδατος οἱ Κῷοι λίθους λατομήσαντες ᾠκοδόμησαν τὸ θέατρον...

This comment leads one to suspect that Eudoxus could have been more decisive for Callimachus' conception of paradoxography than one might have initially thought as Antigonus apparently expects a certain level of exhaustiveness in both Callimachus' and Eudoxus' material. Eudoxus otherwise only occurs in Antig.123 and Apoll.*Mir*.38 as later

[191] Partsch 1909 on the transmission history of this work only existing in Latin translation.
[192] Schepens 2009, 278.
[193] Antig.*Mir.*162.
[194] This expression recurs in similar form elsewhere in Antigonus to indicate knowledge derived from locals.

paradoxographers ignore him as a source except for Aristotle.[195] Eudoxus' seven-book γῆς περίοδος apparently contained stories about strange animals (F 318, F329, F331), but evidence for river stories, for which he is mainly cited in Callimachus, is scarce. Perhaps what appealed to Callimachus was Eudoxus' reliance on sources like Ctesias to underpin his accounts of India and a few paradoxographical features rather than any focus on hydrography.[196] Callimachus' heavy reliance on Eudoxus mirrors the Cnidian's significance for Aratus whose Φαινόμενα was a partial versification of Eudoxus' scientific treatise of the same name. Combined they demonstrate the strong presence of Eudoxean scholarship in Hellenistic literature.

Next, the scientific *éminence grise* of paradoxography: Theophrastus (371-286 BC), known as the founding father of botany with his Περὶ φυτῶν ἱστορίας and Περὶ φυτῶν αἰτιῶν, is one of Callimachus' more frequent sources although only directly named twice (130, 158, perhaps 168). While Callimachus does not provide book titles, it is relatively certain that he excerpted several of Theophrastus' treatises. The mythical story about a Cretan river in which Europa washed herself (ch.163) is linked by Antigonus to the previous *paradoxon* attributed to Eudoxus, although the story originally appeared in the Περὶ φυτῶν ἱστορία I.9.5. In chapter 169 Aristotle allegedly speaks περὶ … φυτῶν even though Theophrastus was the botanist in the Peripatetic school, not Aristotle who instead focused on animals. This *paradoxon* is peculiar as it thematically overlaps with the Περὶ φυτῶν ἱστορία (IV.4.12) but has clearly not been excerpted from it. It could potentially derive from another lost Theophrastan work.[197] Chapter 132 references Megasthenes but in a story appearing in both the Περὶ φυτῶν ἱστορία (IV.7.3.5f) and Περὶ αἰτιῶν φυτικῶν (II2.5.2).[198] Chapter 144 names Aristotle instead of Theophrastus. Giannini suspects that the comment about the omission of

[195] Gisinger 1921, 135.
[196] Gisinger 1921, 17; 19-20; 132.
[197] Giannini 1966, 105.
[198] This note probably derives from Antigonus.

a Coan *paradoxon* by Callimachus and Eudoxus ultimately derives from Theophrastus.[199] Chapter 168 follows a lacuna but preserves a reference to a Περὶ λίθων most likely by Theophrastus.[200] Chapter 136 discusses stones resembling coals coming out of a river, for which both Περὶ λίθων and Περὶ ὑδάτων are possible origins. The latter at least seems to be behind several references to Theophrastus (133, 139, 144, 158). In chapter 137 Theophrastus merely transmits a *paradoxon* attributed to Theopompus. Surprisingly often *paradoxa* overlap thematically with a Theophrastan text but not closely enough, and are attributed to someone else (132, 134, 144). Obvious is also that Theophrastan material is blended with that of other Peripatetics. It seems almost like the paradoxographer Callimachus was trying to disguise how much he was reliant on Peripatetic material even if he was happy to admit his debt to Aristotle.

Theophrastus' writings seem to have been full of geographical indications which would explain why he was a convenient choice for Callimachus. As a scholar with a theoretical approach to science, he was not someone who had visited all the places he wrote about but still covered a significant amount of the Mediterranean and in some cases had near-local knowledge. The ample references to geographical locations of plants in his works (903!) has been sufficiently discussed elsewhere.[201] The extent of his experience stretched from his birthplace on Lesbos to Athens, Macedonia where he probably accompanied Aristotle, and potentially Arcadia and Egypt which he may have visited on research trips. His sojourn in Macedonia gave him the opportunity to collect information on the river Strymon, which features rather heavily in Hellenistic poetry (and in the *Laterculi Alexandrini*).[202] Nevertheless, he was far from biased towards places he had a personal connection with as

[199] Antig.*Mir.*161. Giannini 1966, 101.
[200] *Lap.*II.12-16.
[201] Thanos 2005 neatly distinguishes between classic geographical indicators and geographical adjectives describing the genus of the plant in question, irrespective of the location it is found in.
[202] Euthymus of Locris (fr.201). Call.*Del.*26. Prioux 2012, 132-33 gives an overview of the mentions of Thrace in Callimachus, Posidippus, Lycophron, and Euphorion.

he never mentions Eresus on Lesbos but only four other sites on the island whenever they are relevant, nor Assos, Pella, and Mieza, where we can be certain that he stayed there for a prolonged time. His reluctance to mention places or people he shared a personal connection with (he never mentions his compatriot Phaenias of Eresus nor Aristotle by name in his books despite engaging with his material)[203] was perhaps perceived by him as necessary scientific objectiveness. Otherwise, Greece proper, Asia Minor, Egypt, and the Peloponnese feature most often.[204] The physical features he discusses most are mountains and islands rather than rivers, seas, and lakes,[205] so the few Theophrastan *paradoxa* were either mostly taken from περὶ ὑδάτων or were carefully filtered out of a large part of his oeuvre.

Theophrastus despite mainly working from Greece apparently had access to relevant data. Instead of Aristotle who had been previously believed to have integrated the material from Alexander's campaigns into his works, only Theophrastus had the opportunity to do this.[206] Aristotle died one year after Alexander and the political complications (he had to flee from Athens when long-dormant anti-Macedonian sentiment broke out after Alexander's death) would have left him with insufficient time. Fraser was the first to analyse how the Eastern campaigns had influenced the composition of his Περὶ φυτῶν ἱστορίας, followed by Stevens who directly compared Theophrastus' work with Aristotle's *Historia Animalium.*[207] Her study revealed Theophrastus' understanding of the East to have been significantly more advanced than Aristotle's both in terms of quality and the quantity of references, while the geographical scope largely stayed the same. Places are increasingly characterised by toponyms indicating better knowledge of these places rather than ethnic or adjectival descriptions, which had been the case in Herodotus who as an Ionian historian leaned more

[203] Einarson 1976.
[204] Thanos 2005, 120-21.
[205] Thanos 2005, 122.
[206] Romm 1989 with earlier scholarship; Bigwood 1993.
[207] Fraser 1994, 188; Stevens 2016.

towards ethnic designations, and to a lesser but still significant degree in Aristotle. Theophrastus' horizon is Hellenistic, while Aristotle's is closer to Herodotus and Ctesias. Aristotle admits more often to his use of sources he considers to be unreliable e.g., Ctesias,[208] than Theophrastus is forced to. It has hopefully become clear that Theophrastus at least would have been preferable to Aristotle for Callimachus if superior quality of information and geographical precision were the decisive criteria considering that he represented the 'updated' version of Aristotle.

Perhaps Callimachus' heavy reliance on Theophrastus also had to do with another inherent quality of paradoxography. We have observed just before how paradoxographical digressions in historiographers were particularly prone to extraction as these were set apart from the rest of the text. Theophrastus, similarly, focused in his theoretical writings on differences (διαφοραί), which marked his discussed phenomena out from all the others. To demonstrate, he defines the topic of his Περὶ λίθων as αἱ τῶν λίθων διαφοραὶ καὶ δυνάμεις. If he was interested in abnormalities, his focus on the East over the West in his works appears less surprising since one could expect the Italian flora and fauna to be very close to Greece whereas the East would have many unknowns to offer.[209] Indeed his omission of the West sets him apart from other Peripatetics. There are other features that tie Theophrastus more closely to paradoxography: the vague source indications φασί or μυθολογεῖται in Theophrastus' original texts correspond directly to those in Antigonus and the Περὶ θαυμασίων ἀκουσμάτων. The phrasing in the *paradoxon* about the island of Diomedes (172) is basically identical to the story's summary in the Pseudo-Aristotle.[210] Fraser had already associated Theophrastus through his choice of topics with authors regularly drawn on by Callimachus such as Eudoxus, Theopompus, and Lycus, and described the few remaining

[208] 501a25, 606a8.
[209] Fraser 1994, 182.
[210] Fraser 1994, 183.

fragments of Theophrastus' Ἱστορικὰ Ὑπομνήματα (alternatively called Ἀριστοτέλης ἢ Θεόφραστος ἐν τοῖς Ἱστορικοῖς Ὑπομνήμασιν) as 'quasi-paradoxographical quotations'.[211]

Theophrastus is only one of several Peripatetics whose oeuvre looms large in our evidence. Especially, Aristotle's 9th book of his *Historia Animalium* triggered a wealth of *paradoxa*. The Peripatetic impact on paradoxography and especially that of Callimachus is too complex to define at this point, therefore we will save further discussion until later. For the moment it remains to acknowledge that scientific material featured just as heavily in Callimachus' paradoxography as historiographical material did, but especially those were selected on both sides which contained precise geographical indications. Scientific texts seem to have been more attractive to Callimachus the more they resembled local historiography. At the same time what it has emerged from this analysis that for the paradoxographer, the exception was more interesting than the rule in each text, as seen for the Cypriot lake in Nicagoras and Theophrastus' διαφοραί.

c) Science in Callimachus' poetry

It is also surprising how 'literary' Callimachus' few selected scientific sources are since they are taken from relatively big-name scientists rather than specialists. For Asper the literary origin of Callimachus' sources is decisive: 'kein Faktum ohne *literarische* Quelle.'[212] He implies that for Callimachus a piece of knowledge is not valuable unless it is connected to a literary text. This claim cannot be applied as neatly to Callimachus' remaining paradoxography as implied by Asper considering that we also find Callimachean *paradoxa* in Antigonus which offer no literary sources. Yet it is hard to deny the pre-eminence of literary over scientific concerns among Alexandrian poets and in paradoxography. Fragment 607 ἀμάρτυρον οὐδὲν ἀείδω assumes a new significance in this context as Callimachus feels

[211] Regenbogen 1940, 1540.
[212] Asper 2004, 49.

justified in including anything – provided there is a literary text to back up his information. Essential for Callimachus is that he has sources in the first place.[213]

In Callimachus' poetry, science does not play a significant role even if the occasional reference exists. Scientific subjects as, for example, the gynaecological observations during Leto's birth originating with the contemporary physician Herophilus (*Hym.4.*206-11)[214] or the discussion of Cydippe's quartan fever (fr.75), have a deliberately circumstantial appearance but reflect the scientific interests in Alexandria at the time which especially centred on the exact sciences.[215] Pfeiffer at least took what remains of Callimachus' paradoxography as further proof for his non-scientifically inclined mind, similar to the philologically disposed Philetas and Zenodotus who all did not produce original scientific work but merely excerpted scientific texts.[216] Callimachus at least excelled in the degree of his systematisation.

Pfeiffer also pointed out that science converged with scholarship (alongside poetry) only for the first time in the figure of his fellow-Cyrenean Eratosthenes who wrote poetry as a πάρεργον.[217] For Callimachus, these categories were still distinct from each other and therefore his engagement with science did not exceed the realm of the curious. This was merely alluded to if convenient and therefore not different from any other allusions. His interest was closer to that of an Ionian logographer interested above all in culture. An exact scientist like Eratosthenes, however, substantially differed in his demands on the reliability of the conveyed facts. As a scholar of geography, Eratosthenes was not satisfied with this

[213] Sistakou 2009, 192, however, sees this quote as the result of the scientific treatises consulted in his work. Meyer 1993 interprets it as referring to the transmission of knowledge and appeals to authority. Wilamowitz-Moellendorff 1924, II.92 warns against taking this as a programmatic statement. This statement was stretched to the limit by Howald 1943, 83.

[214] Oppermann 1925; Most 1981.

[215] For scientific interests in Alexandria, see Fraser 1972, I.336-446 and the conference volumes by Giannantoni/Vegetti 1985 + Argoud/Guillaumin 1998.

[216] First remarked by Blum 1977, 166+195.

[217] Pfeiffer 1968, 134-5: 'Like Philetas and Zenodotus Callimachus was not scientifically minded… there is no recognisable intercourse between science and scholarship in Alexandria before Eratosthenes.' But p.124: 'There is complete unity of the creative poet and the reflective scholar in Callimachus'. Capovilla 1967 labours to reconcile Callimachus' philological, scientific, and literary hats.

mixture of approaches as practised by Callimachus and did not hold back with his criticism.[218] Callimachus or Apollonius would have felt fewer qualms about inserting pseudo-scientific material considering they had predominantly philological interests and were not afraid to mix & match different sources. Additionally, Callimachus does not seem to have produced any original scientific work but as a librarian merely divided up information into 'user friendly' categories.[219] Likewise, in paradoxography the scientific sources do not seem to inhabit an outstanding role compared with those of historiography or indeed poetry as we will now go on to see.

3.Poetry: Homer, Pindar, Stesichorus, Ibycus

Among the sources for Callimachus' paradoxography, poetry did not play a negligible role. Yet while the other prose sources for paradoxography often date to the 5th or 4th century, his poetical sources predominantly date to Archaic times. This is especially obvious when compared with Antigonus' spectrum of poetical sources: Antigonus mentions Homer (7, 24, 25), Philetas (8, 19), Hesiod (21), Alcman (21), Callimachus (45), next to Philoxenus (127). He also quotes Archelaus several times (19, 89) and speaks appreciatively of Aeschylus (115). As for the most prominent archaic poet: Despite the overwhelming influence Homer enjoyed on early Greek scientific thinking,[220] his presence in the paradoxographical authors is rather limited. Apart from the later Nicolaus of Damascus (1st century BC) and Phlegon of Tralles (2nd century AD), he is mentioned marginally more often in Antigonus as well as

[218] Jacob 1999, 45.
[219] Blum 1977, 193; Sistakou 2009, 178.
[220] For example, the introduction of Heraclitus' commentary on Homer exhorts to look for ethical and scientific truths in Homer's language, cf. Hawes 2014, 31.

the Περὶ θαυμασίων ἀκουσμάτων where he is usually not named but introduced as 'ὁ ποιητής'. Homer was so ubiquitous and popular that any specification became superfluous.[221] Callimachus' use of poetical sources in his paradoxography needs a bit of unpacking. For this we will first take a step back to look at the defining characteristics of his poetic sources.

a) Archaic poetry vs. contemporary sources

All of Callimachus' poetic sources in his paradoxography are Archaic poets. The reliance on older sources contrasts markedly with the popularity of the updated 4th century historians and scientific texts.[222] One example is the Arethusa story (ch.140) which is narrated ὥσπερ οἱ λοιποί φασιν καὶ Πίνδαρος. Callimachus' note seems surprising considering that Timaeus also told this story as added by Antigonus: τοῦτο δ'ἱστορεῖ καὶ Τίμαιος. Apparently Antigonus himself was surprised that Callimachus deferred to Pindar's rather than Timaeus' authority here considering that Callimachus elsewhere cited Timaeus quite liberally. Apparently, Callimachus felt that a poet could just as easily be cited as a source as a historian could and that there was not a substantial difference between them in terms of authority. In this story he effectively places contemporary hearsay against an Archaic poet.[223]

One may ask why Archaic poets are accepted as sources even though Callimachus' other ones were selected for being up to date. An answer may lie in the fact that temporal gaps between sources were actively exploited by Hellenistic poets: The sheer volume of information contained in the library of Alexandria meant that scholars could observe different sets of information emerge for the same topic. While it contained results of cutting-

[221] Except Antig.*Mir.*25a.2 where ὁ ποιητής is the author of a non-Homeric quote otherwise unknown to us. Clearchus cites it somewhat differently in *On Proverbs* II (fr.75 Wehrli cf. Ath.VII.317a).
[222] The mentions of Eudoxus probably refer to his scientific rather than his poetic work.
[223] As already implied by Callimachus himself, the story was popular in antiquity.

edge research, there would have also been texts that still looked back to Homer or other archaic sources for scientific knowledge, texts with different methodologies or dating centuries apart. Eratosthenes, for example, recognised the methodological differences and differentiated mythical and literary geography from that based on real travellers' reports. His predecessor as librarian at Alexandria, Apollonius of Rhodes, had blended mythical with real geography. He dramatically exploited the contrast between traditional and new sources by having the Argonauts in his mini-epic travel along two different routes, the way to Colchis on a route a Hellenistic ship would have taken, while the chaotic return journey followed the information as provided by the Archaic sources, taking the heroes all across the Mediterranean.[224] If there were several version of the same story, both set off the variations against each other and most of the time settle for one version. Case studies in Apollonius according to Delage 'prouvent que le poète aime à 'contaminer' lorsqu'il se trouve en présence de plusieurs variantes d'une même tradition.'[225] This means that Apollonius decides on one main source to follow which is then embellished with details from other stories so that no episode can be directly ascribed to one author. This is a highly sophisticated but work-intensive approach, only possible with a direct access to a rich body of sources which can be compared against each other. Paradoxography could have represented a welcome relief from this tendency to 'overcomplicate' by stripping down unnecessary layers and levels of detail from a given phenomenon. Yet it shows the same habit to contaminate one story with several sources. The source at the foundation of the information might be the one directly cited, but additional details are derived from texts dealing with the same topic.

The juxtaposition of older and newer sources in Callimachus' paradoxography seems deliberate considering the significant time gap between his sources from Archaic poetry to 4th century historians. All his stories are narrated in a gnomic present even though his sources

[224] Guichard 2012, 350-51.
[225] Delage 1930, 281.

are drawn from over three centuries of Greek literature. The form in which his *paradoxa* are presented today obscures how far these sources appeared levelled next to each other. Yet it is unlikely that Callimachus differentiated them in his treatment considering that the *paradoxa* were already arranged according to geographical criteria. The wide timespan of his sources differs from most paradoxographers who resorted to large-scale excerpts and opted for a more limited range of sources taken from a smaller timespan.

The boundaries between poetry and other types of writing were less clear-cut in Archaic times because poetical form and historical material were not mutually exclusive: Jacoby, for example, included the poets Tyrtaeus (7th century), Mimnermus, and Semonides of Amorgos (both 6th century) as the earliest local historians in his *Fragmente der griechischen Historiker*, while the origin of Greek historiography is often located with Hecataeus of Miletus.[226] For the Hellenistic poets including Callimachus who played with generic boundaries,[227] Archaic poetry would have served as an attractive model by harking back to a period when these boundaries were less strictly maintained. More generally, the idea of an interconnected archaic world was a popular one for the Ptolemaic dynastic who were keen to promote a renewed sense of Panhellenism for the Greeks living in Egypt. Together with the all-too-familiar older-and-better trope of Greek literature, this literature that existed within both monarchical and pan-Hellenic structures, would have made a compelling model to imitate for Callimachus and to aspire to for Ptolemaic audiences.[228] For paradoxography specifically, the answer lies most likely in the archaic poets' complex relationship to truth: although it is hard to reach a satisfying definition of fictionality and one may question how far our retrospective viewpoint may hinder us from understanding ancient attitudes to this problem, we cannot ignore the fact that the poets themselves discussed this topic. Callimachus, who objects to the Aristotelian dogma of the distinct purposes of poetry and

[226] Orsi 1994, 152-54.
[227] Harder 1998, 95-113.
[228] Nagy 1990, 37; Asper 2011, 111.

prose, might have recognised in Archaic poetry a more productive and delightfully ambiguous attitude to truth, which would have served his interests in a manipulative genre like paradoxography much better than Aristotle's adherence to clear boundaries between truth and fiction.

Although some scholars claim that archaic poetry was dedicated to the concept of truth,[229] deception and lying were not condemned per se and were indeed identified as almost positive characteristics of characters in their texts.[230] One may only think of 'wily' Odysseus whose deceptiveness is considered a virtue by the Homeric poet. Epinician poetry as practised by Pindar counteracted possible objections to its ambitious claims.[231] Likewise, paradoxography as an assemblage of shortened extracts of texts, is deceptive as it manipulates its primary texts and plays with levels of believability.

Archaic poetry offered itself to Callimachus also because 5th century poetry in particular exhibits some of the features of local historiography. It narrated local history in poetical form and transposed it into unexpected new contexts, which resembles what happens with texts that are excerpted for a paradoxographical collection. One striking example is the popular water *paradoxon* about the river Himera, first attested in Callimachus' *paradoxon*.[232] The Himera, named after the eponymous city on Sicily's north shore, is said to spring in the middle of the island, with the northern half flowing northwards, the other southwards with one branch carrying salty, the other potable water.[233] This particular *paradoxon* somewhat unusually does not cite its source, but Vibius Sequester later –probably correctly- attributes this phenomenon to Stesichorus, Himera's most famous resident, if not offspring.[234] When

[229] E.g., Detienne 1973; Pratt 1993, 2.
[230] Pratt 1993, 2-5.
[231] Pratt 1993, 115-20.
[232] Antig.*Mir.*133.3.
[233] These are two distinct rivers, modern San Leonardo, the ancient northern Himera and the Salso, 'Southern Himera'.
[234] Vib.Seq.83: '*Himera, oppido Thermitanorum, dedit nomen Himerae. hoc lumen in duas parte findi ait Stesichorus, unam in Tyrrhenum mare, aliam in Libycum decurrere*.' Stesichorus' origin in Himera is based on Pomponius Mela (Mel.II.7.17) whereas others argue that he only moved there later in life. Strabo like

Stesichorus was composing his poetry, the authorities of Himera were keen to cement their strategic relationship with the cities of Selinus and Agrigentum on the island's south coast to which they were connected through its river courses. The Himera River also doubled up in Classical and Hellenistic times as a natural boundary delineating the Carthaginian and Syracusan areas of interest.[235] Even if the respective lines by Stesichorus have not survived, The area's socio-political realities were clearly manifested in his panegyric poetry. As a local historian, Stesichorus qualifies as an authority on the town's history. No other extant *paradoxon* can be attributed to Stesichorus nor does Himera feature again in the sources. Here the source of the paradoxography is tied very closely to its local history as poetry was of cultural significance to the community or patrons who commissioned it.

b) Poetry equal to prose sources

Poets are presented in paradoxography in a manner equal to prose authors. This suits our general impression that Callimachus' poetry promoted the novel idea of the equality of poetry and prose in their literary authority. Still, in his paradoxography when there are two sources, one poetical and one more contemporary prosaic source, then the latter seems to take precedence, as is the case for the *paradoxon* in chapter 134. The river Crathis was famous in antiquity for bleaching one's hair and prominently features in Euripides,[236] but in Antigonus the information is attributed to Timaeus rather than Euripides. If Callimachus had wanted to use the most famous 'traditional' source here, he would have chosen Euripides who was of course not an Archaic poet, but sufficiently established in the literary canon.[237]

Callimachus does not include the information on Stesichorus but provides the same story. It is remarkable that none of them mention a source. Schweder 1888 assumed that Mela's and Pliny's common source may have contained one, but this is not certain.

[235] Frisone 2012, 99-100.

[236] Eur.*Tr.*220-29, cf. Ov.*Met*.XV.315-16.

[237] Theophrastus also mentioned the wonder (Ael.*NA*.XII.36).

With the exception of Antigonus' one reference to Aeschylus, the dramatists are absent from our paradoxography but were obviously not disqualified from supplying *paradoxa*.

Antigonus of Carystus occasionally even cites a few poetic lines in order to underpin his point. This applies to Archaic poets like Homer, Hesiod, Alcman, and Aeschylus as well as the Hellenistic literati Philetas and Archelaus. These poets just like their prose equivalents themselves did not necessarily have to exhibit any paradoxographical qualities but were adapted to fit paradoxography. Poets are cited as literary authorities both in the passages deriving directly from Callimachus as well as the rest of Antigonus, but direct citations only occur in the latter. Musso evaluates the quality of Antigonus' citations as remarkably good,[238] which at least means that a well-stocked library must have been accessible to him. Antigonus' inclusion of these citations is largely unique in the whole tradition of paradoxography and seems to have been an innovation on his part. Considering that the two sections differ in this regard, Callimachus likely did not include any poetical citations in his paradoxographical collection. Instead, we can imagine his collection as a string of paraphrases largely similar in layout: short prose paraphrases drawn from prose and poetic sources, thus levelling the status of both poetry and prose.

How about the language in the *paradoxa* drawn from poetry? Does it still reflect some poetic qualities? Whenever a source is not named, the *paradoxon* is introduced by simple phrases like 'they say'. Simple statements that a poet or a local people 'speak' followed by the *paradoxon* abound. One may recall this way of attributing information from historiographers like Herodotus or mythographers.[239] Yet there is another possible influence on Callimachus for the way he introduced his sources as also Archaic poetry ubiquitously deployed this technique. One of Callimachus' favourite models, Pindar, had used similar imprecise

[238] Musso 1979.
[239] Brown 2002 denies that these reveal their sources' origins.

phrasings to describe the origins of myths. In *Olympian* 6.28-30 Pitana λέγεται to have slept with Poseidon and *O.*7.54-56 where φαντὶ δ'ἀνθρώπων παλαιαί.[240] Instead of looking to Pindar as a model, there is a different reason for these general remarks. It emerges from de Jong's study of the Homeric texts that certain statements in Homer which cannot be checked by the human narrator nor by his audience or are generally admitted facts (*Il*.IV.374f., *Od*.IV.200f.) are introduced by φασί. This usage is not restricted to Homer but was standard practice for Pindar (*Ol.*2.28, *Nem.*3.52f.), Aeschylus (*Eum.*4), Antimachus (fr.35), and for Callimachus' contemporary Apollonius (A.R.II.500). Harder has applied her results to the *Aetia.*[241] Callimachus himself was certainly aware of this special usage and deploys it in his poetry: The conflict of information is played out in the beginning of the *Hymn to Zeus* where the Cretans and the Arcadians each claim their own territory as the location of Zeus' birth. The phrase φασὶ γενέσθαι in line 6 is directly lifted from *Il*.4.374f. and even placed in the same metrical position. Considering how prominently these phrasings are placed in Callimachus' own poetry (fr.384.47f.), it would be plausible to suggest that this way of embedding the information was not Antigonus' innovation but already occurred in Callimachus' own paradoxographical lists. Still, it is impossible to be certain on this point considering Antigonus is paraphrasing Callimachus. In Antigonus, φασί and cognates occur especially towards the start of the collection (15, 19, 20, 24, 53, 54), which is largely based on the *Historia Animalium* and Timaeus as well as one Homeric *paradoxon,* which seems to imply that this way of introducing the information was Antigonus' method rather than Callimachus' influence. It could also be the accepted way of conveying contested information in paradoxography as φασί occurs frequently in Περὶ θαυμασίων ἀκουσμάτων. Since φασί is a widely used verb and seems to have occurred frequently in thaumatographical

[240] In *I*.8.46a-48 the σοφοί are the subject of φαντὶ and interpreted by Morrison 2011, 339 as poets since the passage concerned Achilles.
[241] Harder 1990, 297-300.

contexts, it is impossible to say whether this usage is typically Callimachean but the parallel with his poetry suggests that this is likely.

4. Antigonus' vs. Callimachus' sources

After looking at Callimachus' range of sources, let us analyse whether the non-Callimachean part in Antigonus reflects a different source distribution. Doing so, will allow us to understand in how far Antigonus lets the original Callimachus shine through. Antigonus' wonders immediately before the Callimachean section are gathered from a multitude of sources, among them Myrsilus (117), Theopompus (119), Hippias of Rhegium (121), Hellanicus (126), ὁ τοὺς Σαμιακοὺς ὥρους συγγεγραφώς (meaning Duris of Samos, 120), and Eudoxus (123). Antigonus here relies on authors we also find in the Callimachean part. Antigonus' editorial influence on both parts partially explains this, but the source distribution in Callimachus still differs enough to show that Antigonus' collection is based on at least two compilers with different intentions at work. Antigonus, for example, is generally sceptical of Ctesias, who only appears in chapter 15 in the non-Callimachean part in order to be subjected to the most direct criticism that can be found in Antigonus: διὰ δὲ τὸ αὐτὸν πολλὰ ψεύδεσθαι παρελείπομεν τὴν ἐκλογήν· καὶ γὰρ ἐφαίνετο τερατώδης.[242]

The overlap in sources provides a firmer idea of which texts were considered attractive material for paradoxography at Callimachus' time especially if Antigonus can really be dated to the 2nd century BC. Duris of Samos as one of the few confirmed prose sources behind Callimachus' poetry was behind the catalogue of Sicilian cities in fr.43 and reappears here

[242] '*But since he has told various lies before, we will pass over this extract since it seems too fabulous*', cf. Gómez Espelosín 1994, 144-45. The mention in ch.116 is mere conjecture by Bähr 1824, 244.

as a source.[243] In the Callimachean part Duris is not mentioned a single time as a source, but at least we know that he was used by both Antigonus and Callimachus independently of each other, which speaks for his cultural importance at the time.

Let us analyse the relationship between the sources of both authors a bit further to reach a clearer picture of Antigonus' role, first by looking at the whole collection.

Antigonus' συναγωγή assembles three types of sources: firstly, there are those for which Antigonus was the primary excerptor and which include those at the start of the collection: Timaeus (1), Myrsilus (5, 15), Amelesagoras (12), Theopompus (14, 15), Ctesias (15)[244], Aristotle (16, 19, 20, 22, 25), and Herodotus. The greatest variation is found in the chapters directly before the Callimachean block we have just discussed in the paragraph above. This section is particularly marked by Antigonus' own observations.[245]

Secondly, there are chapters without any source indications. For these Nebert has suggested that Antigonus relied on his own exploration of phenomena or his memory of literary texts.[246] This especially applies to chapter 167, which is not a description of a wonder, but a personal anecdote of being presented with Sicilian salt as a guest. This is the only item in the Callimachean section next to those adding in additional sources that should be firmly ascribed to Antigonus, not Callimachus: *Paradoxa* of this type do not credit Antigonus' source since Antigonus produces the story from memory rather than having forgotten where he had taken it from. That Antigonus' composition technique relies on both systematic excerption and memory is made clear by ch.115:

[243] Greene 2011, 72. *FGrHist* 76F59. Duris is potentially also behind frr.28.5-6 (cf. 2.97-105 and Williams 1978 *ad loc.*, *FGrHist* 76F79), and fr.64 (*Simonides' Sepulchre*).
[244] It is not clear whether Antigonus has taken material from him in this case as he criticises Ctesias here.
[245] Nebert 1895, 369.
[246] Nebert 1895, 364. Schepens/Delcroix 1996, 384-85 hint that personal inquiry might have been important for some paradoxographers but the evidence for this is sparse.

Πολλῶν δὲ ὄντων, ὧν καταγέγραφεν Ἀριστοτέλης, ἐπὶ τοσοῦτον ἠδυνύθημεν ἡμεῖς ἐπὶ τοῦ παρόντος τὰ μὲν ἐκλέξαι, τὰ δ᾽ἀναμνησθῆναι.[247]

In many cases it is impossible to determine whether the *paradoxon* derives from a source or is invented. Nebert has mounted a valiant effort in distilling literary sources out of stories where indirect speech is followed by direct speech as indicating citations,[248] but the effort overall is rather futile. It is ultimately impossible to rely on this method.

The third 'type' is presented by those items which were already taken from paradoxographical collections – in this case Callimachus and probably an edition of book IX of the *Historia Animalium*. In contrast to the previous types, here already excerpted *paradoxa* are in turn excerpted and rearranged as Antigonus adopts these sources while adding a few of his own where he deemed it appropriate. Book IX of the *Historia Animalium* probably circulated under the title of περὶ ζώων as a compilation of Aristotelian and Theophrastan material[249] independently from the rest of the work. It is likely that both already had a paradoxographical character, otherwise it would be hard to explain why its transmission history is so divorced from the rest of the work. Antigonus therefore both sampled his *paradoxa* from these two paradoxographical collections as well as excerpted non-paradoxographical texts, with each type of excerpts dominating different sections in his collection, while he also inserted stories from memory. Sources added by Antigonus to the Callimachean section include Eudoxus and Philon. Τοῦτο δ᾽ἱστορεῖ καὶ Φίλων ὁ τὰ Αἰθιοπικὰ συγγραψάμενος (ch.145) looks like an adscript by Antigonus to the Ctesian' wonder about an Ethiopian fountain rather than being of Callimachean origin. Antigonus also explicitly added a story about Cos, which both Eudoxus and Callimachus had failed to

[247] This remark also hints at the uncertain status of the *Historia Animalium*'s ninth book which likely circulated separately and was largely responsible for the distinctive treatment of Aristotle's oeuvre, cf. Nebert 1895, 368.
[248] Nebert 1895, 364. He offers a list of phrases that could derive from Antigonus in each section.
[249] Kroll 1940, 3f, 30. Susemihl 1887, 1357 was the first to argue that Antigonus was the first beneficiary of this collection.

mention (Antig.*Mir.*161). It would be intriguing to know from what they had omitted this story in Antigonus' opinion, since he is apparently adding a story here for the sake of completeness, an unusual aim to aspire to in a paradoxographical collection. Still, Antigonus does not offer an alternative source, which indicates that this story is either founded on his own personal experience, which is less likely since he could not seriously assume Eudoxus or Callimachus to have visited Cos in person, or that Eudoxus like Callimachus had talked about wonders on Cos but just left out this story, which seems more likely. The Alexandrians were generally well informed about the island through its connection to Philetas and Philadelphus II, so Antigonus' criticism might stem from this fact. Nebert suggests Antigonus to be also aspiring to completeness in chapters 15 and 161. Chapter 161 is the only instance in which Callimachus is mentioned mid-text by Antigonus (after the introduction in 129) and demonstrates Antigonus' continued engagement with Callimachus thirty chapters onwards.

Callimachus' range of sources probably originally exceeded those found in chapters 129-173 considering Antigonus only selected some *paradoxa*. Could the chapters immediately before the Callimachean section be used to reconstruct some of Callimachus' source texts? It seems at least possible for a few: Hellanicus of Lesbos is cited for a Theban wonder: Ἑλλάνικος δ᾽ὁ Λέσβιος ἐν Θήβαις ταῖς Αἰγυπτίαις ἱστορεῖ σπήλαιον ἐν ἄστει εἶναι, καθ᾽ὃ εἶναι μόνον τὰς μὲν τριακάδας νηνεμίαν (ch.126). The same story is narrated later by Stephanus of Byzantium in his encyclopaedia under the entry Θήβη:

> πόλις Βοιωτίας…ἔστι καὶ ἄλλη Αἰγυπτία, περὶ ἧς Καλλίμαχός φησιν ὅτι κατὰ τὰς Αἰγυπτίας Θήβας ἐστὶ σπήλαιον, ὃ ταῖς μὲν ἡμέραις πληροῦται ἀνέμου, κατὰ δὲ τὰς τριακάδας οὐ πνεῖ παντελῶς.

Pfeiffer and Wilamowitz-Moellendorff agree with the analysis already advanced by Bentley that Antigonus here copied the note out of Callimachus since it fit particularly well into Antigonus' thematic arrangement of natural phenomena synchronising with the lunar

cycle.[250] Therefore, for Hellanicus we can be relatively certain that he should be counted as one of Callimachus' sources.

The case is less certain for Myrsilus of Lesbos, a near-contemporary of Callimachus, who does not appear in the Callimachean part but three times in Antigonus (5, 15, 117). He seems not to have been known to Callimachus. The reason is probably that Myrsilus' Λεσβιακά was written slightly later than Callimachus composed his paradoxography.[251] By contrast, Timaeus who lived slightly before Callimachus, is included by Callimachus.[252] The raven story (ch.15) mentions Theopompus, Ctesias and Myrsilus as sources, while Stephanus of Byzantium (s.v.Κραννών) only cites Theopompus and Callimachus for the same story. Stephanus maybe dropped Ctesias and Myrsilus because they did not discuss the Thessalian city Crannon which Stephanus was concerned with in this passage. Here Antigonus seems to preserve a source which is not cited by Callimachus and supports the theory that the first part of Antigonus' text was written before the later Callimachean one.

There are other authorial comments and additions in Antigonus' text that certainly do not go back to Callimachus. Antigonus' personal evaluations of the paradoxographical material are more common in the first part of the collection, where we meet comments almost resembling Herodotean judgements on what constitutes a wonder: ἴδιον δὲ καὶ τοῦτο (ch.89). In the Callimachean part these are rare, a further indication that Antigonus here did not substantially change Callimachus' original collection apart from the order. Most paradoxographical collections such as those by Apollonius and pseudo-Aristotle contain relatively unconnected *paradoxa* so that Antigonus' collection by comparison appears unusually coherent. His personal voice also breathes more life into the collection. Even if

[250] Wilamowitz-Moellendorff 1881, 20f.; Pfeiffer 1953, 338.
[251] Nebert 1895, 373-74 believes that this set of sources proves that the Λεσβιακά was written before Callimachus' θαυμάτων συναγωγή. A similar deduction follows from Plin.*Nat.*IV.65 who provides a seemingly chronological list in which Callimachus follows Myrsilus. Nebert's elaborate argument is not collaborated by other scholars.
[252] Müllenhoff 1870, 456; Wilamowitz-Moellendorff 1881, 24.

paradoxography as it is preserved today does not make for exciting reading, Antigonus' few personal inflections tangibly personalise the text. Antigonus seems to have put extraordinary effort into correcting his sources.[253] Specifically for Callimachus, there are several passages where he applies corrective touches. In ch.45 Antigonus criticises Callimachus' false use of the epithet ἀμφιγυήεις, while in 145-6 and 161.2 he adds sources which he considered missing in Callimachus. It is interesting that Antigonus felt especially inclined to criticise Callimachus and seems to have had his own standard of what he expected in a paradoxographical collection. Kwapisz who accepts the identification of Antigonus with the Carystian, detects a serious amount of *Schadenfreude* in the Pergamene in being able to correct his Alexandrian rival playing on the considerable state of rivalry between the two libraries. For Callimachus this question did not present itself considering he was setting the standards for later paradoxography. For Blum: 'Kritik an den von ihm ausgeschriebenen Berichten übte er nie; auch machte er keinen Versuch, die Ursachen (*aitiai*) der Paradoxa zu ergründen.'[254] Callimachus' mission was to discover the world through his books and make it as enchanting as possible. Undermining his sources was not part of this strategy.

All of this taken together, one may safely say that Callimachus' scope of sources was particularly big. Indeed, his range of sources far exceeds that of later paradoxographers. Yet this is of course what we would expect from someone cataloguing the library of Alexandria and the difference to Antigonus who had presumably access to the Pergamene library, was not as big. Callimachus probably noted down interesting phenomena as he came across them rather than systematically scouring the whole library for citations on water phenomena, while later paradoxographers relied on excerpting already existing collections. Callimachus' haphazard approach would both explain the great range of his sources, but also why

[253] Wilamowitz-Moellendorff 1881, 165-6; Schepens/Delcroix 382-9.
[254] Blum 1977, 193. Körte/Händel 1960, 17 doubt that anything can be known about Callimachus' scholarly practices.

Antigonus in the first place could find stories supposedly missing in Callimachus – also because it was never meant to be exhaustive.

5.Observations about the selection of paradoxographical sources

a) Biggest range of sources in Callimachus

The preceding discussions have demonstrated the variety of sources Callimachus relied on for his paradoxographical compilations, which contrasts with later paradoxographical collections which are generally based on a smaller number of works. The conservative nature of paradoxography is borne out by the fact that the range of its sources stays largely the same. In a parallel development some later paradoxographers include increasingly obscure references to the point that we cannot even be sure whether the texts of these supposed sources really existed. The same happened in parallel with mythographical works. The prime example is Pseudo-Plutarch's *De Fluviis.* Although it is generally not counted as paradoxography, it still exhibits some of the features of the genre.[255] The unknown composer has been accused of including bogus references even if some of his *paradoxa* originate with real sources.[256] He even pretends to know an Περὶ Ὀρῶν (*About Mountains*) by Ctesias (XXI.5).[257] This is surely invented and not a gateway to previously unknown paradoxographical collections. The almost comical over-exaggeration of its sources belongs to a later period of the paradoxographical genre that had little to do anymore with the concerns of Aristotle and Callimachus. It is a more extreme version of what ancient readers perceived as the defining feature of paradoxography: the inclusion of references, a trend started by Callimachus.

[255] Fraser 1972, I.454-55. Discussed in Cameron 2004, 127-34.
[256] Atenstädt 1922 carefully extracts Xenocrates and Archelaus (not the poet!) as *De Fluviis*' sources .
[257] Ps.-Plut.*Fluv.*19.2. Nichols 2011, 89-90 rightly calls them 'false fragments.' Perhaps also a περὶ ποταμῶν (XIX.2) if identified with the Cnidian.

b) Authors over book titles; postscripts are Antigonus' addition

Despite the great number of *paradoxa* attributed to specific authors in what remains of Callimachus' paradoxography, his notes appear vaguer than is the case in later paradoxography because they basically never contain the titles of excerpted books. The mention of Philon's Αἰθιοπικά ch.145 and Megasthenes' Ἰνδικά (ch.132) are the only ones of book titles, but these seem to be one of the only additions undertaken by Antigonus. Indeed, Antigonus seems to complement rather than restore Callimachus' information. Of course, it is possible that Callimachus could have originally included book titles which subsequently fell out. Still, it does not look as if after directly excerpting Callimachus Antigonus reinserted references or a text closely based on Callimachus. We should assume that Callimachus did not originally include book titles in his paradoxography.

For someone of Callimachus' scholarly calibre who was preparing a library catalogue of huge dimensions and was forced to think about the question of titles, it is striking that book titles are completely absent especially considering that later paradoxographers diligently record the books from which the stories are taken. The plethora of book titles in later paradoxographers such as Apollonius or even more so Pseudo-Plutarch's *De Fluviis*, however, often consist of pseudo-citations. Their aim was to bestow literary precedent on unbelievable claims and claim a more scholarly value to their content. Callimachus obviously had to try less than his later colleagues who first needed to convince their audience. Callimachus as someone who was deeply familiar with the literature and could assume his readership to be so as well, could have easily left off the titles. Only in later centuries when the *paradoxa* became increasingly disconnected from the books they were originally taken from, an urge to insert book titles makes more sense. This situation, however, also reflects the fluidity of ancient book titles, which Callimachus would have been repeatedly confronted with during his task of compiling a library catalogue. An ancient book

did not necessarily need a book title in antiquity as often merely the content was paraphrased. We see this happening with Callimachus' treatise περὶ ὀρνέων, which could either be the real title of this collection or merely a paraphrase of its content. Many paradoxographical collections seem to have described their content in these terms especially if we believe the much later pseudo-Plutarchean *De Fluviis.* Considering this, we should perhaps not be too surprised not to see any titles in Callimachus' paradoxography, which anyway seems to have attached more meaning to the names of its sources than the precision of its source citations. Antigonus' approach to references is more inconsistent, but when at his most precise he provides the name of the books - especially in the case of local historians.

c) New wonders vs. old wonders

Next, we will analyse whether the temporal gap between Callimachus and his sources matter for his paradoxography. Here it is worth diving further into the relation between paradoxography and his poetry in this respect. The latter relies significantly on authors from previous generations such as Xenomedes or Pindar rather than contemporary authors. The chronological proximity of a source to its narrated material carries at least some weight in Callimachus' poetry as can be deduced from the example of Xenomedes. He is called an old source (παρ᾽ἀρχαίου Ξενομήδεος, fr.75.54) and through his μνήμη…μυθολόγῳ (a mythological account) Acontius' and Cydippe's story can be placed closer in time to Xenomedes than our own even if the narrator leaves open when exactly the story is happening.[258] Xenomedes just like his protagonist Acontius came from Ceos and was thus an appropriate source for Callimachus as his both temporally and geographically closest source to the story. Those of Callimachus' sources which exist in the present are mainly oral in nature as in the case of Theogenes (fr.178) who provides information of Peleus' cult on

[258] Harder 1990, 302.

Icus. Here a contemporary is asked about the past in a twist on Callimachus' usual *modus operandi* as his local status qualifies him for this job. Callimachus' paradoxographical sources mostly derive from the previous century, while older ones are often selected based on a local connection to the *paradoxon*. The οἱ πάλαι Λυδοί of the 4th *Iambus* (fr.194.7) resembles the type of source indication we meet in paradoxography whenever no literary authority is given even if a mention of the sources' chronological placement does not normally apply. Although more varied, the source attribution in his poetical oeuvre is rather like paradoxography as great store is set on local knowledge. The paradoxography at first glance uses contemporary authors indiscriminately together with more senior ones, thus fusing their information together into one big collection, which is not interested in the chronology of its *mirabilia.* There are a few exceptions for the *paradoxa* with mythographical content: in chapter 172 the natives tell a story about how the companions of Diomedes were turned into birds, which is acknowledged as an action which took place in the past.[259] Here the inhabitants are guarantors for stories that happened long ago but in the same area. These mythographical passages stand slightly apart from the other *paradoxa* but the set-up resembles the one in fr.178. For paradoxography usually the age of the source does not matter as most phenomena are timeless. The paradoxographical stories themselves all seem to exist in a generic present independently of how old the source is.

As already mentioned, Callimachus' sources for paradoxography overwhelmingly consist of 4th century authors, chief among which are Aristotle, Theophrastus, and Timaeus. Perhaps this is significant. Alexander's conquests had brought serious upheaval to the whole Greek world which took the form of an intellectual watershed. The Alexander historians conveyed the stories of these newly discovered horizons in the East to its Greek audience whose communities often changed their relationship to their myths to reflect the new geopolitical

[259] The same applies to Antig.*Mir.*163 with the Cretans as witnesses + Antig.*Mir.*131 without a source indication.

circumstances. Universal history was on the rise in parallel to local history which continued to be written. The 4th century also saw the systematisation of academic and scientific disciplines propelled by the efforts of Peripatetics like Aristotle or Theophrastus. All these are names we regularly encounter in Callimachus' paradoxography as a product of the changed literature of the 4th century, which is disproportionally dependent on its sources. Among the historians, Timaeus and Theopompus, although both writing historiography in a style like Herodotus,[260] were apparently considered preferable by Callimachus to the Father of History. The driving force here is a desire on Callimachus' part to have up-to-date sources in preference to Herodotus' influential yet more outdated accounts. Priestley has argued for paradoxography as almost approaching the standards of Ionian historiography in its attempts to be at the vanguard of contemporary research and its epistemological approach.[261] Contemporary examples of this practice in Apollonius of Rhodes' *Argonautica* whose medical, nautical, and geographical material was cutting-edge, show that being up-to-date was a real concern in Hellenistic Alexandria.[262] Viewed from this angle the paradoxographical source selection appears to be far from erratic and explains why Callimachus would prefer later a later author like Timaeus to an older authority like Herodotus even if the temporal gap did not matter.

Part of the paradoxographical rationale is that wonders are only interesting if they are new. Already known wonders lose some of their lustre. A wonder is of course at its most exciting when it is heard for the first time. Armand D'Angour firmly associates the new with the marvellous.[263] In a further extension of this concept paradoxography resorted to making already known stories more interesting by taking them out of their original context and thus defamiliarising them. It highlighted details a reader might have easily missed while browsing

[260] Priestley 2014, 86 for Timaeus' Herodotean qualities.
[261] Priestley 2014, 86. Thomas 2000 for Herodotus' attention to this point.
[262] Priestley 2014, 83; Meyer 2001, 223.
[263] D'Angour 2011.

a text or simply refreshed the reader's memory all the while increasing the significance of the story by singling it out. We shall now look at a concrete example of how this happened. Antigonus breaks up the original division of Aristotle's *Historia Animalium*: while Aristotle in 487a11-b7 had attempted to classify animals according to manner of life, behaviour, parts, or habitat, this systematisation is not translated into the paradoxography. Instead, single examples are singled out e.g., Antig.*Mir*.61 according to which all land animals with lungs breathe except for wasps and bees. Similarly, *HA*.489a30-5 distinguishes blooded animals from bloodless while ch.63 says that those creatures are bloodless which have more than four feet.[264] Hereby, Antigonus effectively leaves out sea creatures and blooded animals. Aristotle's neat division is disturbed as an original addendum is turned into the main point. Antigonus' intention here is to report an aspect which is not hitherto known in contrast to something that is already familiar. We meet the same concept earlier in Herodotus where marvels are believed to lose their wondrous aspect, the better they are known. For this reason, Herodotus discards the camel as uninteresting, since it is already known in the Greek world, and limits his narrative to its unusual bone structure:

> Τὸ μὲν δὴ εἶδος ὁκοῖόν τι ἔχει ἡ κάμηλος, ἐπισταμένοισι τοῖσι Ἕλλησι οὐ συγγράφω· τὸ δὲ μὴ ἐπιστέαται αὐτῆς, τοῦτο φράσω. κάμηλος ἐν τοῖσι ὀπισθίοισι σκέλεσι ἔχει τέσσερας μηροὺς καὶ γούνατα τέσσερα, τά τε αἰδοῖα διὰ τῶν ὀπισθίων σκελέων πρὸς τὴν οὐρὴν τετραμμένα.[265]

The gap in time from an observed phenomenon seems not to have been the issue considering Archaic poets are footnoted next to figures like Ctesias, provided their information is made to appear new. It is still remarkable that Homer and Herodotus are never acknowledged as sources in Callimachus' paradoxography. We should be prepared to accept that paradoxography entertained ideas about authority that differed from the rest of Greek

[264] Leigh 2013, 193.
[265] '*I will not describe the form of the camel since the Greeks are already acquainted with it. However, I will describe this, which is not known about it: in its hind legs a camel has four thighbones and four knees, and its genitals are turned backward through its hind legs towards its tail* (III.103).'

literature. Homer and Herodotus would have of course counted as 'common sources.' Part of the problem that was recognised in Hellenistic times, was that Homer was often considered as an authority on all types of subjects even in medical matters as if everything worth knowing was contained in his epics. Callimachus although looking up to Homer, was familiar with the broad range of Greek literature and avoided turning to classics like Homer and Herodotus wherever possible. Appreciating this variety, he naturally drew on the literary texts best placed to deal with a particular topic to draw from. Indeed, considering that we do not have the full picture, it is perfectly possible that internal traditions had developed by Hellenistic times, which would have looked for texts different from Homer and Herodotus for certain topics. In a similar vein Pelling discusses Athenaeus using Chamaeleon and Ctesias for this reason: 'We automatically assume that Herodotus is a better authority, because earlier and presumably the "source" for the story, but Athenaeus (or his speakers, or his audience) might attach more weight to Chamaeleon, treasure-trove as he clearly was of hedonistic material. That was where you went for material like this.…Ctesias was the better name for stories like this; his was the name that added lustre and style.'[266] Ctesias was certainly not trusted by anyone to be a particularly faithful storyteller, but he was the right address for stories of this 'type'. It is nearly impossible to establish which criteria induced Callimachus to choose one author over the other, but it seems like the appropriateness of an author to the topic in question or in other cases the region discussed seems to have been at work here, which would explain the high ratio of local historians in paradoxography.

[266] Pelling 2000, 186-7, cf. Priestley 2014, 84.

d) The relationship to local sources

Since the name attached to a piece of information was of crucial importance, paradoxography preferred local sources for information- or at least authors who spent an extended time period in the place they were writing about. This idea is not new in Greek literature: Marincola has already pointed out that the Greeks conventionally thought local testimony better.[267] I will argue in the following that Callimachus relied on local historians to underpin his research as they presented the most reliable authorities available in their field. Still, there are inconsistent attitudes found in the selected sources: especially Ctesias stands out for his coverage of *paradoxa* in areas that were not the focus of his historiographies. Similarly, the Alexander historians' exploration of the Eastern areas which would have improved on Ctesias' and Herodotus' information was completely ignored. Paradoxography apparently did not dogmatically stick to the most local source that could be found.

Callimachus paints a picture of himself as the armchair scholar who has never travelled to the places he is writing about, as, scholar that he is, he defers to the authority of books. That is why writers who are not locals but who spent a considerable amount of time in an area can be consulted as quasi-local sources. This applies to Stesichorus as well as Pindar, who was accustomed to write about places to which he was not native. As a travelling poet he celebrated a variety of places of significance to the Greek world especially at the games in Olympia, Corinth, or Delphi. On the historiographical side, we may think of Ctesias of Cnidus. Nichols' recent discussion of his Ἰνδικά fragments and their similarity to paradoxographical literature gave Ctesias his due or acknowledged his part in the formation of the paradoxographical phenomenon as its earliest model.[268] Ctesias seems to have represented the first instance in which paradoxography was not relegated to digressions or

[267] Marincola 1997, 283-5.
[268] Nichols 2011, 31. Ctesias' text was too varied to be pure paradoxography. This credit goes to Callimachus, cf. Nichols 2018, 12-14.

the realm of myth as he still aspired to historical accuracy to some degree. His local histories, the Περσικά, a work of twenty-three books, and the Ἰνδικά already reveal with their titles their strong geographical focus.[269] His work was probably roughly comparable to the local histories by Nymphodorus on Sicily or Philon for Scythia, which also feature as sources for Callimachus.

Unusual is the frequency in which we encounter Ctesias in Callimachus with twelve references to Ctesias, a third of all references and as many as Theophrastus and Aristotle together. Ctesias' prominence is even more remarkable as plenty more recent sources existed on the areas Ctesias wrote about which Callimachus largely neglected.[270] Perhaps this is because Ctesias occupied the dominant position in the literature on Persia and India. The choice faced by writers before Alexander's campaigns had been to either believe Ctesias or have nothing to work with at all. Aristotle had faced the same dilemma as he openly criticised Ctesias where he could, but also tacitly used his information on the elephants or the mantichore when the remoteness of India forced him to defer to Ctesias' authority.[271] The new information from the Eastern campaigns would have taken some time to trickle down in the literature. Megasthenes could have delivered reliable information on India by Callimachus' time but seems to have been of little interest. A direct comparison of Ctesias and Megasthenes which is made possible by several fragments of both authors concerning Semiramis' campaigns into India, shows that their information differed substantially from each other.[272] Megasthenes usually provides more details than Ctesias as in the case of the Indian reed where he adds precise measurements (Str.XV.1.56-57), proving the generally held assumption that Alexander's campaigns seem to have tried to follow up several

[269] The exact nature of the two texts is debated due to their fragmentary state.
[270] Fraser 1972, I.763.
[271] *HA*.610a19; *PA*.659a1 for the elephant.
[272] Nichols 2011, 43n.75-76.

phenomena book in hand. Whenever something approximating the description in Ctesias was found, Ctesias was 'improved upon' through the inclusion of more details.

By Callimachus' time, stories about remarkable phenomena so obviously differed from local historiography that this divergence probably caught Callimachus' attention. In a similar way to how Callimachus largely rejected the exact science as practised in Alexandria, the Alexander historians seem to have been less desirable to Callimachus as they represented a disenchanted world in contrast to the fanciful stories found in Ctesias. Although the Alexander historians could have offered updated information of the East, they only feature once in Antigonus' collection and are also generally rare in paradoxography. They were obviously not the appropriate source for Callimachus' conception of paradoxography as their methodological exactitude did not recommend them. The only way their material found its way into the paradoxography seems to have been through Theophrastus' writings in diluted form. The Alexander historians' temporal and spatial proximity to their material seems to have been of little importance here as Callimachus was content with letting older sources stand next to newer ones depending on to whom he attributed higher chances of convincing his audience.

Paradoxography meanwhile had already been accepted for what it was, namely fanciful stories. Certain expectations about foreign places had been developed and been turned into recognisable stereotypes e.g., such as that precious stones are retrieved from rivers, which paradoxography could exploit. The reception of Ctesias differed during the centuries: Nichols cites his popularity with Roman writers of natural history who exploited Ctesias since he covered the topics these writers were interested in, whereas his history was soon discounted as fictive.[273] By the 2nd century BC when Antigonus was writing, the reliability of information on India had already changed significantly. Now the fabulous nature of

[273] Nichols 2011, 32.

Ctesias' stories seemed suspect even to paradoxographers: Antigonus in the *paradoxon* about the deer in Crannon dismissed Ctesias' information, which was probably taken from his Περσικά, about the same deer existing in Ecbatana.[274]

Callimachus' synthesis of local sources focusing on different places seems to have been the watershed moment for the genesis of the genre as never before had the stories about local phenomena been disconnected from the nexus of their local stories. Ctesias takes an important role in this development as his wonders are set in India, but also Greece and 'Ethiopia' and are directly juxtaposed in Antigonus. His authority for India was arguably greater than for Ethiopia but still this information is included. I am venturing a guess that Ctesias is such a prominent source in Callimachus as he was the first not to restrict his discussion of wonders to a local context but to directly compare and contrast wonders from different places as in the case of the Ethiopian and Indian spring.[275] Local writers were still included for the authority they could provide but Ctesias seems to have been particularly attractive to Callimachus as he broke with the unwritten rule of local historians exclusively writing on local stories.[276] As someone prone to breaking the boundaries of genre and literary conventions, Ctesias would have been a natural model for his paradoxography, which sought to organise stories according to new and unexpected ways.

e) Oral vs. written sources

It is worth mentioning that Greek does not know a single word that would be equivalent to our word 'source'.[277] Ancient conceptions about *Quellenforschung* were markedly different

[274] Antig.*Mir.*15.
[275] This does not contradict the argument that Callimachus organised his material geographically. It was probably Antigonus who juxtaposed the Ethiopian and the Indian spring, but there is no certainty about how strictly Callimachus' lists aggregated the *paradoxa* according to geography. Two rivers in different places but with the same properties would have been highly interesting to Callimachus' associative mind.
[276] Clarke 1999 for the relationship between history and geography in the Hellenistic world.
[277] Hornblower 2002, 374.

from ours. We cannot assume a general preference for written over oral sources to align with our own sensibilities, but at least with the Alexandrian poets for the first time one can be sure about the importance of written influence on the creative process.[278] This contrasts with someone like Herodotus who drew on the written and the oral depending on which information was available. Whenever Herodotus cites a people as the origin of a particular story, we cannot be certain that his sources were of an oral or written nature, but merely that he drew his information either from members of the local elites or bases it on a circulating *communis opinio*.[279] Callimachus travelled certainly less than Herodotus and did not make enquiries *in situ*. He mainly came across these stories in Alexandria, but his poetry and his paradoxography differ in the degree to which they admit to using literary over oral sources.

In his poetry he presents himself as both an armchair scholar who draws his knowledge from books and from questioning people who have come to Alexandria about their places of origin. Thus, oral and written sources in his poetry are relatively equal in their status. The 5th century historian Xenomedes for example who is cited as a written source, is still marked by oral communication as Callimachus claims to have heard rather than read the story from Xenomedes: ἐκλύομεν...Ξενομήδεος, ὅς ποτε πᾶσαν νῆσον ἐνὶ μνήμῃ κάτθετο μυθολόγῳ.[280] Callimachus is of course famous for this inclusion of prose sources into his poetry.[281] The concern with citing authority for one's information was relatively prominent during Callimachus' time and occupied historians from Herodotus to Polybius. The latter for example considered personal inquiry as more important than information derived from books or others, while eyes are better witnesses than ears.[282]

[278] For the relation between oral and written sources Morrison 2007, 187; Bruss 2004.
[279] Hornblower 2002, 376. Cf. Griffiths 1966, 59: Hdt.II.10: κατὰ περ οἱ ἱρέες ἔλεγον; shortly after II.15 on a similar topic 'ὡς αὐτοί λέγουσι Αἰγύπτιοι', showing that a religious elite can stand in for the whole people.
[280] Kidder 2018, 136. Also fr.43.12-16; fr.64.5-6 the name of Phoenix is known by ἀκοή, but the *aetion* concerns the epitaph on Simonides' tomb. In *Iamb* 1 the scholars are told to write down what they hear.
[281] Further instances are perhaps Leandrius/Maeandrius (fr.92.2), *Melicertes* (fr.91), fr.88 (*Schol.*A.R.II.705-11), cf. Pfeiffer 1949-53; Polito 2006.
[282] Plb.XII.27.1-3.

Yet in Callimachus' *Aetia* second-hand information always replaces first-hand enquiry. Callimachus' poetry regularly contains quasi-programmatic statements about oral sources which place these over stories ascertained through autopsy. We may consider here fr.282 in the *Hecale*: ὀκκόσον ὀφθαλμοὶ γὰρ ἀπευθέες, ὅσσον ἀκουὴ εἰδυλίς.[283] There is also ψευδοίμην, ἀίοντος ἅ κεν πεπίθοιεν ἀκουήν.[284] Even where Callimachus depicts himself as gathering information outside of his books, he relies on a second-hand source. He consults the Ician Theogenes at Pollis' Athenian-style festival on his local rites.[285] Kathleen Kidder interprets the similarities drawn between Callimachus and Theogenes in fr.178 as subtle commentary on Theogenes' suitability as an oral source. In her view this makes his information more reliable than a written source ever could be.[286] We do not know whether Theogenes or a similar Ician ever really existed from which Callimachus received his information, but we should not put it past Callimachus that this episode is down to his poetic self-fashioning as an enquiring quasi-historian in the tradition of Herodotus and that he in fact got his information from a book.

In the paradoxographical fragments the literary sources dominate by far. Indeed, local non-literary knowledge is rarely cited as Callimachus' ultimate source of information. Whereas in Herodotus a local source of information normally could not be nearer defined but still expected to be trustworthy as his interlocutors were mainly local elites, paradoxography seems to have moved into a completely different direction. Among all of Callimachus' *paradoxa* four cite local authorities. Of those, two tell a mythical story (131, 163) and as will be discussed these seem not to derive from Callimachus' paradoxographical texts. Callimachus shows at least on the surface his readiness to cite the authority of locals: chapter 137 (καθάπερ παρὰ τοῖς Λαμψακηνοῖς) about the local fountain concerns a non-

[283] '*As much as the ears are uninformed, so much are the ears informed*.'
[284] '*I may lie when I speak what may persuade the ear* (*may it be such fiction as persuades the listener's ear!*) (*Jov*.65).'
[285] Kidder 2018, 132: His Ician lineage (fr.178.7-8: γενέθλην/ Ἴκιος) qualifies him to speak on Ician rituals.
[286] Kidder 2018, 136.

mythographical episode. This relatively short *paradoxon* includes only one author: ἱστορεῖν δὲ ταῦτα Θεόπομπον. This note seems to have been added by Antigonus, which makes one question whether Callimachus had cited the Lampsacenes instead of a literary source as the origin of this story.

Locals as authorities are relatively rare in what remains of Callimachus' paradoxography. The locality of the wonders near Lampsacus could have been easily transposed unto the inhabitants as a local authority in the absence of a literary source. More likely is that the *paradoxon* originally contained a literary source which was subsequently lost. Pliny (*Nat.*XXXI.14) shows that this story about local mice was generally attributed to Theophrastus. Theophrastus as a native of Lesbos would have been an obvious source for the Troad. Thus, Callimachus' original written source was probably Theophrastus before dropping out, while Antigonus re-added Theopompus. Sometimes in Antigonus the source cited in a note also embraces the next note, but this is not the case here. Likely Callimachus himself left out the literary source by accident and added in the Lampsacenes, which underlines the makeshift character of this collection.

The structure of chapter 137 is repeated in 161 about a story circulating παρὰ τοῖς Κῷοις, credited to the literary authority of Callimachus and Eudoxus. Here again Callimachus does not seem to have offered a literary source. As Kwapisz has argued Antigonus here takes pleasure in adding a *paradoxon* to Callimachus, which he perceives as missing from the catalogue.[287] Antigonus' endeavour is that of a precise γραμματικός ensuring that each *paradoxon* is supplied with a literary note. Callimachus, however, rather than lacking in his cataloguing as assumed by Antigonus, had originally just looked for variation in the presentation of his sources rather than uniformity. Here it is worth to think back to οἱ πάλαι Λυδοί in the 4th *Iambus* (fr.194.7) as a source indication equalling that of a Xenomedes.

[287] Kwapisz/Pietruczuk 2019, 236.

All in all, one can be certain that Callimachus drew on written sources for his paradoxography rather than relying on stories picked up at dinner parties, but it is of course not impossible that he included a small number of stories he gathered in an alternative way. Callimachus' successors at least usually understood paradoxography as an exercise in excerpting written sources and only cited literary authorities for their wonders. This chapter though has hopefully been able to lend more meanings to Callimachus' ἀμάρτυρον οὐδὲν ἀείδω (fr.607). Rather than only referring to him needing a source no matter what, it goes beyond the need for footnoting. Both in the paradoxography and in his poetry, Callimachus tweaks the original story to convey unexpected new aspects to the story always in a very subtle way, but his desire to open new perspectives to old material is undeniable.[288]

[288] Herter 1931, 451.

III. Paradoxographical Geography: Fantastic Rivers and Where to Find Them

It is generally agreed that Callimachus' paradoxographical treatises were organised according to geographical principles,[289] but there have been hardly any attempts to prove this claim, which is usually based on the geographical focus of his transmitted titles, or to analyse the geographical distribution of Callimachus' wonders within the possibilities of our limited evidence.[290] This chapter will examine the substantial number of paradoxographical titles transmitted for Callimachus and his immediate paradoxographical successors in order to distinguish them from those works with no recognisable paradoxographical content. The great uncertainty surrounding the works described by his extant titles is perhaps the biggest obstacle in this discussion since thematic overlaps with onomastic and Κτίσις-literature complicate our understanding of paradoxographical content in both his poetry and his prose. We are lucky to possess the roughly fifty paradoxographical notes by Callimachus at the end of Antigonus of Carystus' Ἱστοριῶν παραδόξων συναγωγή, which provide a unique opportunity to determine Callimachus' geographical distribution of wonders – at least on a smaller scale while keeping Antigonus' role as an intermediary in mind. Antigonus and later exponents of paradoxography followed thematic arrangements, which means that we must assume Antigonus to have substantially changed Callimachus' original order and that Antigonus' categories only partly reflect Callimachus' themes. Nebert sees periegetic character in some of Antigonus' works, but this does not seem to have translated into his paradoxography.[291] Deliberately breaking up Callimachus' geographical order in favour of

[289] Fraser 1972, I.454-55; Krevans 2004, 175; Sistakou 2009, 179.
[290] Prioux 2008.
[291] Nebert 1896, 780.

a thematic organisation would be surprising in an author with alleged periegetic interests, but we should not straightaway deny Antigonus the same *polyeideia* claimed by his Egyptian rival.

Rivers and springs represented dominant categories in both and offer a means of comparison between Callimachus' paradoxographical material and the prominent status of water bodies in his poetic programme. They represented more desirable categories for him than fantastical islands or stones, which assumed greater popularity in later paradoxographers. These themes aid our reconstruction of Callimachus' paradoxographical oeuvre if one is prepared to keep an open mind and look for evidence in small fragments, Roman poetry, papyri, and even epigraphy. As will be seen, Callimachus' areas of paradoxographical interest largely correspond both with his transmitted titles as well as with those areas generally covered in his poetry (and with those in Antigonus)[292]. The exception is Egypt, which features even less in his reconstructed paradoxographical oeuvre; on the other hand, Arcadia and the Western Mediterranean emerge more distinctly than before as places to which Callimachus pays particular attention.

1. Organisation according to geography

Callimachus' poetry effectively conjures up the geographical locations of his narrative. On the one hand while the *Hecale'*s humble protagonist serves as an *aetion* for the naming of a single Attic deme in which it is set, the narrative of the *Iambi* traces a gradual shift from Alexandria towards Ephesus with Callimachus' narrator picturing himself as remaining in

[292] Nebert 1895, 372.

Egypt.[293] The *Aetia* on the other hand ranges across large swathes of the Greek-speaking world, from Sicily and Egypt to Asia Minor and the Greek islands. The extensive play with geography is obvious in his poetry. Its composition would have been aided significantly by a systematic arrangement of its disparate material according to locations. Paradoxographical items are nearly always connected to a location, while their literary 'footnotes' are occasionally omitted. Since his paradoxography constitutes the longest continuous sample of his prose literature, it is an ideal candidate to test how dominant his geographical concerns were.

a) Titles suggesting geographical organisation

One way to analyse Callimachus' geographical focus is by looking at the large number of transmitted titles of his prose texts containing geographical indicators. The title Θαυμάτων τῶν εἰς ἅπασαν τὴν γῆν κατὰ τόπους ὄντων συναγωγή reported by the *Suda*, which Pfeiffer encompassed in fragments 407-11 including those contained in Antigonus, is often assumed as the primary work encompassing his literary activity in the discipline of paradoxography. It provides the scope (the whole world) and organisation (according to places) of his paradoxographical undertaking, whereas other titles tend to differentiate their subject matter much further. There are alone the three transmitted titles for river marvels Περὶ ποταμῶν (fr.457 = Schol.Ephor.P.Oxy.2085, fr.1, col.2.29ff.), Συναγωγή τῶν ποταμῶν (fr.458 = Strab.IX.397), and Περὶ τῶν κατὰ τὴν Ἀσίαν ποταμῶν (fr.459 = *Schol*.Ap.Rh.1.1165a) contained in fragments, as well as Περὶ τῶν ἐν Εὐρώπῃ ποταμῶν and Περὶ τῶν ἐν τῇ οἰκουμένῃ ποταμῶν in the *Suda*.[294] The titles in fragments 457-58 seem to be abbreviated versions of the latter title in the *Suda*, which in terms of its scope could easily accommodate

[293] According to Scodel 2011, 380 *Iambus* 13 justifies his writing of choliambics despite not having personally visited Ephesus, the birthplace of Hipponax.
[294] *Sud*.s.v.Καλλίμαχος.

the rivers of Europe and Asia. In the absence of further knowledge about their content, the difficulty consists in ascertaining whether simple titles like Περὶ ποταμῶν belonged to the rest of his θαύματα or whether they were non-paradoxographical.[295] The fragments 457-9 seem to approach hydrography as a category of geophysics rather than paradoxography, but at least demonstrate that rivers constituted an autonomous organisational unit.

Titles like Περὶ τῶν ἐν Πελοποννήσῳ καὶ Ἰταλίᾳ θαυμασίων καὶ παραδόξων with obvious paradoxographical character suggest ordering criteria in conflict with other extant titles. Of course, they could also reflect different chapters of Callimachus' συναγωγή rather than separate treatises.[296] After all, in the *Suda*'s list of Callimachean titles, relatively unequally sized areas with Europe or Asia on the one hand are pitched against smaller units like the Peloponnese or Italy on the other. The clusters of marvels concentrating on Sicily, Arcadia, or Asia Minor, which might have constituted further prominent subsections or chapters in his works, will be discussed below.

Even works with less straightforwardly geographical or paradoxographical titles seem to have listed their material according to places rather than following an alphabetical system as one might have expected from glossography.[297] For these, we retain some fragments betraying their interest in onomastic relativity according to place. Περὶ ὀρνέων (frr.414-28) and Περὶ ἀνέμων (fr.404) are assigned by Krevans to Callimachus' work on Ἐθνικαὶ Ὀνομασίαι (*Local Nomenclature*, fr.406),[298] which contained the names of fishes in different cities as well as Μηνῶν προσηγορίαι κατὰ ἔθνος καὶ πόλεις (*Appellations of Month Names according to Peoples and Cities*).[299] Also in his poetry, anemological references are always

[295] Romano 2011, 320 speculates whether Περὶ ποταμῶν discussed water sounds as metaphors for poetry.
[296] For deliberations on how these treatises are aligned, cf. Krevans 2004, 175; Fraser 1972, I.454-455; Giannini 1964, 107; Pfeiffer 1949, *comm. ad loc.*
[297] See chapter VI for Philetas who apparently combined his interest in glossography and paradoxography. Alphabetisation as an organisational system was introduced to Alexandria by Zenodotus of Ephesus and was used for the Πίνακες, cf. Alpers 1975. Before the 3rd century alphabetization was rare and only happened by initial letters, cf. Rusten 1982, 363-64.
[298] Krevans 2011.
[299] Krevans 2011, 120-21.

combined with a location.[300] Callimachus' interest in nomenclature was combined with the foundations of islands and cities in Κτίσεις νήσων καὶ πόλεων καὶ μετονομασίαι (fr.601). This work will prove a close match for the poetic enumeration of Sicilian cities and their adjacent rivers in fr.43, which implies that it was equally subjected to a geographical ordering system. It is therefore legitimate to assume the geographical organisation that is normally ascribed to Callimachus' paradoxographical collection on the basis of its organisational similarity to his other works and the partial titles transmitted for his paradoxography. This chapter will also see his titles' themes or single *paradoxa* directly mirrored in his poetry.

b) Immediate contemporaries with similar topics/titles

The transmitted titles resemble several other paradoxographical texts but predominantly those of Callimachus' own pupils, Polemon and Philostephanus.[301] Following their master's interests, both engaged with Sicilian marvels and specifically rivers. His fellow Cyrenean, Philostephanus, wrote Περὶ τῶν ἐν Ἀσίᾳ πόλεων,[302] Περὶ παραδόξων ποταμῶν,[303] and Περὶ κρηνῶν, all titles directly reminiscent of his teacher.[304] For Polemon we have four titles of which Περὶ τῶν ἐν Σικελίᾳ θαυμαζομένων ποταμῶν (Macr.*Sat*.V.19.26-30)[305] and Περὶ Θαυμασίων (Ath.XII.552b-c) were clearly paradoxographical, while Περὶ τῶν ἐν Σικελίᾳ ποταμῶν (Ath.VII.307b) and Περὶ ποταμῶν (*Schol*.Eur.*Med*.835) are open to interpretation. Thus, both Philostephanus and Polemon in the generation after Callimachus wrote

[300] E.g., ἡ δ'ἀπὸ Μηρισοῖο θοὴ βορέαο κατάιξ *(Hecale*, fr.238.29); Αἴμῳ ἐπὶ Θρήικι, τόθεν βορέαο κατάιξ *(Dian.*114); Στρυμονίου βορέαο *(Del.*26), cf. Ach.Tat.*Intr.Arat.*33 in Maass 1898, 68.
[301] Capel Badino 2010 is a recent edition and commentary of Philostephanus of Cyrene who lived later during Philopator's reign (221-203 BC). Transmitted for him is a fragment by Tzetzes about a Sicilian lagoon which rejects those trying to enter it (*FGE* p.21 = *SH* 691) and a doubtful fragment (*SH* 693) by Herodian maybe about the Pamphylian River Cestrus. Gisinger 1951 assumed based on the first fragment a book Περὶ λιμνῶν παραδόξων for which no testimony exists.
[302] Ath.VII.297f.
[303] According to Capel Badino 2010, 192-3 possibly a verse composition.
[304] Fr.21. Ceccarelli 1989, 914-24 sees signs of verse composition.
[305] Angelucci 2014.

paradoxographical treatises on very similar subjects and adhered to comparable geographical considerations, which supports our understanding of Callimachus' breadth of scholarly activity.

c) Later shift towards thematic organisation

While Callimachus' paradoxography and prose catalogues were arranged geographically,[306] already a century later paradoxography had shifted towards a thematic approach, which eroded any geographical order, and its arrangement criteria were subject to individual preference. This variation in the taxonomy of wonders suggests that later lists were composed with different intentions to those of Callimachus. This also applies to Antigonus who arranged Callimachus' paradoxographical material according to themes after his own liking, which ultimately limits our ability to understand the structure of Callimachus' paradoxographical text excerpted by Antigonus. The latter's more 'Aristotelian' *mirabilia* in the first section, although more numerous, contain fewer geographical references, which are delayed until the Callimachean section.[307] The latter contains unusually many treatises with specifically geographical titles. The mention of Amometus' Ἀνάπλους ἐκ Μέμφεως is paralleled in the *Paradoxographus Florentinus* (18),[308] while Philo's Ἀιθιοπικά is added in a postscript possibly by Antigonus. Callimachus' reliance on geographically focused works for his paradoxography indeed comes closer to Apollonius of Rhodes' intensive use of geographical sources for his ᾽Αργοναυτικά[309] than to the thematic organisation of Antigonus or later paradoxographers. Timaeus' *History of Sicily* is the only direct reference in Antigonus' non-Callimachean section, but this served of course also as a reference work for

[306] Περὶ θαυμασίων ἀκουσμάτων was also organised geographically, cf. Brown 2002, 23.
[307] Eleftheriou 2018, 94-96 on geographical aspects of Antigonus' *paradoxa* (she does not identify Antigonus with the Carystian).
[308] The name Amometus is borrowed from Callimachus.
[309] Hurst 1998; Pearson 1938.

Callimachus who attributed several *paradoxa* to the Tauromenian. The geographic horizon of paradoxography gets diluted, the further we move away from Callimachus. A geographical indication is basically always supplied in the *paradoxa,* but we start to see mistakes infiltrating the lists. This is partly due to the increasingly thematical organisation. The geographical information might be retained but is not considered essential anymore. Later copyists were not averse to adapting the location of some wonders if they still sounded sufficiently spectacular. Sometimes the location was altered to a more exotic location to make them more interesting.

This is not to say that Callimachus did not link his wonders thematically. Geography remains Callimachus' primary organising principle but considering how large rivers and springs loom in his poetry, their collections were able to accommodate themes even within smaller geographical units, which Antigonus could partly still reflect, for example rivers whose water has an effect on the human body (ch.141-42). The difference is that later paradoxographers seemingly considered thematically ordered lists of wonders as an autonomous genre, whereas their purpose in Callimachus' time most likely went further, perhaps as material for inclusion in poetry, as will be discussed in chapter VI.

d) Antigonus' geography different from Callimachus'

Indeed, the Callimachean section in Antigonus differs from the previous wonders not only in quantity but also in the geographical distribution of its wonders. Antigonus' horizon extends to Scythia, the Hyperboreans, Ethiopia, and India, and therefore covers the usual breadth of paradoxographical works. His selection is skewed towards his place of birth with 3 wonders from Carystus (18, 78, and 84; none in the Callimachean part!), which Ziegler

took as further proof of Antigonus' identification with the famous sculptor.[310] Italy with the exclusion of Sicily and some Adriatic islands is completely absent here.[311] Sicily he seems to have travelled personally as ch.167 narrates his receipt of salt as a guest during his stay on the island.[312] In the Callimachean section, however, Italy is mentioned thrice next to a general focus on Sicily and Asia, followed by Thrace and Greece. Callimachus also discussed exotic places traditionally found in paradoxographical digressions such as India (Antig.*Mir.*132 quoting Megasthenes and 146+150 Ctesias), Arabia (149 Amometus), and Ethiopia (145 Ctesias and Philo's *Aethiopica*), but they are in the minority. References to Egypt are relatively limited (excluding mention of the Nile). The comparison with Antigonus lets Callimachus' original geographical distribution of wonders shine through.

2. Categories according to types of natural wonders

After our superficial analysis of Callimachus' paradoxographical titles and a rough outline of his geographical interests, we should further examine how far Antigonus' imposed categories reflected Callimachus' original themes and geographical arrangements.

Bodies of water had assumed major significance in Callimachus' literary programme.[313] The sheer quantity of his precise and obscure knowledge about the properties of rivers and springs in his poetry suggests that he had an ordering system in place, which allowed him to

[310] Ziegler 1949, 1146.
[311] Antigonus is bucking the trend of his contemporaries Philostephanus and Bolos who wrote about Italy, cf. Eleftheriou 2018, 95. Nebert 1896, 777-78 detects in Antigonus a propensity towards Italy, for example since he starts his collection with Rhegium and Locri Epizephyrii (chs.1-2), but we one should specify that these are Southern coastal Italian cities. Nebert considers ch.152 about Lake Avernus to be non-Callimachean.
[312] The conclusions by Nebert about the paradoxographer's travels to Italy place them in 266-64BC and would therefore mean an even earlier dating for Antigonus' collection, but all of Nebert's conclusions should be handled with care, also because they stand relatively isolated.
[313] Knox 1985. Euphrates acts as a signpost for Callimachean passages in Vergil, cf. Scodel/Thomas 1984, 339.

access this information on demand. Luckily, there are very similar water marvels emerging in both his paradoxography and his poetry which enable direct comparisons. The emphasis on hydrographic wonders is remarkable and Callimachus' predilection for the topic is immediately visible among Antigonus' *paradoxa*. The generation of poets directly after Callimachus treated similar clusters around rivers as does the significantly later *Paradoxographus Florentinus* in which curiously several Callimachean water marvels from Antigonus resurface in an even simpler form with the source references dropped.

After the preliminary survey of Callimachus' sources in the previous chapter, it remains to be asked whether this focus on rivers, springs, and lakes is one that Callimachus invented himself or whether there were already some patterns visible in the sources that inspired him to his collections. Herodotus though one of the few texts which we retain in its entirety, seems not to have been useful for Callimachus in this regard. Instead, I would suggest another text which may offer some enlightenment: Ctesias is not only the most frequently cited source in Callimachus' fragments, but he apparently set a similar emphasis on fantastic rivers and springs. Fortunately, there are ten stories about miraculous springs alone among Ctesias' fragments, of which several derived from his Ἰνδικά and cover very familiar ground in terms of the wonders associated with them. Our study is complicated by the fact that water marvels can be the subject of the *paradoxa*, but are just as often used as geographical indicators themselves: they can function as actual wonders by virtue of their waters' properties (Crathis hair-bleaching qualities, Antig.*Mir*.134) or they are the setting for wonders especially when delineating the habitats of animals: both the Lysian and a Lampsacean spring are infested with mice (ch.137), while a spring in Chalcedon produces crocodiles similar to those in Egypt (ch.147). One might also adduce the famous lack of birds near Lake Avernus (ch.152).

Possibly Callimachus partly started his paradoxographical collection after he perceived a general interest in water paradoxography within Greek literature and tried to systematise this knowledge in order to make it accessible to himself as a poet and perhaps also to others. The following pages will analyse in greater detail the possible original distribution of Callimachus' marvels along geographical and thematic lines, two organising principles which cannot always be separated from each other. Besides Antigonus, our evidence here consists of a disparate range of sources, including papyrology and epigraphy, as well as Callimachus' reception in later literature.

Antigonus' selection of Callimachus commences with the unusual category of marvels connected to the seas (Antig.*Mir.*129-33), a theme not replicated in other paradoxographical collections and rare in Callimachus' poetry. Dimitra Eleftheriou insists on a deliberately alphabetical order in this section of the sources Eudoxus, Theopompus, and Megasthenes.[314] Following the larger sections containing rivers and springs, Antigonus lists lakes (152-57) mostly located in the Mediterranean and the Black Sea region, followed by several water marvels not placed in a systematic category (158-67), of which most are still rivers and springs. Up until the end of the lake section each of Antigonus' categories had been organised around a key concept and perhaps intentionally introduced by a word signalling the new theme (θαλάττῃ 129, ποταμῶν 133, κρήνην 137, λίμνην 152). Now water marvels still occur towards the end of the collection, but they seem to have been added unsystematically. After a gap in the text, we get a marvel each on stones (168), plants (169), coals (170), objects submerged in water (171), and finally two on animals (172-73), which are allotted more lines of text than other items. The last marvels seem to be taken from a variety of texts and no geographical focus can be detected.[315] All these wonders still seem

[314] Eleftheriou 2018, 96.
[315] There is poetical precedent for ending collections with miscellanea e.g., Pindar's *Nemean* odes and Posidippus' Λιθικά, but it is unlikely that Antigonus' would have looked to them as models. It is unlikely that Antigonus is here preserving Callimachus' order.

to derive from Callimachus, but it is impossible to guess how these single *mirabilia* fit into the rest of his paradoxographical work.

a) Springs[316]

Callimachus's paradoxography and poetry both focus slightly more on springs than rivers. The former constitute Antigonus' largest section (137-51). Springs are also more ubiquitous than rivers in the programmatic passages of Callimachus poetry. In epigram 28 he compares the cyclic poem to a presumably dirty public spring: οὐδ᾽ἀπὸ κρήνης πίνω· σικχαίνω πάντα τὰ δημόσια (ll.3-4) and the springs on Mount Helicon start off his *Aetia* (fr.2). Yet in analogy to his works on rivers, birds, etc. neither the *Suda* nor other sources attest a title Περὶ κρηνῶν as one might have expected considering the pervasiveness of his fragments on springs. This includes the *Aetia* of which remain the *Springs of Argos* (frr.65-6), the *Spring of Boukerais* (fr.42) in Boeotian Plataea, and two further fragments describing springs near Orchomenos in Boeotia, which Pfeiffer did not locate in the *Aetia*.[317] For many of the single fragments on springs we cannot be sure if they are taken from a paradoxographical context, but fragment 546, for example, seems paradoxographical in subject matter: κρήνη…λευκὸν ὕδωρ ἀνέβαλλεν.[318] The twin springs of Ammon in his paradoxography (Antig.*Mir.*144) correspond to those in Didyma in the lyrical *Branchos*.[319] Κλεψίρρυτον ὕδωρ (fr.771) describes the Klepsydra spring in Athens. Fr. 109 references the Argonauts with the Artacia spring near the Hellespont, while another mentions the spring Europe in Epirus.[320] Springs clearly formed a category of their own, considering how many fragmentary mentions of

[316] The distinction observed by Wycherley 1937 between πηγή and κρήνη seems not to have been maintained by Callimachus. He uses both in his paradoxography: πηγή (Antig.*Mir.*133, 140; *Ap.*88, *Dian.*171); yet κρήνη is more frequent in the rest of his poetry and in paradoxography: Antig.*Mir.*137, 140, 142, 146, 148, 149.
[317] Fr.740: νιψάμεναι κρήνης ἔδραμον Ἀργαφίης; fr.751 Κιδαλίης κρηνῖδος (perhaps related to Pi.fr.244).
[318] Str.VIII.6.21 applies a similar formulation to Hippocrene.
[319] Fr.229.11, cf. Pfeiffer *ad loc.*
[320] Fr.630.

springs have survived, but one should cast a wider net in order to observe overlaps between Callimachean poetry and paradoxography, as the mentions of springs in his remaining poetry never include paradoxographical springs despite the high frequency of springs in general.

Rather, Callimachus' paradoxographical interest in springs surfaces from an unexpected place: the *Pride of Halicarnassus,*[321] a 60-line inscription found near modern Bodrum and dated to the late 2nd or early 1st century BC.[322] Before listing famous sons of Halicarnassus, the highly sophisticated epigram narrates several foundation myths of the city, including the transformation of Hermaphroditus, lover of the nymph Salmacis, into a half-man (vv.15-22), and explores the mythical origins of local cults in a whirlwind fashion mindful of the *Aetia.*[323] The epigram is the earliest attestation of this particular myth. Several direct verbal allusions to Callimachus occurring at the beginning show that the epigram's author was inspired by his poetry.[324] This connection to Callimachus appears to be at first somewhat unexpected, but by considering the evidence proving the wider circulation of Callimachean paradoxographical material, we will better understand the allusion to Callimachus in the Salmacis epigram.

Callimachus' interest in water marvels is mirrored by one of his most fervent imitators: Ovid's *Metamorphoses* contains two allusions to the Salmacis spring, one an extended account of the emasculating quality of the spring in book IV,[325] the other occurring in a list of ten water marvels in book XV, half of which are springs:[326] curiously, 6 of these correspond to *paradoxa* listed in Antigonus' version of Callimachus,[327] including the Crathis

[321] *Editio princeps*: Isager 1998.
[322] Gagné 2006, 1. Lloyd-Jones 1999, 13-14 discusses some of the problems offered by the dating of the inscription which seems to speak for composition in the 2nd century BC.
[323] Gagné 2006, 16.
[324] D'Alessio 2004, 43-5; Lloyd-Jones 1999.
[325] Ov.*Met.*IV.285-388.
[326] Ov.*Met.*XV.306-36.
[327] Krevans 2011, 124.

(134), the Ammon springs (144), the Aethiopian lakes (145), the Athamanian spring (148), the lethal waters in the Pheneus region,[328] and the bitter waters of the Lyncestius (164). Ovid's cluster of water marvels strongly suggests his indebtedness to Callimachus' paradoxographical material also because he repeatedly looked to Callimachus as a model.[329] For the four wonders not directly found in Callimachus, one can nevertheless assume that these can be added to his corpus of paradoxography. They comprise the Sybaris and an unnamed river close to the Cicones turning objects into gold and stone, respectively, while the Arcadian Cleitor spring makes wine repugnant to its drinkers. All three sound familiar based on the themes we have found in Antigonus' selection. The fourth one is the Salmacis reappearing after book IV but with a different thematic emphasis (ll.16-20):

quodque magis mirum est, sunt, qui non corpora tantum,
verum animos etiam valeant mutare liquores:
cui non audita est obscenae Salmacis undae
Aethiopesque lacus? quos si quis faucibus hausit,
aut furit aut patitur mirum gravitate soporem.[330]

Salmacis here is not cited for her traditional emasculating effect, but for maddening its drinker. The Salmacis poem is generally understood as counteracting the negative comments the spring has attracted from ancient authors who seemed extraordinarily uncomfortable with its emasculating qualities[331] as can be glimpsed from the numerous references to this story among historians, encyclopaedists, as well as Roman poetry.[332] Since Callimachus'

[328] Albeit without mentioning the Styx as Paus.VIII.41.2.
[329] Cameron 2004, 268 points to the similarities with the *Paradoxographus Florentinus.* Cameron wants to see Isigonus as Ovid's source rather than Callimachus.
[330] '*What is even more miraculous, there are waters capable of changing not the body, but also the mind. Who has not heard of the wretched waves of Salmacis and the Aethiopian lakes? If anyone fills his mouth with them, he either rages or suffers a strange deep slumber*.'
[331] Gagné 2006, 5; Ragone 2001, 87-99. This seems to have been the traditional story, though, as Bremmer 2013, 64 claims, the effeminising effect was an Anatolian story attested since the 3rd century BC.
[332] Cic.*Off.*1.61 quoting Ennius; Str.XIV.2.16, Vitr.II.8.12, Fest.329; Vib.Seq.*Font.*152, Ov.*Met.*IV.285-388.

paradoxographical story about the spring seems to have been one of insanity rather than physical transformation, he would have been the preferrable poetic model for the epigrammatist keen to extol the virtues of his hometown. This is further confirmed by the fact that waters precipitating metamorphosis occurred exclusively in later paradoxography,[333] while Callimachus focused more on natural phenomena rather than on those involving humans. Ovid obviously ascribed more importance to hydrographical paradoxography than to the rest since water wonders form the only larger passage in Ovid and one can be certain that his source here is Callimachus. By combining Ovid's reappraisal of Callimachus' paradoxographical material together with the Callimachean allusions in the Salmacis inscription, it has hopefully been shown that paradoxography has had an impact in Hellenistic times that transcended the bookishness of Alexandria and Pergamon, although this phenomenon seems in many regards limited to water marvels. We cannot rule out that collections of hydrographical paradoxography existed independently from the rest of our known wonders and their prominence in Ovid coupled with the interests of Callimachus' pupils would support this.

With springs forming the biggest subsection within Antigonus' Callimachus excerpt, they, in combination with the additional four springs in Ovid, are the best method of ascertaining the geographical scope of Callimachus' original paradoxography. Among them Sicily and Arcadia are areas of special interest followed by a second but less prevalent concentration on Thessaly, Thrace, and Asia Minor. Egypt is only represented by the Ammon springs. Callimachus also included exotic places such as Arabia, Aethiopia, and India with its two springs originally mentioned by Ctesias. Callimachus' predilection for marvellous Indian springs seems to derive from Ctesias, his most frequent source, which will be further

[333] Gagné 2006, 5.

discussed below.[334] Overall, the geographical horizon and distribution of his springs with its inclusion of Eastern marvels is probably relatively representative of his paradoxography as a whole.

b) Rivers

Next, the river marvels (chs.133-36) come from Sicily and Italy, then Asia, and finally Thrace, while within each geographical area the rivers are listed alphabetically. This section is comparatively small considering that Callimachus' paradoxographical titles suggest a focus on rivers and river marvels which constituted the majority of wonders in many paradoxographies.[335] Antigonus' collection here seems to inadequately reflect Callimachus' engagement with marvellous rivers.

Rivers often appear in Callimachus' poetry in clusters or as part of a thematic network. This is especially obvious in the *Hymn to Zeus* (ll.14-41), which plays with the image of a waterless (ἄβροχος) Arcadia devoid of rivers before Zeus' birth.[336] Ἄβροχος was a scientific term appearing in treatises on hydrography[337] usually concerned with the Nile. Here it reappears in one of Callimachus' few mythological notes in Antigonus' collection: Europa washed herself in a Cretan river, which is said to stay dry even after rainfall.[338] The previous note likewise mentions Pythopolis where the Nile overflows during the summer but recedes in winter. Waterlessness, just like abundance of water[339] is a recurring theme in his poetical oeuvre as in 'the thirsty city of Sparta' (Σπάρτη δίψιον ἄστυ, fr.240) and the reference to the

[334] Photius knew nine springs treated by Ctesias in addition to other marvellous waters. Karttunen 1985; Nichols 2018, 6-7.
[335] Pseudo-Plutarch's *De Fluviis* organised its mythographic and paradoxographical stories around rivers.
[336] *Jov.*19-20, cf. McLennan 1977, 50.
[337] For parallels from prose and poetry, cf. McLennan 1977, 48-59; Weber 1993, 395n.1. It does not occur in Thphr.*HP*.I.9.5, which narrates the same story.
[338] Antig.*Mir.*163: the source is Eudoxus. Theophrastus connects the dryness to a plant, cf. *HP*.I.9.5.
[339] E.g., fr.239.2: ῥυηφενές (abundant in water).

river Cleitor[340] buried in 'Κλειτόεν ὕδωρ' (fr.770).[341] The Cleitor featured in a myth about the Spartan king Soos refusing to drink water in order not to break the truce with the Arcadian Cleitorians and keep his conquered territory.[342] Arcadia is mentioned particularly often in the *Hymns* and nearly always in connection with bodies of water.[343] We might also compare the Arcadian donkeys (τοὺς Ἀρκαδικοὺς ὄνους) in the *Aetia* Prologue (fr.1.43), which were famous for refusing to drink from springs outside of Arcadia and able to survive indefinitely without water.[344] Here in a part of the *Aetia* generally assumed to have been composed later in Callimachus' life,[345] we find a story relating to the theme of waterlessness common in both paradoxography and the *Hymns*, placing them in a roughly similar time frame. As Callimachus demonstrates substantial knowledge of Arcadian rivers in the *Hymn to Zeus* (Carnion, Crathis, Erymanthus, Iaon, Ladon, Melas, Metope) together with those in his paradoxography (Alpheus, Cleitor, Styx),[346] one could imagine that his work Ἀρκαδία,[347] only transmitted by title in the *Suda,* was a systematic treatise or paradoxographical subchapter on Arcadian rivers, considering that rivers represent the one overriding Arcadian theme in Callimachus. Potentially waterlessness was one of its core themes.[348]

The theme of waterlessness can be also subverted as in the *Hymn to Delos*: the normally dry Delian Inopus overflows during Leto's birth at the same time as the Nile inundation happens (ll.206-08, 263) even though this was a geographic improbability. Allegedly, the Delian rivulet was connected to the Nile.[349] The *Hymn to Diana* also mentions the πηγαὶ Αἰγυπτίου

[340] For the paradoxographical Κλείτωρ see below.
[341] Pfeiffer assumes a spelling mistake by Hesychius.
[342] Plut.*Lyc.*2.1.
[343] *Jov.*7, *Del.*70, *Dian.*88+220.
[344] Pohlenz 1933, 321-23.
[345] Parsons 1977, 49-50; Pfeiffer 1928.
[346] Alpheus: Antig.*Mir.*140; Styx: Antig.*Mir.*158.
[347] *Sud*.s.v.Καλλίμαχος. Hecker 1842, 5 believes that the title should not be Ἀρκαδία but Ἀρκαδικά like that of Ariaethus cf. D.H.I.49; Hellanic.*Schol*.A.R.I.162.
[348] Griffin 1989, 63 suggests that *Jov.*18-27 might be a versification of parts of Περὶ τῶν ἐν τῇ οἰκουμένῃ ποταμῶν.
[349] Lyc.*Alex.*575; Paus.II.5.3.

Ἰνωποῖο (l.171). The story demonstrates another common paradoxographical theme of bodies of water sharing underground connections with another, sometimes even across large distances. We may remember that the early Arcadian rivers in the *Hymn to Zeus* were supposedly all located underground (l.27).[350] Callimachus' paradoxography contains two further examples of this phenomenon but in different locations. An object thrown into a lake on Zakynthos reappears in the sea 4 stadia away (Antig.*Mir.*153). Likewise, in the marvel borrowed from Ibycus, but attributed to Pindar and Timaeus, an object thrown into the Alpheus near Olympia resurfaces in the Syracusan spring Arethusa.[351]

It is easy to see how Callimachus would have found alleged subterranean connections a useful tool in establishing meaningful connections between disparate places in his *Aetia*, but paradoxographical material seems less pervasive in this text than in his *Iambi* or *Hymns.* This may be demonstrated by Callimachus' second prominent river cluster found in the *Aetia* which differs significantly from the Arcadian rivers: The *aetion* on Sicilian cities (fr.43.1-83) lists rivers and their eponymous cities. Since we have observed in Callimachus' titles and his immediate paradoxographical successors an interest in Sicilian rivers, we would have expected his poetry to discuss them, yet this passage is closer to the discipline Callimachus turned to in Μηνῶν προσηγορίαι κατὰ ἔθνος καὶ πόλεις and Κτίσεις νήσων καὶ πόλεων καὶ μετονομασίαι.[352] It is relatively certain that Callimachus' material here derives, just as in some other passages in the *Aetia*,[353] from the *Histories* of Samian Duris (ca. 340-280 BC).[354] Although based on non-paradoxographical material, this passage is the only instance in his *Aetia* in which the feeling of wonder is explicitly addressed. While here rivers are included for their foundational and onomastic significance, the poet's treatment of wonder

[350] Sistakou 2009, 189.
[351] Antig.*Mir.*140; Pi.*N.*1.1-7; Timae.fr.41; Plb.XII.4d-5; Plin.*Nat.*II.225.
[352] Greene 2011, 71-72.
[353] E.g., fr.64 (Simonides' Sepulchre).
[354] *St.Byz.*s.v.Ἀκράγαντες.

foreshadows his paradoxographical interests, which seem to have developed later than the core of the *Aetia.*

Our analysis of rivers has allowed us to perceive vague hints of a thematic organisation within the geographical order that is given as a framework on the basis of the several titles transmitted by the *Suda*. Considering that themes such as waterlessness or underground connections may also apply to other bodies of water next to rivers, we should assume that Callimachus' themes transcended Antigonus' rigid categories and were instead tied to particular areas or focused on making meaningful connections between disparate places.

c) Islands

One should consider the possibility that Antigonus completely ignored categories of wonders due to individual preference, for which islands are an interesting test case. Islands in Greek literature were generally connected with myths, the bizarre, and the supernatural as in the case of Homer's Scheria (*Od.*VII.110-33), Pindar's 'Islands of the Blessed' (*Ol*.2.68-75), and Euhemerus' Panachaea (*FGrHist* 63F3). Even real islands were frequently credited with utopian conditions:[355] Pliny, for example, singles out Zakynthos for its marvellous fertility (*Nat.*IV.54). Utopia also found a place in paradoxography as Lucian's *True History,* a parody on the genre, knows 365 springs each of water and honey next to 500 of myrrh, 7 rivers of milk and 8 of wine (2.13), all located on the Islands of the Blessed including the island 'Cheesy' (2.3).

A Callimachean book solely dedicated to islands is not transmitted, but his pupil Philostephanus seems to have written a paradoxographical Περὶ νήσων,[356] which formed the third part of his *periegesis*. Further, Callimachus' nephew of the same name apparently wrote about islands in verse: Καλλίμαχος … ἀδελφῆς δὲ αὐτοῦ ἦν παῖς ὁ νέος Καλλίμαχος,

[355] Gabba 1981, 56-57.
[356] Ceccarelli 1989, 914. Steph.Byz.s.v.Κύπρος.

ὁ γράψας περὶ νήσων δι᾽ ἐπῶν.[357] Judging by what remains of it, Callimachus' paradoxography seems uninterested in marvellous islands, but merely uses islands as locations for wonders. Smaller islands barely ever feature as locations of wonders as water marvels are exclusively found on bigger islands such as Crete (163) and Sicily (133, 139, 140, 154), Lesbos (171), Zakynthos (153), Cyprus (157), and Cos (160-61), albeit not Rhodes which is remarkably absent.[358] The relative emphasis on Cos is surprising but might indicate that Theocritus' mention of the Bourina spring in *Idyll* 7 (ll.4-9) springing up after Chalcon pressed his knee against the rock, is part of a bigger Alexandrian engagement with the island as a tribute to Philetas of Cos.[359]

Islands assume greater significance especially in the more fantastical paradoxography of later periods, but already the second century BC *Laterculi Alexandrini* list among other hebdomads seven great islands next to seven great rivers, thus demonstrating that islands counted as 'paradoxographical units' as much as rivers did. It is not true, however, that Callimachus did not concern himself with islands per se: Apart from the title of his Κτίσεις νήσων καὶ πόλεων καὶ μετονομασίαι, a handful of isolated fragments concerning islands (14, 579-83, 594, 599, 697, 710, 812) next to the geographical tour de force in the *Hymn to Delos* attest to Callimachus' general interest in the topic.[360] Pliny represents the most copious source for Callimachean material concerning islands and specifically their original names, among them Corcyra, Malta, and Pola (III.152.139; IV.52.65.69.70.73).[361] It is obvious that Pliny here did not use Callimachus' paradoxographical treatises, but a text derived from the μετονομασίαι.[362] In the past scholars have tried to ascertain Pliny's sources for the

[357] *Sud*.s.v.Καλλίμαχος. This is our first and only mention of Callimachus' nephew.
[358] At the beginning island groups are used twice to pinpoint wonders in the sea (129, 130).
[359] Fr.24 Powell. For Philetas' interest in wonders, see chapter VI.
[360] For his interest in islands in general see Pfeiffer 1949, 339, 353, 404; Pfeiffer 1922, 49, 73; Herter 1931, 402; Schneider 1873, II.323-25. Brown 2002, 339 assumes Callimachus behind Conon's use of Anaphe's name.
[361] Schweder 1888 assumed Pliny's source to be identical with Mela's and Strabo's. It was not a first-hand edition of Callimachus because Pliny does not cite Callimachus as an author in the indices.
[362] Ceccarelli 1985.

Callimachean fragments and usually settled on a collection Περὶ νήσων roughly from the 1st century BC by an anonymous author, which Detlefsen assumed to be Isidore of Charax.[363] Overall, islands seem not to have formed a separate paradoxographical category for Callimachus, whereas they did in his onomastic texts.

Despite paradoxography's focus on natural phenomena and landscape features, mountains are completely absent, even as locations for wonders. In the later Pseudo-Plutarchean *De Fluviis* mountains play a substantial part, but mainly in terms of mythical nomenclature never as wonders or locations for wonders. Since they are also not mentioned particularly often in his poetry except as traditional settings for stories, we can assume that this category was not established in Callimachus' paradoxography.

3. Geographical criteria governing the selection of sources

a) Semi-generic spaces and agents

Remarkable when reading Callimachus' remaining *paradoxa* is that they are very generic in their descriptions and are limited to the bare necessities. The geographical location is usually the best indication one receives in order to identify a particular *paradoxon.* The reader finds themself in a generic landscape where *thaumata* are objects and humans act as anonymous agents or victims of natural wonders, for example, rivers with healing properties or those petrifying anything thrown into them. Still there are a few observations that can be made about how Callimachus' paradoxographical world looked and how it differed from later paradoxography in several points.

Early paradoxography was predominantly occupied with natural phenomena. These natural features are almost by definition confined to spaces outside of urban centres just as in

[363] Detlefsen 1909, 97-113 esp.113. Kentenich 1896, 5-17; Pfeiffer 1922, 59n.1, 73f.n.2.

Callimachus' poetry rituals rarely have an urban setting, but take place in mostly sacred spaces near rivers, groves, or mountains, which are somewhat removed from cities albeit not completely isolated. All the *paradoxa* carry some sort of geographical indication usually consisting of the names of landscapes such as Thessaly, Lydia etc. rather than city names. This is especially striking when we consider that the bulk of Callimachus' source material was local history, which would have probably contained clearer geographical indications as it was connected to smaller communities. The contrast to later imperial paradoxography appears very strong here, as by then *paradoxa* had moved largely into urban spaces and were sometimes even described as deliberately imported spectacles.

This move into urban settings was accompanied by a change in the treatment of humans.[364] The texts moved from depicting humans as coincidentally interacting with the wonders of the world towards being the wonders themselves,[365] as already expressed by Johnson: 'Early paradoxographies include stories about bizarre plants, geographical formations, and the like. Gradually, however, the content became more fluid, including social customs and sexual oddities.'[366] In particular, human erratic behaviour and strange medical conditions advanced to the status of wonders in authors like Phlegon of Tralles.[367] And since humans predominantly settle in cities, these tend to dominate in later paradoxography. This realisation may assist us in filtering out later paradoxographical notes. The Περὶ θαυμασίων ἀκουσμάτων, for example, contains two examples of madmen, one in Abydos, one in Tarentum, who are depicted in a city setting. These *paradoxa* are among the few which can safely be dated later.[368] The absence of anthropogenic wonders is indeed striking for the early paradoxography represented by Callimachus and Antigonus, which supports our

[364] Kazantzidis 2018b.
[365] Kazantzidis 2018a, 33.
[366] Johnson 2006, 178.
[367] Doroszewska 2019.
[368] Kazantzidis 2018b struggles with the presence of these wonders in the Pseudo-Aristotelian treatise as he rightly assumes human wonders including insanity to be later paradoxographical phenomena.

assumption that the core of Antigonus' collection goes back to earlier editions and was not contaminated with later material.

Let us now return to the geography in Callimachus' paradoxography and assess possible origins for his geographical distribution: Sistakou indeed suggests that it resembles Ionian logography in his titles' geographical specifications: the division of the world's rivers according to those in Europe and Asia as well as Libya correspond to Hecataeus' delineation of the world.[369] Yet a different Ionian author seems more likely: Herodotus based his historical narrative around similar geographical areas, which in turn were usually defined by rivers.

Rivers in Herodotus' time were not only of extreme military importance but were one of the first landscape features recorded on physical maps known from antiquity. The map by Aristagoras of Miletus (V.49.1) was 'a brazen tablet, on which was engraved the circumference of the whole earth (περίοδος γῆς) and the whole sea and all rivers.'[370] They remained a mainstay of cartography in the 5th century and were frequently mentioned by Herodotus in his description of landscapes as the only distinctive features within two-dimensional landmasses.[371] The connection between maps and text here was close as space was frequently conceived on the basis of text rather than on drawn images, while physical maps were not very common.[372] The distribution of land and water was the basis for the construction of his mental map.[373] We can be relatively certain that this perception determined geographical conceptions for several centuries and at least partly lies behind the prominence of rivers in Callimachus' landscape.

[369] Sistakou 2009, 179n.6 cf. Hdt.IV.36.
[370] Translation: Harrison 2007, 44.
[371] What Clarke 2018 called the 'lines and dots'.
[372] Strabo's *Geography* strikingly offers two books on map-making. Jacob 1999, 26.
[373] For a visual presentation of Herodotus' map, see Thompson 1948, 99 fig.12.

By Callimachus' time, the usage of maps had changed in comparison to Herodotus. Jacob had discussed the scholars and particularly geographers working in the library as synthesizers of information with libraries functioning as 'les centres de calculs'[374] where information was collected and reorganised. A geographical section containing travel reports, maps, and geographical texts surely existed in Alexandria, but just as we discussed for the literary sources in the previous chapter, the knowledge gap between contemporary maps made for navigational purposes and those conceived in Herodotus' time must have been huge. Through the cartographical concerns entertained in their immediate environment, Callimachus and Apollonius would have encountered a precise kind of geography,[375] which would be later brought to its apogee by Eratosthenes' exact science.[376] Yet in a counter-move to the exact science practised in Alexandria, Callimachus and Apollonius both deliberately blurred geographical concepts in their poetry through different techniques:[377] Apollonius let the Argo's return-journey follow the route of mythical geographical which takes the Argonauts all across the Mediterranean on an impractical journey, while the outward journey broadly maintained linear lines.[378] Callimachus exhibited swift location changes in his *Aetia* and a geographical whirlwind tour of the islands in the *Hymn to Delos*. His hodological approach as found in Homer, Hesiod, or Herodotus describes places tied to the living experiences of people for which his paradoxography is another good example.

Of course, the quick-paced treatment of many places in a short amount of time in geographical order in Callimachus' paradoxography resembles the genre of *Periegesis*. These catalogues were originally composed in prose and based on travel reports or human memory. A literary example of this genre before Callimachus is Hecataeus who basically offers us ''an inventory of places, countries, rivers, mountains and tribes, according to a

[374] Latour 1996 cf. Jacob 1999.
[375] Jacob 1998, 30-36.
[376] Sistakou 2009, 192.
[377] Meyer 1998 calls it Apollonius' 'mental map model'.
[378] Meyer 1998, 65-72, esp.n.29.

circuit around the Mediterranean Sea.'[379] Yet comparing ancient geographical accounts with the geographical distribution in paradoxography, we recognise one important contradiction. Traditional geographies usually provided less and less information the more peripheral the account went, since information of these parts was harder to obtain than in the Greek homeland, but this rule does not apply to paradoxography as we will go on to see.[380]

A particularly interesting exponent of the Hellenistic interest in geography was Simias of Rhodes, active in Alexandria one generation before Callimachus.[381] He would not have been able yet to draw on the chronologically focused and precise research of the library since it was still in its early stages at his time of writing.[382] Accordingly, he does not reject the information he had received from the ethnographical traditions of Herodotus and Ctesias with their paradoxographical character.[383] Instead, he integrated them into his writing as neatly summarised by White: 'Simias was describing fabulous places and peoples, and there is no reason for him to have included references only to real rivers.'[384] Simias admitted both real and fictional landscape features into his writing and therefore makes for an intriguing precursor of paradoxography. With his technique he effectively prefigures Apollonius who would rationalise the geographical indications he has found in the sources about the Argonauts' journey, but he also demonstrated how fantastical stories could find a place alongside facts in the same text. At least this juxtaposition of fact and fiction in his geographical setting would have been obvious to scholars and poets as well equipped with maps and texts as the Alexandrians were.

[379] Jacob 1999, 28.
[380] Podossinov 2014, 3.
[381] Fränkel 1915; Di Gregorio 2008.
[382] Perale 2011, 382.
[383] E.g., fr.1 Fränkel from his *Apollo* describes the Hyperboreans and Massageteans.
[384] White 1982, 175.

b) Exoticism at the margins

Paradoxography breaks the traditional geographical boundaries set by the Greek world. Following one of the titles transmitted by the *Suda*, Callimachus' paradoxographical interest extends to the whole οἰκουμένη, which includes places as remote as India, Arabia, and Ethiopia, traditionally not places well known to the Greeks. While most of his works are interested in the individual features of a community, be that rituals or language, strictly within a Greek context, paradoxography dispenses with these geographical boundaries and considers exotic marvels just as or even more interesting than Greek phenomena. Normally stories thin out towards the margins of the inhabited world and rarely occur in far-away places such as India, Arabia, or Scythia.

Paradoxographical information, however, gets richer the more one moves towards the extremities of the ancient world even if not always in a very reliable way. Particular attention is also paid to places in the Western Mediterranean and Greece, etc. Our paradoxography includes places in the exotic margins, for example, the two Indian springs mentioned by Ctesias or those in Aethiopia. In Greek literature there existed an almost topical interest in what was called the Eastern marvel, which especially Ctesias catered to.[385] The East was usually adduced for the purposes of contrast rather than comparison as it was imagined to be radically different from the Greek lived experience. Therefore, the exotic made more of an impression the more it was juxtaposed with familiar places. This effect seems to have been known to Ctesias as Callimachus collection preserves an extraordinary number of wonders not compatible with the geographical focus implied by the Περσικά or Ἰνδικά. Instead, we are presented with several water *mirabilia* from Sicily or ancient Greece. Gómez Espelosín, based on what remains in Callimachus and in Photius' summary, put forth the theory that

[385] For writing on the East from antiquity onwards cf. Brown 1955; Dihle 1984; Romm 1992, ch.3; Munson 2001, ch.4.

Ctesias compared his Eastern wonders to equivalents in the west whenever suchlike existed.[386] This is particularly obvious in this *paradoxon*:

> Περὶ δὲ λιμνῶν Κτησίαν μὲν ἱστορεῖν λέγει, τῶν ἐν Ἰνδοῖς λιμνῶν τὴν μὲν τὰ εἰς αὐτὴν ἀφιέμενα κάτω οὐ δέχεσθαι, καθάπερ τὴν ἐν Σικελίᾳ καὶ Μήδοις, πλὴν χρυσίον καὶ σίδηρον καὶ χαλκόν, καὶ ἄν τι ἐμπέσῃ πλάγιον, ὀρθὸν ἐκβάλλειν.[387]

Here Antigonus (or rather Callimachus) assumes the reader to be aware of the properties of the Sicilian and the Persian lake. Another example for the combination of geographically distant but thematically similar water bodies are the miraculous springs in Zakynthos and Naxos preserved in Photius.[388] Finding a phenomenon that was perhaps more relatable or familiar to the reader was a strategy to increase one's credibility. Herodotus deployed the same technique when he used the more familiar example of Zakynthos to underpin his story of a Libyan spring with similar properties (IV.195). What is surprising is that despite Antigonus' efforts at reorganising Callimachus' material, direct juxtapositions can still be found, such as that of the Indian Sila sand the Ethiopian springs (chs.145-46).[389] The comparison offered itself probably because of the confusion between India and African Ethiopia, which was popular in the literature.[390] Ctesias himself located the Ethiopian people in India.[391] Callimachus and subsequently Antigonus seem to have been aware of the close connection that was created between the two places and preserved their traditional connection in their loose catalogues. In these cases, the exotic marvels are compared to their Mediterranean equivalents or places that are seemingly well known through the literature rather than serving as contrasts, which is an important distinction.

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[386] Gómez Espelosín 1994, 157-59.
[387] '*About the lakes he says that Ctesias narrates that among the lakes in India one does not let things that are thrown into it, sink under like that in Sicily and that among the Medes, except gold, iron and bronze, but if something is thrown in sideways, it is ejected right out* (Antig.*Mir.*150).'
[388] Phot.*Bibl.*72.46a32.
[389] Karttunen 1985 for the Indian spring.
[390] India, Arabia, and Ethiopia were commonly confused cf. Casevitz 1995.
[391] Ctesias in Plin.*Nat.*VII.28 counts Ethiopians as Indian, cf. Hdt.III.94.

This approach resembled that of scholars like Aristotle who also rejected the traditional eastern marvel model,[392] but still wrote to a considerable extent about the East. Aristotle writes about the East comparatively often. By covering most areas also discussed by Herodotus Aristotle's East is geographically coextensive with that of Herodotus (which is especially obvious in the *Historia Animalium*)[393], yet it is not conceptually Herodotean since he largely eschews the discussion of wonders. Of particular interest to Aristotle were the animals of the East while Theophrastus tried to describe its plants. Aristotle was still hampered by a lack of sources, which meant that he had to fall back on fantastic writers like Ctesias,[394] but both Aristotle and Theophrastus are usually keen to push back on the wonder narrative for the East and instead focused on what seemed interesting to them irrespective of location. What these examples of the Peripatetics and the texts pertaining to the realm of paradoxography have in common, is that here the margins of the world are not used as contrasts to their own environment but used to draw out similarities. One gets the sense that the paradoxographical world is bigger than that of other contemporary literature, which is perhaps exemplified by Thucydides' Nicias who had still urged the Athenians in his speech to the Sicilian Expedition to seek wonder closer to home rather than in exotic places (6.11.4). The advice was clearly neither taken up by subsequent historians nor paradoxographers.[395]

We have already observed that Callimachus enjoyed joining geographically distant places through underground connections. The same applies to his paradoxography where a single *paradoxon* frequently mentions a comparable phenomenon at another place. Someone might explain this as Antigonus' influence but these comparable *paradoxa* usually occur within one chapter as a unit usually connected through the same literary authority, which is why one should rather ascribe these cases to Callimachus. Indeed, this technique is a deeply

[392] Stevens 2016, 147.
[393] Stevens 2016, 138.
[394] Short summary in Bigwood 1993, 539-44.
[395] Priestley 2014, 61-68.

familiar one since it is encapsulated in the *Aetia*'s associative approach. Still the geographical range of the *Aetia* and his paradoxography are very different. As we have seen, the geographical range of the *Aetia* and the fragments corresponds to the Greek-speaking Mediterranean, while that of paradoxography is generally wider. Interesting at the start of the *Aetia* is indeed Callimachus' explicit refusal to discuss subjects located in the geographical margins. While Callimachus in his *Aetia* travels widely across the Greek world, he still limits his stories to the Mediterranean. The Prologue sketches a remarkably wide geographical frame far exceeding that of the *Aetia*'s narrative:

… ἐπὶ Θρήϊκας ἀπ᾽ Αἰγύπτοιο [πέτοιτο
αἵματ]ι Πυγμαίων ἡδομένη [γ]έρανος,
Μασσαγέται καὶ μακρὸν ὀϊστεύοιεν ἐπ᾽ ἄνδρα
Μῆδον]·

Unfortunately, the beginning of the sentence is not extant, but it is doubtful that we are missing much. The text gives the geographical dimensions appropriate to large-scale poetry, Herodotus' *Histories* or indeed our paradoxography. Callimachus eschews discussing these areas also because the fringes of the known world are more connected with fantastical stories and less aetiology when the reader is transported to Thrace, Scythia as well as the Persia. Pygmies could also be found on the Upper Nile, but Callimachus might be thinking here of their first mention by Ctesias as living in India (albeit not in connection with the cranes). At the end of the prologue Callimachus also alludes to the island of Sicily which represents the Western end of the Greek world, albeit its location is less exotic and does occur at several points in his fragments. In particular, the *Aetia* demonstrate that interest in an area was of course not always defined by its distance from the observer but depended on the individual's preferences. Certain areas like Spain, Gaul, or Britain, for example, seem to have been of little interest to Callimachus both as a poet and as a paradoxographer.

c) Subjectivity of location

For Herodotus wonder was a purely subjective matter since it was up to the individual to decide what is considered as lying outside the category. It is the prerogative of the person with the 'wonder response' to decide on what constitutes a wonder.[396] A reader of Herodotus or a paradoxographical text is asked temporarily to engage with standards different to his own. Normally we can agree that the viewpoint is Greek. For Herodotus, this becomes especially clear when looking at the Indian excursus where the temperature maximum in India 'is not noon as it is elsewhere' (III.104.2) and 'animals and birds are far larger than in other lands' (III.106.2). Herodotus fails to specify what the point of comparison is, but since no other referential point is named, we must suppose that he means his own realm of experience and that of his audience – Greece.[397] Confirmation of this comes in the case of the famous gold-digging ants which are explicitly compared in behaviour and appearance to the ants native to Greece (III.102.2). Occasionally it is implied that the parameters can be different amongst different people and cultural pluralism translates into the choice of wonders. Within Herodotus this fact is acknowledged in the meeting of the Ethiopians and the Fish-Eaters (III.22-3). In the previous chapter we have already encountered Philo of Heraclea's Πρὸς Νύμφιν περὶ θαυμασίων, which indicates that Nymphis of Heraclea had selected wonders close to his own living experience which his compatriot had taken issue with. Applying this to Callimachus, one must understand his choice of wonders as indeed that of most subsequent paradoxographers to be highly individualistic – and partly shaped by how it responds to wonders from his own geographical sphere.

Antigonus looked at the world from places he was familiar with - as a scholar based in Pergamum and a local Carystian. This becomes especially clear through the inclusion of three wonders located near Carystus (18, 78, and 84). For Callimachus, there is no local

[396] Munson 2001, 242.
[397] Hunzinger 1995, 52.

equivalent- neither from Cyrene nor Egypt. While the *Aetia* are occupied with drawing connections between Alexandria and all other places in the Greek world, the paradoxography shifts its attention away from Alexandria. The absence of Egypt has been noted for Callimachus' poetry in general. We therefore must assume that Egypt and particularly Alexandria takes the role of Callimachus' implicit point of reference which would be consistent with the rest of his work.

One would have expected Egypt to feature more extensively in paradoxography since it was traditionally seen as the spiritual home of marvels and their natural habitat, as encapsulated in this famous Herodotean quote:

> Ἔρχομαι δὲ περὶ Αἰγύπτου μηκυνέων τὸν λόγον, ὅτι πλεῖστα θωμάσια ἔχει ἢ ἡ ἄλλη πᾶσα γῆ καὶ ἔργα λόγου μέζω παρέχεται πρὸς πᾶσαν χώρην· τούτων εἵνεκα πλέω περὶ αὐτῆς εἰρήσεται. Αἰγύπτιοι ἅμα τῷ οὐρανῷ τῷ κατὰ σφέας ἐόντι ἑτεροίῳ καὶ τῷ ποταμῷ φύσιν ἀλλοίην παρεχομένῳ ἢ οἱ ἄλλοι ποταμοί, τὰ πολλὰ πάντα ἔμπαλιν τοῖσι ἄλλοισι ἀνθρώποισι ἐστήσαντο ἤθεά τε καὶ νόμους.[398]

Herodotus had paid a serious amount of attention to Egypt by dedicating all of book II to it. In one of its three occurrences in paradoxography we hear about the spring of Zeus at Ammon (ch.144). In the second (ch.147) Egypt is the reference of point of comparison as the *paradoxon* assumes the reader to be familiar with the crocodiles living in the Nile: Εὔδοξον δ᾽ἱστορεῖν τὴν μὲν ἐν Καλχηδόνι κορκοδείλους ἐνναίειν μικροὺς ὁμοίους τοῖς ἐν Αἰγύπτῳ.[399] This is the most explicit our text ever becomes regarding its point of reference – even more so when we consider the fact that it was preserved by Antigonus as a scholar writing in Pergamum. Antigonus' note describing Callimachus as Egyptian (ὁ ἐκ τῆς Αἰγύπτου, ch.45) is interesting in this regard, since he characterises him as Egyptian rather

[398] '*But about Egypt I will now speak at length since no other country holds so many wonders nor in the whole world are there so many unspeakable works. Therefore, I will speak more about Egypt. The Egyptians, besides having a climate peculiar to themselves, and a river different in its nature from all other rivers, have adopted customs and usages in almost all respects different from the rest of mankind* (II.35).'

[399] Asper 2011, 175 wrongly claimed that there was not a single Callimachean *paradoxon* located in Egypt.

than Cyrenean and that in a passage where he is pointing out a mistake. There is no way the author would have been unaware of Callimachus' original birthplace in Cyrene considering how often Callimachus was described as Cyrenean or Battiad.[400] This minor point speaks for authorship of this text at the Pergamene court, but also demonstrates that Antigonus' description is not an ethnic, but an intellectual one. Callimachus is characterised by his working place, a focalisation which betrays at least the adherence of this statement's author to a major literary centre outside of Egypt.

Egypt had a unique fauna which would have appeared exotic to a person living in Greece, but since these animals were located close to home for Callimachus, their presence in the paradoxographical texts is limited to the crocodiles (who could also be found in India). Callimachus does not even seem to have been interested in wonders coming from areas south of Egypt (excluding Ethiopia which was anyway at times connected with India), unlike his contemporary Archelaus who wrote several epigrams on unusual animals found in the Nile. Most of these animals probably came from Sudan in the areas upriver. Under Ptolemy Philadelphus several expeditions were led into these areas to explore the fauna and to bring back various animals for the royal zoo, but overall, it would not have been considered well explored.[401] Despite Sudan's proximity to Egypt, for Archelaus its animals were exotic enough, since they were still unusual sights in the sophisticated royal capital at the river mouth. For Callimachus, however, more exotic areas could be found for his paradoxography than those from Sudan – at least based on what remains.

Because Antigonus' selection of Callimachus focused on water marvels, at least the Nile is well represented. Its exceptional behaviour and its significance for the Egyptian civilisation meant that mentions of the Nile occurred especially in connection with its floods, a topic

[400] Meillier 1979, 10-11.
[401] Timosthenes was tasked by Ptolemy Philadelphus to explore the Mediterranean whose findings filled *On Harbours* cf. Jacob 1999, 35.

which had fascinated natural philosophers and paradoxographers alike. We meet this theme three times, once in a *paradoxon* which directly describes the flooding (ch.162), secondly in the *Hymn to Delos* where the local Inopus swells up in analogy with the Nile,[402] and thirdly in the victory ode to Sosibius (fr.384.31-32) where Callimachus draws attention to the unknown source of the Nile. The special status of the Nile also emerges from the fact that the Nile here is personified.[403]

We may be able to add another *paradoxon* (fr.409) on Egypt describing the wind in a cave near Thebes as blowing following the schedule of the lunar cycle, which was preserved by Stephanus of Byzantium. Pfeiffer counted it as a paradoxographical note with relative confidence because the same story (this time ascribed to Hellanicus of Lesbos) appears in Antigonus (ch.126) just before the start of the Callimachean section. Antigonus most likely took it from Callimachus' original selection of stories but failed to include it in the Callimachean part, probably because it fit better into its immediate thematic arrangement as it is framed by notes which are connected through the lunar cycles. Still these two (perhaps three) notes on Egypt are significantly few.

The absence of Egypt can hardly be explained by a lack of available sources: Callimachus could have used the history of Egypt by Hecataeus of Abdera, the court historian of the Ptolemies who had an undeniable influence on subsequent historiography.[404] The same applies to the mysterious figure of Manetho who seems to have been active under Ptolemy II. Both Manetho and Hecataeus surely could have offered local material suitable for paradoxography, but Callimachus in general seems to have been more interested in phenomena not located in Egypt. Part of the reason can be of course that Egypt for Callimachus was the starting point and did not qualify for him and his primary audience as

[402] Call.*Del.*206-08, 263.
[403] Sistakou 2009, 190.
[404] D.S.I.46.8.

exotic. What had been a foreign country for Herodotus is uninteresting to the Alexandrians because of its familiarity. Considering that Herodotus considered Egypt to be the exception to everything, it does not conform to the expectation of normality against which *paradoxa* are normally measured.

It is undeniably problematic to argue ex nihilo and nowhere more so than in paradoxography where every paradoxographical item can change the perception of the whole collection. But certain absences are too pronounced to pass over such as Rhodes which enjoyed a close relationship with the Ptolemaic kingdom well into the 3rd century and was one of the major trading ports of the Mediterranean next to Alexandria. Probably because it was within the Alexandrians' awareness as a mercantile and political centre, it does not seem to have been particularly attractive as a setting for *paradoxa.*

There is another place relating to Callimachus' lived experience which we might have expected to be featured: Cyrene, his hometown, which only late in his life came under Ptolemaic rule. In his poetry he does not shy away from referring to his home city as in *Iambus* 6, for example, he points to the copy of the Olympian statue of Zeus available to see in the Apollon temple at Cyrene. In the *Hymn to Apollo* he narrates the city's whole foundation story. But in his paradoxography, even though one could have expected him to have great expertise on the subject, there is no hint that he ever referred to the place he knew best – similar to how the city of Alexandria, which should be particular present to the Alexandrians, rarely ever appears in their poetry. Yet in contrast to Alexandria, Cyrene had a long history to look back on to and would have lent itself more to the aetiology than Alexandria could.

d) The impact of geographical realities on Alexandrian geography

We know that contemporary Alexandrian poetry was interested in places in the Ptolemaic sphere of influence and Callimachus was no exception to this rule.[405] The interdependence of geographical knowledge and conquest was especially obvious in the aftermath of Alexander's campaigns in the East.[406] The influence of this sudden expansion of knowledge on Hellenistic poetry has already been demonstrated for Posidippus' Λιθικά. The twenty stones are all sourced from places conquered by Alexander.[407] The collection of poems present 'geopoetics', a term coined by Barchiesi,[408] which would also be applicable to Callimachus: Thomas has talked about 'the enlarged Greek world' as represented by the *Hymn to Delos* in contrast to the *Homeric Hymn to Apollo*.[409] Callimachus' choice of geographical settings for his poetry also relates to Ptolemaic power politics. The Ptolemies were keen on building an 'intellectual empire' in analogy to their actual empire and beyond, with the library of Alexandria holding books on every conceivable place and topic on earth.[410] Accordingly, they were interested in gathering knowledge according to geographical considerations. A geographical organisation of Callimachean wonders might have therefore been more germane to his intended audience than a thematic one. This theory cannot be applied very neatly considering that fiercely contested areas such as Cyrene or Syria are not represented at all. Therefore, we should rather conceive of paradoxography's geographical organisation as one of several possible expressions of the Ptolemies' interest in the world.

[405] Asper 2011says Callimachus focused on places of interest for the Ptolemies.
[406] Stevens 2016, 121-24 quoting Str.I.2.1. Hellenistic literature in general was occupied with geography cf. Fraser 1972, I.520-23, II.750-90.
[407] Bing 2009, 253-71.
[408] Via Asper 2011, 156. Bing 2005, 121-27 called it the 'politics and poetics of geography'.
[409] Thomas 2016, 40.
[410] On the connection between collection of literary texts and imperial power in general cf. Johnstone 2014, 347-93, Woolf 2013, 6-9; Jacob 2013, 57-81. On the library of Alexandria and Ptolemies, see Erskine 1995, 38-48; Gutzwiller 2007, 19-23.

Perhaps some of the reasons for Callimachus' geographical selections lay closer to home. Alexandria as a melting pot for Greeks coming from all over the Greek world naturally showed an interest in these areas of origin. Indeed, Greeks living in Alexandria were designated for legal purposes by their citizenship and ethnic origin as a means of identification.[411] Since daily life paraded everyone's differences to each other, the interest in people's individual ethnic background is palpable in the Alexandrian scholarship. Partly it is also a language of displacement, especially in Callimachus and Theocritus.[412] The Alexandrian grammarians showed not only interest in different geographical origins, but also celebrated their philological differences by recording their dialects.[413] Homeric scholars such as Aristarchus who were keen on distilling the true Homeric dialect, must have been repeatedly confronted with the truth that the Homeric texts consisted of a multitude of dialects. The same led Philetas to develop an interest in local nomenclature or shifts in meaning of the same word in different dialects.[414] With this in mind, Krevans laid out two paradigms in which Callimachus might be operating for both his prose and poetic works.[415] Firstly she picks up Selden's idea of the geographical alienation which is compensated by treating all Greek local idiosyncrasies as equally worthy of being recorded.[416] The second scenario is a temporal 'rupture' between the past as the heyday of Greek literature and the less interesting present, which is both bridged and emphasized at the same time through his aetiology.[417] Krevans sees Callimachus' scholarship in light of these two poles: whereas his aetiological interests tend towards the latter, our paradoxography and perhaps his works such as *Local Nomenclature* should be counted as part of the former. Both are coping mechanisms

[411] Selden 1998, 294; 298.
[412] Acosta-Hughes/Stephens 2012, 148-53.
[413] Krevans 2011, 129-30.
[414] Bing 2003; Parsons 2011, 146-47.
[415] Krevans 2011, 130-31.
[416] Selden 1998.
[417] Bing 1988, 56-75, esp.71: aetiology is 'an awareness of the enormous gulf separating past and present, and the desire to bridge it.'

for this sense of lost identity. Krevans also added a third more positive model where exotic variety is showcased and celebrated for its diversity, beauty, and magnitude, which elegantly explains how Callimachus' paradoxography catered to most geographical concerns at Callimachus' time.

e) Geographical clusters: Arcadia, Sicily, Italy, Asia Minor

One of the main inspirations for this thesis was Évelyne Prioux's preliminary study of the distribution of Callimachus' wonders in his paradoxography compared with that in his remaining poetry. Prioux saw a major overlap in how well the Western Mediterranean and specifically Italy and Sicily were represented in both. We have also contemplated the case of Arcadia and the numerous mentions of its springs as well as the possibility of a separate treatise named Ἀρκαδία. Callimachus' poetry and specifically the *Hymns* and the *Aetia* focus extensively on springs and rivers among which especially the springs of Argos stand out, which can also be counted as Peloponnesian rivers.[418] Taking a step back, we recognise that the stories surrounding rivers in Sicily and the Peloponnese also emerge prominently in Callimachus' poetry, concretely in fr.43 of the *Aetia* for Sicily and especially the *Hymns* for rivers in Greece.

Both areas are connected by one of Callimachus' titles transmitted by the *Suda*: περὶ τῶν ἐν Πελοποννήσῳ καὶ Ἰταλίᾳ θαυμασίων καὶ παραδόξων. Apart from the general uncertainty surrounding Callimachus' titles, this appears as a strange mixture between the title for a full book *On Wonders of the world* and a single chapter laying out a subsection. One may ask why it is exactly the Peloponnese and Sicily which are combined. Their smallest common denominator is that both represent the places where Greek civilisation had been present for a long time and can be expected to boast a multitude of mythological stories about its local

[418] Frr.65-6; *Hymn to Pallas*.

features. Both indeed occur in Callimachus' poetry represented by their rivers which are connected to a significantly earlier period when the cities next to these rivers still carried different names or they still flowed underground (even if that is not unusual for an author interested in aetiology). There is a chance, of course, that the transmitted title is a later fabrication by later scholarship which combined the two areas for some reason, but it is difficult to conceive of a reason why a later author should have done so rather than Callimachus himself, of whom it is known that he paid particular attention to these areas. It seems unlikely that only these two areas would have been included together in a chapter while the hypothetical larger book dealt with wonders in general. Callimachus' confident knowledge of Arcadia and Sicily indicates that he drew on dedicated treatises for these areas, which flourished as a genre of their own. That he can give a catalogue on Sicilian or Arcadian rivers does not mean that these areas contained more rivers, but merely reflected the store that local people set on the rivers which became manifest through treatises on these areas. Disproportionally many mentions of springs also survive dealing with Boeotia to which we may count the springs on Mount Helicon (fr.2), the *Spring of Boukerais* (fr.42) in Boeotian Plataea, and the springs near Orchomenos.[419] The focus on bodies of bodies is striking especially in contrast to other areas which are frequently mentioned, albeit in other contexts, such as Thrace for its myths.[420] For Sicily, especially histories of the island routinely included tales of wonders such as Nymphodorus of Syracuse's Περὶ τῶν ἐν Σικελίαι θαυμαζομένων, but as mentioned several of Callimachus' successors concerned themselves with Sicily, e.g. Polemon in his Περὶ τῶν ἐν Σικελίαι ποταμῶν.[421] Potentially it was particularly these histories which concerned themselves with rivers.

The evidence overwhelmingly shows that paradoxography paid particular attention to the Greek heartland (which itself is not remarkable) and to the Western Mediterranean, which is

[419] See above.
[420] Prioux 2012.
[421] Polycritus of Mende wrote a Σικελικὰ ἐν ἔπεσιν (*Aud.*112).

indeed unexpected, since it cannot be explained merely by Ptolemaic socio-political interest in this area or the ancestral connections of individual poets (with Theocritus as a prominent exception) or paradoxographers to the Western Mediterranean. Instead, the origin of this unusual geographical focus should be located in Callimachus' immediate literary ancestors with an influence on his editorial decisions.

f) The interest of the Peripatetics in the Western Mediterranean

It is known that the Peripatetics endeavoured to find as many local stories about the Greece and the Western Mediterranean as possible. Both Aristotle and Theophrastus showed particular interest in the Western Mediterranean which is confirmed by transmitted titles such as Aristotle's *Constitution of the Zanclaeans* and the sheer number of fragments which ultimately derive from Theophrastus rather than Timaeus who is traditionally considered as Callimachus' go-to source for material on the Western Mediterranean.[422] Yet while the paradoxography does contain a few fragments ascribed to Timaeus, for Callimachus' poetry one finds only two episodes that definitely derive from his work as they tell the same version of the Phalarian bull (frr.46-7) and the bequest by Connidas (*Iamb*.11). Timaeus' and Callimachus' stories usually differ in the details. Instead, Callimachus' versions tend to be closer to the Peripatetic writings. [423] Fraser provides a complete overview of all the stories in Callimachus' poetry dealing with the Western Mediterranean, which will not be reproduced here.[424] His study is valuable as it demonstrates that Greek awareness of Rome was growing at Callimachus' time but had not been fully developed yet. His paradoxography therefore helps us to understand that the Western Mediterranean was indeed of interest to the Ptolemies. The next chapter will look further at the Peripatetic influence on Callimachus, which has already been indicated through the ubiquity of Aristotle and Theophrastus as

[422] Fraser 1972, I.763.
[423] Cf. Fraser 1972, I.764.
[424] Fraser 1972, I.763-69.

sources for paradoxography, but for the moment it is enough to stress that the Peripatetics' geographical interests align closely with that of Callimachus and should not be underestimated.

After looking at Callimachus' and Antigonus' methods for geographical organisation, this chapter has taken a mixture of different approaches first by looking systematically at the categories of the wonders mostly pertaining to the realm of hydrography in order to reach some general observations, before distilling possible geographical criteria that governed Callimachus' selection of wonders. An unexpected smaller point that will be reprised here, is that thematic overlaps between paradoxographical material and Callimachus' poetry occur especially in the *Hymns*, partly in the *Iambi*, and rarely in the *Aetia.* Particularly interesting is that some of these match what we already know from Callimachus' poetry such as the scarcity of wonders from Egypt following the lead of the rest of his poetry and indeed that of Alexandrian poetry as a whole. For paradoxography the absence is even more striking considering that Callimachus looks back to Herodotus but does not adopt his view of Egypt as the land with the highest number of wonders overall (Hdt.II.35). Callimachus seems to have been guided here by the common feeling of nostalgia for the places of origin of the Greeks living in Alexandria as well as the fact that wonders are usually sought further away and in the margins, next to Ptolemaic strategic interests. All of this is overlaid with Peripatetic layers of interest in the Greek heartland and the Western Mediterranean. The last point is one of the most consequential aspects of Callimachus' paradoxographical pursuit.

IV. Myth, Truth, and Documentation in Callimachean paradoxography

ἀμάρτυρον οὐδὲν ἀείδω (fr.607)

This famous phrase was most likely taken out of one of Callimachus' poetic sections. Yet the principle behind it still stands for his paradoxography: for Callimachus any story is correct whether it might be mythological, aetiological, or sensationalist, as long it is attested in writing or orally. We have already discussed this in the chapter on Callimachus' sources, but it is worth diving deeper into how this sentiment fits in with paradoxography and Callimachus' treatment of sources in general. The phrase indeed combines two formerly quite distinct realms of literary exercise, namely that of poetry (with ἀείδω announcing the style in which the poet intends to proceed) and that of historiography through ἀμάρτυρον due to the discipline's concern with testimony.[425] Several scholars have suggested Ionian historiography as one of the impulses for Callimachus' paradoxography. Trüdinger channelled his studies in this regard into the title 'Eine neue paradoxographisch-ethnographische Literaturform'.[426] In particular, the 'father of history', Herodotus, is hailed as the major precursor of the paradoxographical mindset by offering attractive conceptual frameworks for thinking about wonder in the geopolitical landscape in all its shapes and forms.[427] He was popular in general among Hellenistic scholars and even among historians who claimed to be above the marvelling sentiment.[428] Katherine Clarke finds Herodotean influences even in Polybius[429] and Hornblower re-evaluates: 'For Polybius, Rome's rise to

[425] Wiseman 1979, 143-153 eloquently discussed possible complications in discerning the boundaries between poetry and history.
[426] Trüdinger 1918, 34-36 + 77 ff.
[427] Schepens/Delcroix 1996, 383-95 gives a quick overview. More detailed discussion is found in Barth 1968; Hunzinger 1995; Munson 2001; Priestley 2014, 51-108.
[428] Priestley 2014. Murray 1972, 203 does not think that his impact on their texts was proportionally bigger than that of others; Pajón Leyra 2011, 208.
[429] Clarke 1999; Hornblower 1994, 47.

empire was a wonder.' They helped to show how pervasive Herodotean conceptions of marvel really were and thus challenged the well-known judgement by Momigliano of Herodotus as 'the prototype of the historian who always marvels' in contrast to Polybius, 'the historian who never marvels.'[430]

This chapter will endeavour to root Callimachus' wonders more firmly in Herodotean wonder. Herodotus' *Histories* are an inquiry into the Persian Wars with a plethora of local natural marvels scattered in between, with places like Egypt being mainly characterised through its wonders.[431] His digressions on wonder are often signalled by cognates of θῶμα[432] in the Ionian dialect or by superlatives. All this makes him an important model for Callimachus' paradoxography next to being widely read as an author and a great influence on Aristotle. As we will go on to see, his significance for paradoxography is most strongly felt not through his material which indeed occurs rather rarely in our paradoxography, but through his relationship with truth. Herodotus was ascribed by his literary successors to the 'Liar School'[433] of historiography, since already his ancient audience realised his problematic relationship with the truth alongside that of Ctesias, Callimachus' most frequent source. After identifying methodical overlaps between paradoxography and Ionian historiography, the chapter will turn towards the few mythographical items contained in Callimachus' paradoxographical collection. Our analysis of the reasons for their inclusion will be supplemented by a study of the rationalising mythographers preceding Callimachus whose innovative approaches to religion will help to put these relative anomalies in the paradoxography into perspective.

[430] Momigliano 1975, 25.
[431] Legrand 1966, 45ff., esp.47 about Egypt: 'Les descriptions de pays, chez Hérodote, sont en grande partie des recueils de merveilles (θώματα).'
[432] For Herodotean θῶμα in general, see Hunzinger 1995; Barth 1968; Hartog 1988, 230-7; Munson 2001, 232-65.
[433] Priestley 2014, 53 for references on the liar school. Pritchett 1993 specifically on Herodotus.

1. The influence of the 'Liar School' on paradoxography

Herodotus' profound interest in marvels was one of the primary reasons for the complaints levelled against him subsequently, for example by Diodorus.[434] Part of the problem with this branch of historiography was that it was perceived to put entertainment of its audience above facts. Herodotean marvels, for example, act as deliberate attempts at creating narrative suspense such as when he uses future tenses of verbs to signal that he will treat these wonders later on, since he expects his audience to be looking out for them.[435] The *Histories* can even dispense with the explicit mention of a θῶμα especially if the passage otherwise stays within the conventions of wonder stories. A case in point is the *logos* on India (III.98-106) containing a cluster of superlatives and implicit comparisons with features of the Greek landscape.[436] The expectation of wonder forming an essential part of the description of exotic places in historiography was such, that concrete terminology was not even necessary since the framework of wonder seems to have been immediately obvious to his readers. The culture of telling stories naturally included exaggeration and this was nowhere easier than in accounts about faraway places. Indeed, *paradoxa* seem to have been a set component of these accounts about exotic places. The Indian *logos* contains geographical and ethnographic observations as well as marvels. This is also the case for most early writers on India.[437] Since information on India could hardly be verified by anyone, these stories were repeated and persisted even if other eyewitness might have claimed otherwise.[438]

[434] D.S.1.69.7. Veiled attacks in 1.59.2 (Hdt.II.111); 1.62.2 (II.112); 1.66.10 (II.151), cf. Murray 1972, 205 for a brief summary.
[435] Hunzinger 1995, 61; Munson 2001, passim, via Priestley 2014, 58. Hdt.I.94, II.35, II.155, IV.129, VI.43.
[436] Priestley 2014, 59.
[437] Sierra Martín 2015, 177.
[438] Scylax of Caryanda's *periplous* probably was such an early eyewitness who through his early travels to India might have been accorded more trust than Herodotus and Ctesias. He is mentioned by Herodotus in IV.44.

One should mention that ancient criticism of Herodotus and Ctesias is at times one-sided and can often be explained as a trope of later historians in deprecating their predecessors in order to elevate their own status.[439] Herodotus indeed produced several sophisticated responses to wonder which far exceeded the simple naiveté he was accused of. Hunzinger, for example, characterises Herodotean wonder as vacillating between *l'esprit critique* and *l'émerveillement stupide*.[440] This contradiction is encapsulated by the moment when a *paradoxon* is triggered in his text: this mostly happens when the narrator is lost for an explanation of a particular phenomenon or anomaly, for example, when he says: θωμάζω δέ … ὅτι ἐν τῇ Ἠλείῃ πάσῃ χώρῃ οὐ δυνέαται γίνεσθαι ἡμίονοι, οὔτε ψυχροῦ τοῦ χώρου ἐόντος οὔτε ἄλλου φανεροῦ αἰτίου οὐδενός.[441] The fact that he cannot explain the lack of mules in the area despite the absence of unfavourable climatic conditions shows that a certain systematisation underlies Herodotus' wonders which encompasses the symmetrical organisation of the world. Following contemporary conceptions of the flat earth, areas at the margins of the world are automatically less inhabited and hotter since they are closer to the sun. This systematisation alters the focus and determines the type of material included in his accounts. A more exotic country at the borders of the known world will warrant more fantastical stories even if mainly because there was hardly anyone to check whether the information was true or not. As soon as a phenomenon stops conforming to the rules established by Herodotus and cannot be explained by them, they deserve the label of θῶμα.[442]

[439] Ψεῦδος in Greek did not have to be a lie but could be a conscious fiction cf. Schwartz 1896, 10.
[440] Hunzinger 1995, 60.
[441] '*But I find it strange ... that in the whole of Elis no mules can be begotten, although neither is the country cold nor is there any other obvious reason* (IV.30.3).'
[442] Lateiner 1985, 88-89 analyses anything transcending a boundary as a θῶμα, whether that is an animal or a plant. Herodotus thinks of wonder in terms of transgressions from a norm determined by his own estimation.

a) Herodotean θῶμα

How does a typical Herodotean wonder look like? There is not one set type as Herodotean wonder takes many different shapes. They include natural phenomena, buildings, outstanding human characteristics either in the ethnological sense or among prominent individuals, physical differences, or observed wonders. The astonishing breadth of wonders even extends to acoustic observations about animal cries (IV.129), foreign languages (VIII.135), and intellectual conundrums (IV.129).[443] The smallest common denominator for Hunzinger for these manifold wonders is 'la perception d'un écart avec l'ordinaire,'[444] but this is far from the only way wonder is conceptualised in Herodotus.

Wonders occur not only when Herodotus admits to being puzzled, but also at dedicated locations in the text. Herodotus' *logoi* are organised according to a rigid system usually falling into four parts (following Jacoby): after introducing the area with a general assessment, the local νόμοι are presented before listing its *thaumata* followed by its political history.[445] That the *thaumata* are an essential part of an area's description, transpires from Herodotus' comments in two such *logoi.* Scythia is normally analogised to Egypt especially as regards their major rivers, but Scythia according to Herodotus disappoints through its overall lack of marvels (IV.82). Lydia at least can boast at least one marvel in the gold dust washed down from Mount Tmolus (I.93). Apparently, a description of local marvels presented an expected commonplace in contemporary travel literature.[446] At times, however, this order is broken up or the transitions between the *thaumata* and other parts of the *logoi* appear fuzzy. In the Egyptian *logos* the order is less obvious as descriptions of *thaumata* are mixed up with historical facts. One could perceive this as artistic licence on Herodotus' part or ascribe it to the fact that Herodotus conceived of Egypt as existing according to rules

[443] Hunzinger 1995, 50n.23.
[444] Hunzinger 1995, 51.
[445] Hartog 1988, 231; Jacoby 1909, 89 + 1913, 330-32.
[446] Trüdinger 1918, 15. For wonders in travel literature see Frank 1998, 489-93, 496.

which are the complete opposite to anywhere else.[447] Thus, the formal features of these early *logoi* were not excessively rigid but acted as loose guidelines of the genre and could be adapted according to individual judgement.

A *logos* can contain a whole cluster of wonders or not even one as in the case of Scythia. Perhaps the largest cluster of wonder occurs in the section on Arabian spices in the context of which Herodotus mentioned the gold-digging ants (III.106-116). This passage describes the ἐσχατιαί (most-distanced lands) of the world and their valuable natural resources extracted by local inhabitants mostly by confronting fierce animals guarding these spices. This cluster is an excursion on the wealth of India in which Herodotus had elaborated on the tributes brought to king Darius. India's wealth was legendary and as the pinnacle of the offered tributes Herodotus launches his discourse on foreign countries and their valuable natural resources with the first and last story concerning the extraction of gold.[448] The passage stands out so much that some scholars even assumed Herodotus to have included the passage during a revision of his *Histories.*[449] Since it is organised as a list of wonders, it raises the possibility that we may be able to partially locate the origin of paradoxography here in these clustered assortments of wonders. Not only do they concern the natural world, but they are also loosely arranged like the items in our early paradoxography. An arrangement such as that of Herodotus was an open invitation for Callimachus to extract and further deploy this passage since it was set off against the other stories in the catalogue and the main story.[450] Callimachus therefore would have been alerted through Herodotus both to the accumulative effect of θώματα and the extractability of these *paradoxa* as they appeared in dedicated places in ethnography. In their compact form they offered themselves to Callimachus as collectibles for his list of wonders. Hartog in *The Mirror of Herodotus*

[447] II.35-36 contains eighteen unique Egyptian wonders.
[448] Romm 1987.
[449] Trüdinger 1918, 16.
[450] Harrison 2000, 74.

emphasized that the quantifiable nature of the *Histories'* θώματα encouraged the subsequent play with the notion of wonder by later authors.[451] These digressions on wonder which he calls προσθῆκαι are regularly included throughout Herodotus' work.[452] In the story about the deer in Elis which stands apart from the main narrative he says: προσθήκας γὰρ δή μοι ὁ λόγος ἐξ ἀρχῆς ἐδίζητο (IV.30). The conception of wonders as existing in 'collectible form' does not always work and must remain an assumption. It seems to be true for Theopompus (as we have discussed before). Yet the source texts for paradoxography and their narrative structures are usually not sufficiently known to us to be able to state with certainty in which form marvels occurred in them. This leaves us with Herodotus as the best witness for pre-paradoxographical practices.

These cluster of marvels provide even more interesting insights. The Arabian cluster of marvels about the collection of cinnamon, frankincense, or labdanum comprises internal comparisons of wonders such as 'ἔτι τούτων θωμαστότερον'.[453] These comparatives and superlatives are almost ubiquitous in Herodotus and occur exceptionally often with wonder. Bloomer has systematically analysed that they occur at the extreme ends on a spectrum of different νόμοι or θώματα.[454] A θῶμα is here an extreme version of something and not conceived as an exception to the rule. The criterion is one of quality i.e., the value judgement is subjective and undertaken by the narrator. This thought can also be expressed with verbs like ὑπερβάλλειν*,* as is the case with the Egyptian labyrinth or the temple of Athena at Sais (II.175.1) exceeding similar buildings in skill or size.[455] For the νόμοι the yardstick is unmistakably the set of Greek customs which Herodotus' audience would have been familiar

[451] Hartog 1988, 234.
[452] Other words he uses are παρενθήκη (VII.171) and παρένθεσις. For the question of whether the ethnographical sections in Herodotus are digressions or integral parts of the work, see the scholarship summary in Skinner 2012, 244-48. Cobet 1971 for Herodotus' digressions overall.
[453] Hdt.III.107-12.
[454] Bloomer 1993, 34-5, 37-38.
[455] Hunzinger 1995, 51-2; Priestley 2014, 57.

with. For the wonders the question is more problematic as the qualitative estimation of a wonder depends on the perception of the individual.

In a cluster of wonders the biggest wonder according to Herodotus is withheld until the end as is the case for the monuments of Egypt or the Arabian wonders.[456] Priestley describes this accumulation of superlatives as an 'escalation'.[457] What is important here is that the qualifications in this case imply that Herodotus has a hierarchy of wonders: in the category of buildings, for example, those of Egypt and Babylon are at the top. Although he introduces a hierarchy, Herodotus still issues a lot of superlatives but at the same time implies a gradation between them. Herodotus is not afraid to use superlatives provided the subjects are not compared to the incomparable.[458] Rather than being a logical oversight by Herodotus, the problem stems from the dual nature of superlatives in Herodotus: normally superlatives denote the extreme end of a spectrum, while Herodotus deploys them also as general indicators of exceptionalism of θώματα from nature's normal rules. The important lesson from this observation is that Herodotus categorised wonder even before the systematic wonder lists were created. Still, Callimachus' paradoxography per se does not contain superlatives since his *paradoxa* occur outside any narrative context. Wonders are articulated in different ways in the paradoxographical lists but one should keep Herodotus' taxonomical strategies in mind.

The superlatives provide further food for thought: The superlatives take on an important role in anticipating the crux of the following narrative and helping to justify the preceding claim. These superlatives are not spontaneous insertions into the text, but serve at closer inspection a clear narratological purpose, making it more problematic to speak of Herodotus' νόμοι or θώματα as mere digressions. This has important consequences for our understanding of what makes these sections stand out so much. By being prefaced with a superlative, it is signalled to the reader

[456] Hunzinger 1995, 62n.60.
[457] Priestley 2014, 58.
[458] Bloomer 1993, 39-40.

which narrative he should look out for in support of this claim. For both the νόμοι and the θώματα it is the exceptional nature of the subject, which makes it worth mentioning. Although he is according to Harrison 'tracing the margins of human experience, as his frequent use of superlatives—the first, the greatest and so on—suggests',[459] he is fully aware of the complications this brings about for his sources. Several of these superlatives are qualified with additional information, which is supposed to show that the author has thought about the topic at hand and has inserted these claims having anticipated possible objections. At these points Herodotus inserts his claims to autopsy, precise numbers, and more rarely documental proof of a certain claim until the amount of evidence supports the bold superlatives. A passage combining all these supporting pieces of evidence is the description of the Lydian tomb:

> ἓν δὲ ἔργον πολλὸν μέγιστον παρέχεται χωρὶς τῶν τε Αἰγυπτίων ἔργων καὶ τῶν Βαβυλωνίων· ἔστι αὐτόθι Ἀλυάττεω τοῦ Κροίσου πατρὸς σῆμα, τοῦ ἡ κρηπὶς μέν ἐστι λίθων μεγάλων, τὸ δὲ ἄλλο σῆμα χῶμα γῆς. ἐξεργάσαντο δέ μιν οἱ ἀγοραῖοι ἄνθρωποι καὶ οἱ χειρώνακτες καὶ αἱ ἐνεργαζόμεναι παιδίσκαι. οὗροι δὲ πέντε ἐόντες ἔτι καὶ ἐς ἐμὲ ἦσαν ἐπὶ τοῦ σήματος ἄνω, καί σφι γράμματα ἐνεκεκόλαπτο τὰ ἕκαστοι ἐξεργάσαντο. καὶ ἐφαίνετο μετρεόμενον τὸ τῶν παιδισκέων ἔργον ἐὸν μέγιστον. … ἡ μὲν δὴ περίοδος τοῦ σήματός εἰσι στάδιοι ἓξ καὶ δύο πλέθρα, τὸ δὲ εὖρός ἐστι πλέθρα τρία καὶ δέκα· λίμνη δὲ ἔχεται τοῦ σήματος μεγάλη, τὴν λέγουσι Λυδοὶ ἀείναον εἶναι.[460]

The superlatives are therefore just one method to support the historian's bold claims. The complications raised by the evidence for Herodotus which necessitate the insertion of the historiographer's authority, were of great concern to Callimachus: case in point is the phrase already cited at the outset: ἀμάρτυρον οὐδὲν ἀείδω (fr.607) which claims that anything whether it be orally attested or by writing, can be included in his poetry. There is also the

[459] Harrison 2000, 75.

[460] *'*[*Lydia*] *offers one building far the greatest except those of the Egyptians and Babylonians: There is the tomb of Alyattes, the father of Croesus, whose base is made of great stones, while the rest of the tomb is a mound of earth. The market men and handicraftsmen and prostitutes built it. In my time there were still five cornerstones on the top of the tomb, on which was engraved a record of each of their work: and the measurement showed that the prostitutes' work was the greatest. … This tomb has a circumference of six furlongs and a third, while its breadth is two furlongs. There is also a great lake by the tomb, which the Lydians think of as eternal* (I.93)*.'*

passage on the Sicilian cities in the *Aetia* (fr.43.1-83) where we encounter a similar concern with authority. Although based on non-paradoxographical material, this passage is the only instance in his *Aetia* in which the feeling of wonder is explicitly addressed. It takes the form of a dialogue between the Muse Clio offering extended explanations of a few *aetia* and Callimachus' poetic persona exhibiting his knowledge by listing Sicilian cities and rivers, an effect intensified through his repeated use of οἶδα (46, 50). The poet vaunts his own knowledge of the subject without fully acknowledging that he likely drew his information from books.

The passage also demonstrates the cumulative aspect of Herodotean wonder. Once the Muse has finished, Callimachus goes on to say (ll.84-85):

ὣ[ς] ἡ μὲν λίπε μῦθον, ἐγὼ δ᾽ἐπὶ καὶ [τὸ πυ]θέσθαι
ἤ]θελον - ἦ γάρ μοι θάμβος ὑπετρέφ[ετ]ο

The poet's curiosity is propelled by his half-knowledge in combination with the information he receives from the Muse where he relinquishes some of his authority to a higher power. The choice of θάμβος as a distinctly Homeric word[461] is appropriate for a dialogue with the Muse as an epic figure, but Homer usually applied it to wonder that overcomes characters who are observing something.[462] While Herodotus uses autopsy in order to boost his authority, Callimachus picks the one Homeric word which is connected with a passive observation of wonder. The narrator also uses it while rapidly aggregating wonders. In his never-ending thirst for knowledge, there is no limit to his desire to learn. Callimachus in this passage conceives of accumulated wonder as in constant acceleration resembling Herodotus' thematically linked 'escalating wonders,' which listed marvels in order of their ability to

[461] *Il.*III.342, IV.79, XXIII.815, XXIV.482; *Od.*III.372, XXIV.394. Two of these instances concern gods. Fantuzzi/Hunter 2004, 59 for the use of θάμβος in fr.43; Cozzoli 2011, 424-27; Hutchinson 1988, 44.
[462] Fisher 1995, 7-8. It is used in *Il.*XXIV.482, the emotional direct encounter between Achilles and Priam.

astonish the reader. At the same time, the passage plays with the concern for the authority of this information. Callimachean wonder is here indebted to Herodotus – but with a twist.

b) Preference for Herodotean style over Herodotean material

Based on what we have discussed, Herodotus' influence on Callimachean wonder feels tangible, yet he is barely ever credited by name in the paradoxography. Priestley agrees that the wonders in Antigonus and Pseudo-Aristotle sound very Herodotean, but do not adopt his material.[463] A case in point is one of the most widely known wondrous stories coming from Herodotus on the gold-digging Indian ants (III.106),[464] which is perhaps the only Herodotean wonder directly alluded to in Callimachus' poetry.[465] Although this story was very popular in the ancient world[466] and sounds like a phenomenon that could have easily occurred in the paradoxography, it does not find its way into the paradoxographical collections- just like Herodotus' other wonders.

There are only two occasions in the whole paradoxographical corpus where Herodotus is directly named as a source: Antigonus tells the story about the lioness only able to give birth once before her placenta is broken forever (ch.21.3). Here the paradoxographer repeats almost verbatim the Herodotean wording[467] and ignores the second version in Aristotle's *History of Animals* (VI.579b). The other occurs in the Byzantine *Paradoxographus Florentinus* 23 naming a well in the area of the Ethiopian Macrobians covering the bather in

[463] Priestley 2014, 78. She first noted (p.84) that the structure of paradoxographical texts resembles Herodotus' marvel-passages.
[464] McCartney 1953 has suggested the ants to be nicknames for miners by comparing it to a rationalising note in Str.VIII.6.16. Similar theories probably already circulated in Callimachus' time.
[465] Fr.202. Karttunen 2008, 19 noted that Callimachus' ants are winged which suggests that his source might differ from Herodotus. Both Callimachus and Sophocles (fr. 26 Nauck) refer to Aethiopia instead of Herodotus' India.
[466] E.g., Agatharchides (*FGrHist* 86F70ab) explained that in Aethiopia lions are called ants. Solin.30.23 thinks the ants to be African. D.Chr.*Or.*35.18-24 knows Indian ants bigger than foxes. Prop.III.13.4; Plin.*Nat.*XI.111; Lucian.*Gall.*16, *Sat.*24.
[467] Hdt.III.108 discussed by Pajón Leyra 2011, 187. It is unclear why Antigonus suddenly relies on Herodotus' authority after only using Aristotle in the rest of the section on animal *paradoxa*. His aim was probably to create variety.

oil. This story also appears in a similar version in Antigonus' Callimachean section, but there is attributed to Polyclitus or Polycritus.[468] In Pliny *Nat.*XXXI.17 the information for this story seems to derive from Theophrastus. Hence Pajón Leyra rightly analyses that Herodotus is basically never used as the direct source of paradoxographical items.[469] A possible reason for this might be that the intermediate text which integrated Herodotus' material, was consequential enough in order to overshadow Herodotus' authority as is the case for Aristotle's *History of Animals,* the most popular origin of all paradoxographical fragments about animals. Homer, likewise, is mentioned as an antecedent for conceptions about θαῦμα in most scholarly discussions of the topic,[470] but is next to never directly credited with a *paradoxon.* This is remarkable. Had the compilation of paradoxographical lists been restricted to simply marvellous phenomena, then paradoxographers would have surely found plenty of material in Homer and especially Herodotus to redeploy. Their dominant position within the literary corpus normally conferred validity on their statements[471] and guaranteed them pride of place. In paradoxographical literature, however, they were considered less desirable as sources.

Even the sources used by Herodotus seem largely not to have survived into paradoxography. Herodotus deployed an early forerunner of wonderful stories, the *Arimaspea* by the 7th century Aristeas of Proconnesus about the Arimaspi fighting griffons and Issedones with one eye.[472] Aristeas is mentioned in the story in Herodotus (III.14-15), which reappears in the paradoxographical collection of Apollonius (*Mir.*2). Bolton believes that Apollonius took this story not from Herodotus who offers the oldest source, but from Theopompus because

[468] Antig.*Mir.*135.1. Water and oil occur regularly together in *paradoxa*, cf. Antig.*Mir.*129, 139, 150.3, 151; *Aud*.113.2, 115; *PF*.5, 29, 40; *PP*.9 in Hdt.III.23, VI.119.
[469] Pajón Leyra 2011, 187-88.
[470] Prier 1989; Hunzinger 1993 + 2018; Fisher 1995 on Homer. Mette 1960 for an overview from Homer onwards.
[471] E.g., Homer was considered an authority on geography cf. Kaplan 2008.
[472] Gómez Espelosín 1996, 15 and Bolton 1962. Giannini 1963, 252-3 thinks this to be one of the first texts where wonders were collected.

he is cited in the first note of Apollonius' collection. Nevertheless, the different versions of this story show Theopompus and Herodotus to be closer than Apollonius and Theopompus, which could indicate that Apollonius only cited Theopompus via an alternative route rather than the first hand collection.[473] Theopompus' alleged Epitome on Herodotus would be indeed a good fit for this episode.[474] Not only is an intermediate source preferred over the first mention of the story, but this episode demonstrates how easily Herodotus' name drops out in the paradoxographical collections with the credit given to the excerptor rather than the first originator of the story.

The reason why Herodotus' presence feels so tangible in the paradoxography is that it picks up several Herodotean themes. Herodotus' interest in animals, for example, is directly mirrored in the paradoxography.[475] This applies both to the types of animals (e.g., snakes in Thessaly, *Aud.*23; Hdt.III.108-9 on flying snakes and vipers) as well as some marked absences. Especially Antigonus collects several of these absences of animals (chs.8-13). The deer in Elis, for example, which are missing in Libya (Antig.*Mir.*13), have a direct precedent in Herodotus (IV.30). In this whole section Amelesagoras of Athens[476] (ch.12) is the only mentioned source, although some stories certainly come from Herodotus. This missing-animals theme is familiar to us from Aristotle who was also interested in why certain animals do not naturally occur in some parts of the world, which he explains through food and climate (*HA*.605b22ff.).[477] As discussed, Herodotus also dedicated a lot of thought to water wonders,[478] an aspect which Callimachus found more attractive than animals. Callimachus

[473] Pajón Leyra 2011, 203-05.
[474] Bolton 1962, 120.
[475] Priestley 2014, 80-81.
[476] This Amelesagoras might be identical with Amelesagoras of Chalcedon, cf. Jones 2013.
[477] Antigonus and Pseudo-Aristotle provide no explanation for their absent animals or relegate the explanation to the divine.
[478] E.g., Nile II.17; the Ethiopian fountain III.33; the bitter Hypanis stream IV.52; the healing Tearus IV.90; the well in Ardericca producing asphalt, salt, and oil VI.119; the salted sea near Anaua VII.30.

lived out his interest in animals elsewhere, but he seems not to have done this in paradoxographical terms. An example is his focus on birds with the attested title Περὶ ὀρνέων and other instances of particular animals such as the cicadas and donkeys. Overall, one can agree with Bowie who called the *Histories* 'a treasure house for poets and paradoxographers ... The learned poets of Alexandria ... owed Herodotus an incalculable debt,'[479] but this debt is realised in borrowing from Herodotus the idea of exotic wonders rather than direct material per se.[480]

c) Ctesias' prominence in Callimachus' paradoxography

Rather than Herodotus, his contemporary Ctesias is the most-cited source in Callimachean paradoxography.[481] Like Herodotus, Ctesias seems to have been both a model and a source for paradoxographical material.[482] The attitudes in the paradoxographical texts are highly ambivalent towards Ctesias: The *Paradoxographus Florentinus* deriving from Callimachus mentions him repeatedly as a source,[483] whereas otherwise he is only quoted twice in the paradoxographer Apollonius who draws these mentions from Bolos' study of the Περσικά and Ινδικά. Why did Ctesias appeal to Callimachus but less to others? Photius' summary of Ctesias' Περσικά reveals that Ctesias played with the limits of credibility in narrating his story:

> ταῦτα γράφων καὶ μυθολογῶν Κτησίας λέγει τἀληθέστατα γράφειν, ἐπάγων ὡς τὰ μὲν αὐτὸς ἰδὼν γράφειν, τὰ δὲ παρ᾽αὐτῶν μαθὼν τῶν ἰδόντων: πολλὰ δὲ τούτων καὶ ἄλλα θαυμασιώτερα παραλιπεῖν διὰ τὸ μὴ δόξαι τοῖς μὴ τεθεαμένοις ἄπιστα συγγράφειν.[484]

[479] Bowie 2007, 33.
[480] Greene 2011, 57 reached the different conclusion that Herodotus' influence on the creation of wonder in Hellenistic poetry has been overstated.
[481] Nichols 2018 discusses Ctesias' fragments and their similarity to paradoxography.
[482] Pajón Leyra 2011, 223-24.
[483] Items *PF*.3+17 ultimately derive from Antigonus' examples. Hydrology proportionally dominates among Ctesias' fragments just as in the rest of Callimachus' paradoxography. He was also interested in stones, cf. Nichols 2018, 8-9.
[484] '*After writing these fantastic tales, Ctesias says that he writes the most truthful facts and adds that his account is on the one hand what he saw for himself and on the other what he learned from eyewitnesses; he has omitted many other stories more marvellous than lest he appear to be writing incredible things to those who had not seen them* (Phot.*Bibl.*72.49b.39-44).'

Ctesias was obviously aware of the fanciful nature of his stories and manipulated their believability by selecting only the most believable ones (τἀληθέστατα). He presumed his audience only to accept a certain level of unbelievability before dismissing his complete work as invented. Like Herodotus his credibility was significantly undermined in the following centuries and was labelled a liar.[485]

In most aspects such as his historiographical techniques Ctesias is remarkably close to Herodotus. Both stressed their autopsy and meticulous research, but in the case of mistakes pointed to their sources or even pre-emptively doubted their own sources. Their sources constitute a sort of 'insurance policy' to prevent their own authority from being questioned. Paradoxography, by contrast, fully expects each of its claims to be contested and usually does not transfer any of its own criticism to its sources. Paradoxography's referral to its sources had to be more consistent than Herodotus or Ctesias were.

Not only Callimachus, but also prominent detractors of Ctesias such as Aristotle[486] still resorted to his information. One of the reasons for this was that knowledge of these parts of the world was patchy and Ctesias one of the few existing sources. As physician at the Persian court of Artaxerxes II, Ctesias was more qualified than Herodotus to write a cultural history of Persia, but it is unlikely that he travelled to India.

Ctesias' transmitted works, the Περσικά and Ἰνδικά, reveal in their title their local focus,[487] while Herodotus let his attention roam across the whole οἰκουμένη and was not considered an expert on any particular area per se (unless we believe him that he travelled to Egypt), even if he went to extreme trouble to research its history and his *logoi* take the shape of local treatises. Interestingly, the material in Callimachus mostly seems to come from the Ινδικά

[485] Lucian.*Philops.*2.15; Str.XI.6.2-3; Plut.*Art.*13.4-7; Lucian.*Hist.Conscr.*39, cf. Pajón Leyra 2011, 216-23.
[486] Aristotle is Ctesias' oldest known critic: *HA.*523a, 606a; *GA.*736a2. Byl 1980, 99-104 is a detailed study of these passages.
[487] The exact nature of the two texts is debated due to their fragmentary state.

rather than the Περσικά: two of the five *paradoxa*[488] credited to Ctesias among Callimachus' *mirabilia* concern India directly. The others describe a river in Aethiopia, an unquenchable fire near Phaselis in Lycia, and a river in Armenia.[489] These non-Indian wonders could stem from sections on non-Indian wonders, with Ctesias comparing Indian with non-Indian wonders just as they are presented in Callimachus' paradoxography. The Ινδικά seem to have been an ethnographical work with a heavy emphasis on marvels, more so as Photius' excerpts of the Ινδικά are significantly longer than those of the Περσικά. Callimachus' *paradoxa* therefore seem to stem from the works on India rather than Persia.

It is hard to ascertain exactly what attracted Callimachus to Ctesias' Ινδικά since it is exceedingly difficult to restrict Ctesias to one genre and understand what the Ινδικά looked like. Jacoby had called him 'one of the fathers of the historical romance'.[490] Stronk on the other hand has characterised his work as 'indefinable'.[491] Judged by modern standards, Ctesias perhaps fits best into the category of historical fiction. Ctesias was praised for his style and art as narrator. Photius, for example, considers him to be a better writer than Herodotus, and Demetrius the Orator emphasizes his skill in keeping the reader in suspense.[492] Therefore, we can be relatively certain that Ctesias' works featured novelistic aspects[493] or could be classified as 'dramatic history'. Photius interestingly remarks that Ctesias 'fortunately' eschews the lengthy digressions found in Herodotus (*FGrHist* 688T13). Most of our fragments deriving from Ctesias are indeed about marvellous phenomena, but the propensity of the fragments towards the wondrous could also be a result of Callimachus' selection and Photius' own substantial interest in paradoxography. Still, the remaining Ctesian fragments contain fourteen occurrences of θαῦμα cognates, not including the

[488] Antig.*Mir*.146+150.
[489] Antig.*Mir*.145+165+166.
[490] Jacoby 1922, 2064.
[491] Stronk 2010, 47.
[492] Pajón Leyra 2011, 223n.702: Phot.*Bibl*.72.45a5-19, cf. Auberger 1991, 3.
[493] Nichols argued for the novelistic character of Ctesias' Περσικά and Ινδικά.

paradoxography, which speaks for the fact that his propensity towards wonder was real and exceptional. The conclusion must be that dramatic history at least as practised by Ctesias featured some aspects which aligned with paradoxography such as the explicit mention of wonders and a concern about credibility. These factors presented an inspiration to Callimachus, more than local expertise or methodological orthodoxy. Even if only a small part of Herodotean and Ctesian material found its way into paradoxography, Ctesias is the more visible presence in Callimachus' paradoxography yet is passed over just as much as Herodotus is in all other paradoxographical collections.

d) Antigonus' disparagement of Callimachus typical of historiography

The tendency of later historians to accuse Herodotus and Ctesias of lying is part of the historical genre. The criticism of previous exponents in the field is a familiar modus operandi from historiographers who needed to justify their historical project by highlighting previous deficiencies and their own capability to remedy these. Paradoxography in a similar way needs to elevate its own credibility by criticising its predecessors. Callimachus who was generally more on the defensive rather than attacking side of criticism,[494] did not have to defend himself against predecessors as he did not have any. Antigonus had the opportunity and uses it to discuss Callimachus' paradoxography very critically in ch.45. Here he failed to catch Callimachus' word play with the partially lame bird αἴγιθος as he condemns him for his mistaken use of the adjective ἀμφιγυήεις, meaning 'physically-disabled on two feet', although Callimachus had likely intended it as an allusion to Homer (*Il.*I.607).[495] Antigonus judges this episode to be ἀπίθανον and rejects Callimachus' marvel as untrue. Likewise, Antigonus notes for Lake Avernus that Timaeus in contrast to Callimachus did not consider

[494] One may think here of his defence of *polyeideia* and his exhortation in *Iambus* 1 for scholars to stop fighting each other.
[495] Schepens/Delcroix 1996, 387.

it to be birdless (ch.152b). Antigonus also corrects his predecessor by supplying missing information.[496] Still, his criticism is of a philological nature and differs considerably from the typical criticism one encounters in the rest of paradoxography or indeed in historiography, which is more basic and usually challenges the content rather than the linguistic style of another paradoxographer. The temporal distance of at least a century between the two authors lets one doubt that Antigonus' rejection of Callimachus was based on anything more than a traditional opposition between two rival centres of culture in the Ancient Mediterranean. Incidentally, Antigonus' critical engagement with Callimachus helps to further dispel the doubts as to his identity with the Carystian: a Byzantine compiler would have surely not extended as much care on refuting a predecessor writing in the same genre.

2. Paradoxography's relationship with truth

The previous section has shown how the historiography of Herodotus and Ctesias as Callimachus' greatest models grapple with the question of truth. This section looks more closely at the paradoxography and how it overlaps with Herodotean historiography. Paradoxographical information is never verified, but the paradoxographer simply reports what another person has said and extricates himself from the responsibility for the information. Hutchinson, for example, claims Callimachus in his dialogue with the Muses to seek 'from superior authority the solution of some recondite problems about anomalies and curiosities.'[497] Yet his paradoxography is less interested in explaining these conundrums, but in gaining literary precedent for a certain claim. For Gabba paradoxography's 'unifying

[496] Chs.145+146.
[497] Hutchinson 1988, 44.

characteristic was its acceptance without question of any available information; the problem of truth or credibility of the phenomena or facts which were presented, was simply not raised, since the question of truth was not present in the minds of readers... Its concern was not to distinguish the true from the false..., but to provide lively and highly coloured pictures of milieus and situations, whose historicity was already accepted. Pseudo-historical or paradoxographical narrative was enriched with learned trivia, intended to ensure greater verisimilitude and hence win greater acceptance.'[498] Paradoxography's relationship with truth is very complex. In the following section, we will look at the techniques it deploys to this end, some of which are familiar from Herodotus.

a) Novelty & Remembrance

Paradoxography partly imitates Herodotus' historiography in the way it adapts and manipulates texts in order to make its information appear new. We can only make limited comparisons in this regard with Ionian historiography. The latter mostly relied on oral information, which is now inaccessible to us, whereas we do have the occasional source for paradoxography.

An essential quality of wonder is that it is novel and previously unknown. *Paradoxa* are by definition astonishing facts, pieces of knowledge the reader should not be aware of beforehand in order to achieve the novelty effect. The paradox inherent in wonder is that it loses its ability to surprise the more commonplace it becomes. Paradoxographers counteract this by adapting previously known texts by leaving out some details and adding others. This approach already surfaces in Herodotus on a few rare occasions. For example, he tells the reader that he is reporting a different aspect about the camel since some facts about the animal are already well-known:[499]

[498] Gabba 1981, 53-4.
[499] Priestley 2014, 60.

Τὸ μὲν δὴ εἶδος ὁκοῖόν τι ἔχει ἡ κάμηλος, ἐπισταμένοισι τοῖσι Ἕλλησι οὐ συγγράφω· τὸ δὲ μὴ ἐπιστέαται αὐτῆς, τοῦτο φράσω.[500]

Here Herodotus reacts against the current version of the story and introduces his own upgraded phenomenon in order to make it more interesting.

Yet there are *paradoxa* about natural phenomena in Callimachus' paradoxography which must have been very familiar to an educated Greek readership, which were not given a new twist and do not differ in substantial detail from other versions. The reference to the Crathis River with its hair-bleaching qualities (ch.134) occurs long before in Euripides (Eur.*Troad.*220ff.), while the connection between the Alpheus and the Arethusa fountain in Sicily appears amongst others in a prominent place in Pindar.[501] Indeed, *paradoxon* on the Crathis is too short to show any individuality. Which was their purpose if they were not included to astonish their readers? Perhaps the fact that they are well-known wonders made them staples which should not be left off a wonder list, just as Herodotus elaborates on Egypt as the country with the highest concentration of wonders without expecting his reader to disagree. This resembles the way myths moved in a similar direction and advanced over time to their status as a 'corpus of stories every educated person was expected know.'[502] As will be discussed later in detail, Callimachus' paradoxography also included versions of well-known mythical stories like Europa bathing in the Cretan river. These *mirabilia* functioned as reminders rather than novelties since they were well-known and perhaps included for the sake of completeness. Similarly, Gerolemou conceives of Herodotean wonder as a 'memory mechanism' which contributes something new to the collective memory by altering the pieces which are called worthy of remembrance.[503] The fact that updated wonders are combined with

[500] *'I do not write about the camel's appearance to the Greeks since they know it. But I will describe to them what is not known about it* (III.103)*.'*
[501] Antig.*Mir.*140; Pi.*N.*1.1-7; Timae.fr.41; Plb.XII.4d-5; Plin.*Nat.*II.225.
[502] Cameron 2004, xii for the Peripatetics who collected, summarised, and put these myths in compendia.
[503] Gerolemou 2018.

well-known versions of natural phenomena and myths, shows how individualistic and idiosyncratic Callimachus' selection was.

b) Source selection

The way Callimachus' paradoxography and Herodotus deal with their sources which take on a sort of third-party existence, are relatively similar. The mythical stories are slightly different in this regard as they often either have no direct textual source (ch.163) or prefer a less obvious source. But just as in the rest of the *paradoxa,* a historical source is preferred to a poetical one, which is why Timaeus is preferred over Euripides for the Crathis story. Callimachus seems to have considered Timaeus a critical and therefore reliable source when he points out his caution in accepting mere hearsay:

> Ὃ δὴ καὶ περὶ τὴν Ἄορνίν τι δοκεῖ γίγνεσθαι καὶ κατίσχυκεν ἡ φήμη παρὰ τοῖς πλείστοις. ὁ δὲ Τίμαιος τοῦτο μὲν ψεῦδος ἡγεῖται εἶναι.[504]

Generally, both Herodotus and paradoxographers generally believe in the truth of their wonders with the sources acting as guarantors.[505] There are a few exceptions where a marvel is directly doubted (but never in Callimachus!). Herodotus is critical even of stories he reports himself, which 'resemble fictions' (VIII.8) or are 'rather fanciful' (λόγῳ δὲ εἰπεῖν θωμασιωτέρῃ) such as the theory that the Nile flows from the Ocean (II.21).[506] There are cases where Herodotus succeeds in proving something untrue (VI.121-3), or where he rests his case by remaining in astonishment as for example why Xerxes' camels were attacked by lions

[504] '*But for what happens with Lake Avernus prevails as a rumour among most people. Timaeus believes this to be fiction* (ch.152)*.'*

[505] Schepens/Delcroix 1996, 382-3: '…the unusual will not produce its proper effect on the reader unless this reader is brought to believe that the phenomenon described is part of reality and that it does not merely exist in the imagination of the paradoxographer.'

[506] Munson 2001, 259 says wonder here 'almost functions as an advertisement of nonnarratability: the theory is wondrous and therefore not worth reporting'.

(VII.125). Herodotus regularly tries to absolve himself from any responsibility for his information, but at the same time acknowledges that it is fine to make bold claims provided they are underpinned by authorities vouching for their validity. For example:

> Τοῖσι μέν νυν ὑπ'Αἰγυπτίων λεγομένοισι χράσθω ὅτεῳ τὰ τοιαῦτα πιθανά ἐστι· ἐμοὶ δὲ παρὰ πάντα τὸν λόγον ὑπόκειται ὅτι τὰ λεγόμενα ὑπ'ἑκάστων ἀκοῇ γράφω (II.123.1).[507]

Yet in paradoxography this is a relatively rare phenomenon: One such example is the Timaean wonder about a resurrected man in a cave in Lipara.[508] After the marvel, the paradoxographer adds:

> τοῦτο μὲν οὖν ἡμῖν φαίνεται μυθωδέστερον· ὅμως μέντοι ἔδει μὴ παραλιπεῖν ἀμνημόνευτον αὐτό, τῶν περὶ τὸν τόπον ἐκεῖνον τὴν ἀναγραφὴν ποιούμενον.[509]

Geffcken argued that this particular wonder 'nicht auf den Thaumasiographen selbst zurückgehen kann, der sich über viel Sonderbares nicht wundert' and is directly derived from Timaeus.[510] Here the anonymous paradoxographer pronounces a negative judgement on his original source rather than undermining himself. Occasionally, these comments were probably included to appear as an overall critical and trustworthy voice with the ability to evaluate one's sources, just as Herodotus presents himself as critical of some wonders in order to evoke the impression that the wonders he does include are beyond suspicion as they have already been tested by the paradoxographer. Since Callimachus' paradoxography is overlayed with Antigonus' own commentary, it is uncertain whether Callimachus himself included any such statement. It seems unlikely, however, that the author of ἀμάρτυρον οὐδὲν ἀείδω (fr.607) would go out on a limb to criticise his sources.[511]

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[507] '*These stories about the Egyptians should be used by whoever thinks them trustworthy: as for myself, in this whole work, it is my task to record whatever I have heard*.' Herodotus has been criticized even by modern scholarship for his credulity. A more nuanced approach is Pearson 1941 who considers religious sentiment or unconscious bias.

[508] A*ud*.101. Flashar 1972, 119.

[509] '*This seems rather fabulous to us. Still, one should not omit to mention it when writing a report on that place*.'

[510] Geffcken 1892, 61n.1. The passage implies that the original source was engaged in a longer narrative (τὴν ἀναγραφὴν) on Lipara, which is untypical for paradoxography.

[511] In *Acontius and Cydippe* (fr.75) he goes so far as to criticise a mistaken religious explanation for the *Holy Disease.*

Nevertheless, the concern with truth and falsehood is echoed elsewhere by Callimachus and indeed in the Hellenistic poets in general. After cognates of ἀλήθεια had dominated after the Archaic period, Hellenistic poets rediscovered older synonyms in the Homeric and Archaic texts such as ἔτυμος, ἐτήτυμος, ἔτεος, νημερτής, and ἀτρεκής. Words for falsehood like ψεῦδος and ψεύδομαι were applied throughout. Kidder's analysis of Callimachus' *Aetia* has distilled a few clusters in which these terms occur: whenever there is a concern with source material, versions of stories, and prose stories, Callimachus reverts to discussions of truth and falsehood. These amalgamations occur especially in the passages on Xenomedes whose first citation as a prose author in poetry is acknowledged through the special formation ἐτητυμίη. In the *aetion* on the Ician guest words stressing the truth-value of information are present just as they are in the beginning of the *Hymn to Zeus.*[512] Worth mentioning is also the play with truth and falsehood in the *Hymn to Zeus*.[513] This hymn perhaps served as an answer to the earlier authors Epimenides of Crete and Dosiades who had propagated Zeus' birth on Crete in their histories both called Κρητικά.[514] It is one of several exceptional passages within Callimachus' oeuvre, which hint at Callimachus having consulted specialised accounts. In the hymn the atmosphere of uncertainty is evoked through Callimachus' staged *aporia* and refusal to commit to one version or the other about Zeus' true place of birth. He pitches several versions of the myth and even different types of evidence against each other. Accordingly, he mixes local lore with written histories, proverbs ('Cretans are always liars') and archaeological evidence such as Zeus' tomb on Crete. The scholium to line 8[515] has observantly noticed the problems which a tomb of Zeus would pose to contemporary Greek assumptions about divinities. If Zeus is said to have a tomb, this implies that he must have lived and died. Callimachus more pronouncedly addresses

[512] Kidder 2018, 17-31.
[513] Kidder 2018.
[514] Stephens 1998, 174.
[515] Kidder 2018, 3.

epistemological questions in his poetry than in his paradoxography, but that was to be expected from a genre in need of garnering authority. For the moment it suffices to recognise the epistemological position of Callimachus' paradoxography as resembling that of Herodotus.[516]

3. Methodology influenced by Ionian historiography

Herodotus' account displays a surprising level of self-awareness of his own epistemological limitations by setting himself geographical and chronological boundaries: he clearly distinguishes between hearsay and information acquired first-hand. The remoter a particular place is, the less he pretends to know about it with certainty; for Egypt he clarifies that for anything beyond Elephantine he has to rely solely on hearsay.[517] The same applies when it comes to stories going way back in Egyptian history: in this case he only relies on the authority of their priests, whereas for younger history he even cites non-Egyptians as sources.[518] He aspires to completeness, but qualifies his statement: ἀλλ᾽ὅσον μὲν ἡμεῖς ἀτρεκέως ἐπὶ μακρότατον οἷοί τε ἐγενόμεθα ἀκοῇ ἐξικέσθαι, πᾶν εἰρήσεται.[519] About the land north of Thrace he even refuses to speak completely: τὸ δὲ πρὸς βορέω τῆς χώρης ἔτι ταύτης οὐδεὶς ἔχει φράσαι τὸ ἀτρεκές, οἵτινές εἰσι ἄνθρωποι οἰκέοντες αὐτήν (V.9.1).

One should distinguish between information credited to hearsay and statements relayed through autopsy. He tends to connect especially wonders and exceptional νόμοι to accounts of autopsy, while general assumptions are generally restricted to hearsay. The best example for this is the

[516] Sassi 1993 is an original approach to Hellenistic paradoxography as an epistemological problem.
[517] Hdt.II.29.1.
[518] II.147.1; cf. 99.1-2 and 142.1.
[519] '…as far as we could hear a reliable account of the lands furthest away, everything will be reported (IV.16).'

micro-*logos* on Lydia, where the contrast appears very pronounced: The tomb of Croesus' father is called μέγιστον,[520] because he can support this claim with actual measurements of the tomb and the fact that he describes an inscription on the tomb which he has seen with his own eyes. Yet Herodotus defers to the Lydians for the information on the Gygaean lake as perennially fed by the nearby springs, since Herodotus has not lived there long enough to observe the springs' behaviour himself. His different approaches to hearsay and autopsy have been amply discussed,[521] so that we can use it as a foundation to better understand how Callimachus imitated Herodotus' 'excursions' on wonder.

a) No visual θαῦμα

It has already been sufficiently pointed out that wonder in the literature was especially connected with vision,[522] explained through the assumed etymological link between θαῦμα and θεᾶσθαι.[523] Especially in Homer wonder was a particularly visual phenomenon represented by the ubiquitous formula θαῦμα ἰδέσθαι.[524] Both θαῦμα and θάμβος are used to that effect as they both were assumed to derive from θεᾶσθαι. The popular phrase μέγα θαῦμα is always part of a whole one-line formula e.g., ὦ πόποι ἦ μέγα θαῦμα τόδ᾽ὀφθαλμοῖσιν ὁρῶμαι, which stresses its visual component.[525]

Herodotus likewise conceived of wonders as 'visual spectacles' especially in foreign places. Next to addressing the rarity of wonders, he focused on beauty as an extension of the visual character of wonder, e.g.: τὰ κάλλιστα…καὶ σπανιώτατα (III.116.3). Autopsy indeed was the most important tool of the Ionian historiographer who had to prove that his fanciful stories were indeed true. Generally, Herodotus regards eyes as more reliable witness than

[520] I.93.2. Apart from Egyptian and Babylonian buildings, see below.
[521] E.g., Luraghi 2001 for his techniques applied to local sources.
[522] Mette 1960; Schepens 1980, 50; Hunzinger 1995, 67.
[523] Mette 1960; Fantuzzi/Hunter 2004, 60.
[524] Mette 1960, 49-54.
[525] *Il.*XIII3.99, XV.286, XX.344, XXI.54.

ears (I.8.2) as revealed in the miraculous story about the poet Arion.[526] Of course, the reader could only rely on his word, but the assurance of having seen a wonder for oneself still overrode information gathered by alternative means.

This visual aspect of wonder was still alive in Callimachus' contemporary Archelaus whose remaining paradoxographical epigrams in Varro emphasised the observers (e.g. herdsmen) of particular phenomena next to describing the wonder itself.[527] All this contrasts remarkably with Callimachus' paradoxography, where it is never explicitly stated that his sources or he himself ever observed a wonder rather than learned about it from a book - in contrast to Antigonus who speaks of himself as having travelled to Sicily and includes the only verb relating to vision:

> Παραπλήσιον δὲ τούτῳ ὁρᾶται γινόμενον ἐπὶ ἁλός· ἐδωρήσατο γὰρ ἡμῖν Σικελὸς ξένος τοιοῦτον, ὃς ἐν μὲν τῷ πυρὶ ἐτήκετο, ἐν δὲ τῷ ὕδατι ἥλλετο.[528]

Antigonus attributes an active influence to Callimachus by describing him as περίτρανος ('perceptive', seems to be the first mention of this word!) εἶναι βουλόμενος (*Mir.*45). Vocabulary relating to vision is remarkably absent and the traditional correlation between wonder and vision is broken by Callimachus.

Paradoxically, the ubiquitous geographical indications of *paradoxa* give the reader the choice to ascertain whether these claims are correct by travelling to the place in person. Yet in practice the location is simply one more way of guaranteeing the authority of the information, because no reader will realistically make the effort of travelling so far in order only to prove a fact true or false. Here paradoxography approximates travel literature as both genres never expect their readers to undertake the journey.[529] For Bichler Hellenistic travel

[526] Gray 2001 for Herodotus' epistemological approach to this story.
[527] Leigh 2013, 190, cf. Plin.*Nat*.II.109, also Antig.*Mir*.124, Archel.F3 Giannini.
[528] '*Something similar to this can be seen happening to salt: Our Sicilian host made us a gift us this kind, which melts in the fire, but jumps in water* (Antig.*Mir.*167).'
[529] Cundy 2016, 91.

accounts include exotic places for effect rather than as places to be visited by its audience.[530] It is armchair paradoxography entertaining armchair readers, which aligns with what we are used to from specifically Callimachus' poetry, which indulges in the image of the armchair scholar.[531] No passage demonstrates this better than *Iamb* 6 in which Callimachus recommends his acquaintance to visit the copy of the Olympian Zeus statue in Cyrene rather than traveling all the way to Greece. In real life Callimachus spent most of his time in Cyrene and Alexandria.[532] Due to his limited travel horizon, Callimachus pursued his enquiries as best as he could in Alexandria. This emerges particularly from the *Aetia* episode about the Ician Guest (fr.178), where he staged the process of inquiry in a similar way to Herodotus but from his place of permanent residence. Callimachus' poetical persona interrogates the guest about information regarding his hometown similarly to how he turned to the Muses for information. Callimachus is best described as the static version of Herodotus' enquiring traveller. In Herodotus some characters feel compelled to ascertain for themselves the veracity of information,[533] while others are simply left in their astonishment and do not act on it (Xerxes in VII.208-9). The same principle, however, is impossible to verify for Callimachus' paradoxography where his persona completely recedes behind Antigonus' wording (if he even made any personal comments). As regards Callimachus' sources it is not further described how they have gathered their information considering that Callimachus compiled his information merely from their books, but at least at the start of a *paradoxon* stands the eyewitness who observes the marvel, which is then included as a note in a literary text before being excerpted by the paradoxographer or directly included by the paradoxographer in his collection, in case

[530] Bichler 2006, 244.
[531] See Hunter 1992, 116 for poetry as a journey drawing on fr.1.25-8, which references Pi.*P*.7b.10-14 + Theoc.*Id.*7.
[532] Callimachus probably spent the first years of his literary career in Cyrene depending on whether we can trust the information of the anonymous epigrammatist of *AP*.VII.42, where he is depicted as transported to Helicon in his dream ἐκ Λιβύης.
[533] Hunzinger 1995, 57-9.

it derives from his own experience as we have seen happening for Antigonus. This empirical process, however, is suppressed in our remaining paradoxographical fragments.

A later author combining aspects of travel, geography, and paradoxography was Pausanias who has generally been singled out for his Hellenistic organising principles.[534] Cundy and Jacquemin discussed the underlying paradoxographical principles of his *Descriptions of Greece*.[535] Although Pausanias was under no illusion about the realities of Roman Imperial rule, his approach is locally based and gives off the illusion of a mid-Hellenistic text. His method is selective, which is obvious from the phrase concluding the chapter on Arcadia: ἀξιολογώτατα, a word already familiar from paradoxography (VIII.54.8). Just as in our paradoxography, Pausanias does not seem to maintain a systematic arrangement of places within geographical categories as he does not follow a logical route, yet Pausanias was still a beneficiary of the scholarly practice of previous centuries. Chamoux believes it possible to detect formulations betraying Pausanias' consultation of systematic lists.[536] Pausanias' interest in city names, name changes, bodies of water, as well as fish are remarkably close to Callimachus' realms of interest. In contrast to earlier paradoxographers, he was less keen on quoting his sources and endeavoured to verify each of the wonders given to him by a written source with a personal visit: καὶ ὅσαις μὲν πηγαῖς θαῦμά τι ἦν καὶ ἰδόντι, τοσαύτας θεασάμενος οἶδα, τὰς γὰρ δὴ ἐλάσσονας θαύματος ἐπιστάμενος παρίημι.[537] Although a late outlier of the paradoxographical tradition, Pausanias comes closer to the autopsy idea of Ionian historiography than Callimachus' paradoxography.

[534] Cohen 2001; Jacquemin 1991.
[535] Cundy 2016.
[536] VI.12.9, cf. Chamoux 1974, 86. Also IV.35.10.
[537] Similarly, Mucianus implies travel for the purpose of verification, cf. Detlefsen 1909, 156-59.

b) Oral sources

What Callimachus lacks in the visuality of wonder, is present in its acoustic aspect. The focus on the acoustic rather than the visual process in Callimachus also emerges from his poetry. Pfeiffer in a speech to the Classical Association in 1941 whilst in the middle of preparing his two-volume edition of Callimachus' fragments claimed that 'his imagination was more musical than pictorial'. Bruss has carefully demonstrated that Callimachus is always keen to imply the oral nature of his sources,[538] which contrasts with the written context in which we normally assume the Alexandrian scholars to have operated. Of course, we should be prepared to have our preconceptions in this regard qualified, as in the remarkable study by Cameron who stressed the oral context of Callimachus' poetry.[539] Still, there is no denying that Callimachus' knowledge was based on books rather than oral sources no matter how convincingly he evokes this in his poetry.

Preoccupation with hearsay stands out in Antigonus' introduction to the Callimachus' section: 'ἀναγράφομεν ὅσα ποτὲ ἡμῖν ἐφαίνετο εἶναι ἀκοῆς ἄξια.'[540] Antigonus pits the written character of the paradoxographical lists on the one hand against the acoustic implication of the text on the other. It is impossible to deduce solely from the phrase ἀκοῆς ἄξια that the lists were read aloud. Herodotus deploys a similar phrase, λόγου ἄξια (next to θώματος ἄξια 3.113) focusing on the acoustic process in which these stories about wonders were passed on. Herodotus offered his text for public readings, but the paradoxographical lists as we have them today most likely did not lend themselves for public readings or even the symposiastic setting at that – unless its audience enjoyed being force-fed loosely organised and repetitive information. It does show, however, that Antigonus does not understand himself as completely focused on the written text. One could argue that he is focusing on the information rather than the shape of the paradoxographical items per se. We

[538] Bruss 2004.
[539] Cameron 1995.
[540] '*We wrote down as much as seemed to us at one point worthy of hearing* (Antig.*Mir*.129).'

should not take Antigonus' phrase as a fool-proof indication for how the wonders were consumed by Callimachus' readership. It could also be a form of a historiographical trope first encountered in Herodotus who expressed in the *Proem* his desire to preserve records lest they ἀκλεᾶ γένηται, but this we would be Antigonus' reception of Herodotus rather than that of Callimachus.

The *paradoxa* in Callimachus pretend to distil wonder from an oral background Ὃ δὴ καὶ περὶ τὴν Ἄορνίν τι δοκεῖ γίγνεσθαι καὶ κατίσχυκεν ἡ φήμη παρὰ τοῖς πλείστοις.[541] Here it is implied that this version of the story circulated orally before it was put into writing by Timaeus who thought it to be false. In general, the oral aspect emerges less from the subsequent performance aspect these *paradoxa* might have received, but rather from their circulation before being put into writing.

This rivalry between the written and oral background of paradoxography is due to its close relationship with historiography whose vocabulary it regularly deploys. Among Callimachus' *paradoxa* ἱστορεῖν is by far the most frequent verb, probably in the sense of 'to observe, record'. It is usually but not always employed when reporting a historiographer's version e.g., Τίμαιον δὲ τῶν ἐν Ἰταλίᾳ ποταμῶν ἱστορεῖν Κρᾶθιν ξανθίζειν τὰς τρίχας.[542] This verb is a place holder for 'to write' and aligns paradoxography with the historiographical process. Even in the language of the historiographer it is not always clear which kind of source he is relying on, and the scholarship on Herodotus had to learn –if somewhat uncomfortably – to live with this uncertainty. Paradoxography's use of the same indeterminate vocabulary leaves the topic similarly open to discussion – if we did not know better that Callimachus along with other paradoxographers deployed it to hide the fact that all his wonders derive from written sources.

[541]Antig.*Mir.*152. Translation above.
[542] Antig.*Mir.*134. It is used for Ctesias, Theopompus, Timaeus, Megasthenes, and Lycus with Eudoxus as the only non-historian.

A formulation that occurs repeatedly in both paradoxography and Herodotus, is 'as the x say' citing locals instead of literary texts as sources for particular phenomena. Although Fehling interpreted these as formal source-citations for Herodotus, Marincola and Erbse are not convinced that this can be claimed with absolute certainty.[543] It is a vague way of referring to a story circulating in a particular area and does not give any insights into whether Herodotus acquired this knowledge directly from a local or via a different source. Some scholars even suggested that Herodotus based his knowledge on books.[544] In the Callimachean part in Antigonus's paradoxography there are several allusions to oral sources also in the guise of local lore: Most of these are 'anonymous' quotations such as παραδεδόσθαι τοῖς Κρησίν that Europa washed herself after her union with Zeus in one of the local rivers (Antig.*Mir.*163). Another example is παρὰ τοῖς Κῷοις (ch.161). The fact that it is locals providing the information, bestows reliability on the information in the eye of the paradoxographer, but does not reveal how this information was exactly acquired – it could be local historiography or indeed direct oral communication. This is an ambiguity which Callimachus who valued all types of sources would have surely enjoyed.

c) No ethnography: humans only relevant in interaction with θαύματα

Above we discussed the role of humans as conveyors or knowledge, mainly as casual observers of wonders and as sources for information in early paradoxography. Here they never qualify as wonders themselves as they did in later paradoxography. Instead, they are important in reporting wonder and occasionally instrumental in bringing out the marvellous by coincidentally coming into contact with wonders e.g., by tasting lethal water (*Mir*.141). Additionally, in the context of paradoxography they are collectors of knowledge as θαύματα are treated as abstract neuter plurals, as collectibles and facts, which first need to be

[543] Marincola 1987, 126-32; Erbse 1992, 76n.6.
[544] Pearson 1941, 336 for bibliography.

acknowledged as such by the humans. In Homer the formula θαῦμα ἰδέσθαι was similarly exclusively applied to objects such as Achilles' shield (XVIII.462-7), a chariot (V.724-5), Rhesus' golden armour (X.439-40), and stressed their craftsmanship.[545] For Leigh agency is attributed to the humans occurring in Antigonus such as Odysseus who is described as ἐπιμελὴς καὶ πολυπράγμων for calming his dogs in the epic (Antig.*Mir.*24; *Od*.XIV.31), or to Homer when Antigonus quotes the *Homeric Hymn to Hermes* 51 in order to underline a *paradoxon* which describes the entrails of female sheep to be suitable for strings (in contrast to those of male sheep) (ch.7). Antigonus praises Homer as πολυπράγμονα πανταχοῦ καὶ περιττὸν ὄντα for his description of Hermes' lyre strung with sheep's guts. In both passages Antigonus extends praise to the intellectual skills of both his literary source and a fictional character, but these passages clearly carry Antigonus' rather than Callimachus' signature.

In Herodotus, humans are connected to different types of wonder not encountered in Callimachus' paradoxography. Herodotus' wonders were not yet as regulated in their nature as during Hellenistic times so that they assumed many forms. In his prologue Herodotus states outright that he is especially interested in the ἔργα of humans, which partly reflects the type of wonders he discusses. The largest cluster of wonders, about the gathering of spices in Arabia, emphasizes more the action and methods of the gathering than the spices themselves. Their extraction methods are bound up with the humans who extract them and therefore inhabit a double-function in exploring ethnographical peculiarities. Although Herodotus' interest here is more ethnographical than paradoxographical, he still uses paradoxographical signposting words.

Later paradoxographers such as Phlegon of Tralles departed from Callimachus' conception of the genre by almost exclusively focusing on fantastical creatures and humans with extraordinary abilities. While paradoxography treated some mythical creatures, monsters

[545] Cunningham 2007, 65-66.

never found their way into paradoxography. Teratology was found either in the works of Aristotle or the Hippocratic corpus.[546] Ancient authors mostly designated stories about monsters as μῦθοι.

There are two passages where Herodotus draws a sharper contrast between human and natural wonders. In I.93 Lydia is said to have no θώματα apart from the gold carried by the river Pactolus. Here Herodotus means natural wonders since he goes on to add that Lydia has one ἔργον, by far the greatest of them all, the tomb of Alyattes. The monument is therefore categorically distinct from the natural θώματα. The second is II.35.1 where Herodotus justifies his extended *logos* on Egypt because it has the most θωμάσια and because it contains ἔργα which are indescribable in comparison with other countries.[547] Herodotus' term ἔργον seems to describe Oriental and especially Egyptian (not Greek!) buildings[548] some of which fall into the category of θώματα. Buildings therefore form a category of phenomena which are on an equal footing to wonders, but different because they are the result of human achievement rather than a natural occurrence. While Herodotus distinguished the two terms, paradoxographers did not use ἔργα to describe buildings, but reverted to the false cognate of θαῦμα, θεάματα, so that the two categories later coalesced. This distinction was noticed by Callimachus and will become important later when we will reprise Callimachus' response to Herodotus' architectural wonders in chapter VII. Callimachus' *paradoxa* could pass for Herodotean natural wonders but for the source references. Herodotus' wonders concerning humans operate on a different plane often concerning buildings and tending towards the ethnographical where wonders are bound up in their cultural context.

[546] Lenfant 1999, 198-201.
[547] Immerwahr 1960, 265.
[548] Jane Lightfoot 2003, 179.

4.Exclusion of myth and the supernatural

After looking at the overlap between Herodotus' historiographical techniques and those of paradoxography, this section focuses on a small cluster of paradoxographical stories of mythographical character and explain their presence. They jar with the rest of Callimachus' *paradoxa.* Mythographical material has found its way into several paradoxographical lists.[549] Systematic literary paradoxography and mythography seem to have been equally popular in Hellenistic times. Considering Herodotus has proven so influential for Callimachus' conception of paradoxography, we will also briefly touch upon Herodotus' mythography. The creative innovations in the century before Callimachus on this field will equally inform this discussion.

Mythography similarly to aetiology explains why a place bears a certain name, or why a festival is celebrated, usually by referencing legendary figures or people who allegedly lived in a distant past. In this point it is diametrically opposed to paradoxography, which dispenses with explanations and mainly presents curious results usually set in a generic present. This strange contradiction in terms must be analysed especially with the *Aetia* in mind. Judging from the wealth of mythographical material Callimachus packs into his poem, he presumably compiled systematic lists of myths in order to keep track of the material just as he did with paradoxography.

Mythography resembles paradoxography in so far as it is equally hard to define as a genre. Brown attributes the rise of mythography to the genealogists of the 5th century (such as Hecataeus' *Genealogies*) and the local historians of the 4th and 5th century. It received a further boost from the scholars who collected the myths contained in epic and tragedy as in

[549] Higbie 2007, 238-43 discusses how the genres interrelate or differ. For her, mythography covers material one step further removed in time.

Heraclides Ponticus' Περὶ τῶν παρ' Εὐριπίδῃ καὶ Σοφοκλεῖ (μύθων).[550] Mythography intersected with other realms of ancient literary production such as local historiography or poetry. Especially from the 2nd century BC onwards mythography seems to have been associated with poetry[551] which led Bremmer to discuss the *Pride of Halicarnassus* as encompassing all these different facets in one text.[552] Considering that mythography can encompass a multitude of literary texts, one should approach its significance for paradoxography from a different angle by looking at how mythography operated in contrast to paradoxography. Here we are met with the problem that our physical evidence for mythography is very small and only extends to a few authors amongst which we find names as varied as Apollodorus' Βιβλιοθήκη, Antoninus Liberalis and Parthenius of Nicaea. Its popularity seems to have really taken off in Roman times, which might make for an interesting comparison with paradoxography which also took some time to reach the status of popular literature.[553] The terms μυθογράφος and μυθογραφία merely appear for the first time in the medieval Latin translation of the Pseudo-Aristotelian *On the Flooding of the Nile* and Strabo, respectively.[554] Mythography itself is a modern category relatively broad in scope in encompassing the plots of the Classical tragedian, as well as the Hellenistic collections of Eratosthenes or Parthenius.[555] Still, like paradoxography mythography tends to extensively cite its sources in detail and leave the authority of its information to literary authorities.[556]

One of the first scholars to separate paradoxography from mythography was Anton Westermann whose 1839 and 1843 editions divided paradoxography off from

[550] F180 Wehrli.
[551] Bremmer 2013, 57. Delattre 2013, 93 points to ancient authors like Diodorus and Strabo who paired mythography with poetry: D.S.I.23.8; III.62.2, 7; III.66.4; Str.I.2.8.
[551] Cf. *Schol*.A.R.III.1179.
[552] Bremmer 2013.
[553] Cameron 2004 is the authority on Greek mythography in Roman times.
[554] Palaeph.26.18. Str.I.2.35; VIII.3.9.
[555] Bremmer 2013, 55.
[556] Cameron 2004, 89-90.

mythographical texts in the second part, which encompassed both writers of mythical stories and those of poetic history.[557] There seems to have been room for confusion of mythography and paradoxography as Lysimachus probably wrote a Θηβαϊκὰ (παράδοξα) or συναγωγὴ Θηβαϊκῶν παραδόξων[558] usually considered a mythographic work despite its title suggesting otherwise.

a) Mythography in paradoxography

The issue is similarly complicated for Callimachus as an author who is predominantly a paradoxographer, yet still included a few mythographical notes. Because mythography was never a firmly established genre as such but highly variable, it was easily included with other genres. Hellenistic mythography exhibits a particular tendency for variation, especially in the case of Euphorion and Callimachus. The latter Brown even wants to see him as decisive for the development of later mythography.[559] Indeed, one gets the sense that the two genres collapse into each other shortly after Callimachus. Already Callimachus' pupils Philostephanus and Polemon were active in the paradoxographical as well as the mythographical field. It is questionable to what extent ancient authors would have really differentiated between paradoxographical and mythographical literature. Systematic lists of mythographical material probably existed in a similar vein to that of paradoxography, namely snippets of stories arranged in lists, ready to be turned into poetry.

It is also possible to find the reverse case where a handful of *paradoxa* are contained in a mythographical collection. This applies to the mythographer Conon, active in the Augustan period, whose Διηγήσεις are a collection of myths which include three paradoxographical

[557] Delattre 2013, 93 modified by Pajón Leyra 2011; the European *Polymnia* project (http://polymnia.recherche.univ-lille3.fr/); all this in Delattre 2018, 207.
[558] *Schol*.A.R.III.1179.
[559] Brown 2002, 15 should be read with Jane Lightfoot 2005: Conon who preserves more Callimachean material than Parthenius, should be contemplated in combination with the latter.

stories and has a similarly large geographical range to Callimachus' collection.[560] Conon is largely transmitted through the Byzantine context from which most of Ctesias' extant fragments have emerged as well, as Photius included Conon's list of fifty stories in his Βιβλιοθήκη (cod.186).[561] Most later Byzantine manuscripts did not firmly distinguish between paradoxography and mythography, which is why they often appear alongside each other. I want to demonstrate, however, a few crucial differences, which will make clear that these later sensationalist texts play in a different league. There are some formal aspects, which fundamentally divide them. Later *paradoxa* reach the length of short stories, which is comparatively rare in paradoxography (apart from Apollonius and Phlegon). It is probably no coincidence that these texts increase in length from the 1st and 2nd century AD and depart into ever more fantastical areas exactly at the time when the Roman and Greek novels increased in popularity.

Strabo two centuries after Callimachus distinguished between mythological subject matter, which described and invented things, and paradoxography, which sounded incredible but was true.[562] With this distinction in mind, he criticised Herodotus and Ctesias for allowing marvellous (and untrue) stories to invade their histories even though history should steer clear of mythological material. Strabo, however, allows paradoxography for the sake of variation. Similarly, when Aristotle doubts the veracity of Herodotus' information, he calls him Ἡρόδοτος ὁ μυθολόγος.[563] Wherever mythological stories are included in paradoxography, the paradoxographers show at least some awareness that mythographical stories face even more problems of credibility than *paradoxa*. In pseudo-Aristotle the stories

[560] Standard edition: Brown 2002.
[561] Next to forty-two lines containing two stories on papyrus fragments from the 2nd century AD, cf. Brown 2002, 1.
[562] Malinowski 2001.
[563] Arist.*GA*.756b6; cf. *HA*.579b2; Partsch 1909, 561. Aristotle did not reject mythological plots per se but appreciated consistency within a pre-set frame provided it was κατὰ τὸ εἰκὸς ἢ τὸ ἀναγκαῖον (Arist.*Po.*1460a26-7).

involving Diomedes (79), Heracles (100), Jason (105), or Philoctetes (107) are introduced by the verb μυθολογοῦσιν, whereas the paradoxographical sections on natural wonders are simply introduced by φασίν.[564] Here the compiler of the collection shows an internal awareness of the alien nature of these mythological sections, but this is not the case in Antigonus or Callimachus where mythographical sections have no dedicated introductory verb. Indeed, the only time that a cognate of μυθολογεῖν occurs, is in the *Aetia*'s Xenomedes passage. Where Callimachus' paradoxography relies on mythological material, it completely transforms its nature. At the end of the process, these mythographical stories are unrecognisably changed. The paradoxographical treatment preserved the locality but dropped the mythological component by condensing the story into a few lines. As a result, we end up with a paradoxographical episode with reduced mythographical content. An example is the Arethusa fountain whose myth was famously told in Pindar's 1st Nemean, where the river Alpheus fell in love with the nymph Arethusa and chased her under the sea to the island Ortygia, where her fountain is now located. This whole mythological background is suppressed in the *paradoxon* on the fountain (ch.140), which emphasises merely the underground connection and the literary sources albeit including Pindar.

b) Two isolated mythological notes

There might just be a possibility that the selection as occurring in Antigonus' text comes from a diverse set of Callimachus' works and that mythography has infiltrated his collection. At least two *paradoxa* sound very mythographical. They concern the dedications by Heracles in chapters 131 and 163, which tells the story current among Cretans about a local river where Europa washed herself after sleeping with Zeus. Neither story is ascribed to a literary source, but only local knowledge, which itself is rare in the paradoxographical collection. A

[564] Kazantzidis 2018a, 33.

natural conclusion to draw is that these texts do not derive from Callimachus' original paradoxographical collection, but maybe a book on rivers or a separate mythographical collection.

Whereas the *Aetia* and the *Hymns* forge connections to the Greek past, the *paradoxa* are set in a generic present. Even if the statement made by a literary source must be over 200 years old, the *paradoxon* is still assumed to be true. This is more easily understandable in the case of natural phenomena, which if at all are not subject to immediate, but only very gradual, almost imperceptible change. This runs counter to the way rivers are envisioned in the *Hymn to Zeus* as springing up in Arcadia. The poet can imagine times in which Arcadia existed both without and with rivers. The few *mirabilia* of a mythological nature are the only ones that can envision two periods in time –the first time when the gods performed their action on earth and then the *paradoxon* visible today. Fr.163 explains a process or *aetion* by connecting the mythical past with the present natural phenomenon:

> Καὶ περὶ τοῦ κατὰ τὴν Κρήτην ὑδατίου, οὗ οἱ ὑπερκαθίζοντες, ὅταν ὑετὸς ᾖ, διατελοῦσιν ἄβροχοι: παραδεδόσθαι δὲ τοῖς Κρησὶν ἀπ᾽ ἐκείνου λούσασθαι τὴν Εὐρώπην ἀπὸ τῆς τοῦ Διὸς μίξεως.[565]

Indeed, the story in fr.131 about the statues dedicated by Heracles[566] resembles the way the Argonauts leave dedications in the landscape[567] and the several manifestations of Heracles' presence in the landscape.[568] Apollonius similarly connects the past to the present through features in the landscape. This further shows how unusual the mythographical items are.

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[565] '*Further, about the rivulet in Crete, where they sit when there is rain, they continue to be dry*: *it is handed down among the Cretans that Europa was washed by it after her intercourse with Zeus.'*
[566] Cf.*Aud.*58.
[567] A.R.II.718.
[568] The Tritonian Lake was created by Heracles stomping the ground: A.R.IV.1432-49.

c) Mythography's connection with the divine

It has been suggested that paradoxography was associated with the realm of the religious,[569] but it is important to stress that this is a later development and not one that was common in the 3rd century BC, as described by Nilsson:

> 'à la place de l'exploration sérieuse et scientifique du début de l'époque hellénistique s'introduisit la tendance de déceler dans l'ensemble de la nature organique et inorganique les forces mystérieuses et merveilleuses des éléments naturels, leurs propriétés occultes, et les sympathies et antipathies qui en résultent, et de les mettre en lumière. Les hommes, les animaux, les plantes, les pierres furent considérés comme porteurs de forces mystérieuses capables de guérir les maladies et les souffrances et d'apporter aux hommes la richesse, le bonheur, les honneurs et des facultés merveilleuses.'[570]

Within paradoxography paranormal phenomena are never ascribed to divine causes, also because paradoxography eschewed explanations. Sites with unusual natural phenomena were normally intuitively taken as places with an increased divine presence – take for example, the exhalations near the Apollon sanctuary at Delphi which allegedly inspired the Pythia to make her predictions. These places therefore received either an oracle or a ritual that related to the individual phenomenon. Yet this has not made an impact on paradoxography. The context in which *paradoxa* occur is one of nature devoid of human or divine influence. According to Giannini:

> 'L'avvertimento di una presenza divina, mai del tutto lontano al fondo di ogni interesse paradossografico nell' ambito dei fenomeni della natura, si accentua e si complica o balza in evidenza con il parallelo offuscarsi e attutirsi dei meri interessi scientifici che erano alla base della primitiva e più genuina ricerca peripatetica.'[571]

To compare this with Herodotus, his explanations are taken from a wide methodological range, which also includes supernatural interference.[572] In these cases Herodotus adapts the terminology to τέρας (occurring twenty-one times in the *Histories*) and φάσμα (ten times), only occasionally calling them θῶμα (IV.28, VIII.37). Here the divine represents in

[569] Cundy 2016, 5.
[570] Nilsson 1955, 122-23.
[571] Giannini 1963, 261-62.
[572] Hunzinger 1995, 49-50.

Hunzinger's conception of wonder 'la perception d'un écart avec l'ordinaire', which demonstrates how divine interaction becomes a last resort explanation to the inexplicable, a method not too far removed from Homer's 'double-motivation'.[573] Callimachus readily admits gaps between wonder and ordinary everyday experience but is no longer content to accept supernatural explanations to fill them. In the *Acontius and Cydippe* story he disproves the divine element of the *Sacred Disease* and rejects it in favour of a better explanation.[574] Callimachus' approach to the divine is highly ironic when he portrays them with human properties in the *Hymn*.[575] Still, Callimachus stays open to the common conception of nature as inhabited by the gods; chapter 144 is a *paradoxon* about the properties of water even if the springs happen to bear the name of Ammon/Zeus. Here the gods retain a place in the landscape but solely as nomenclature.

d) Myth & Aetiology

Mythological stories found their way into paradoxographical collections which stopped distinguishing between the natural and the mythological sphere. Part of the reason for this was that the Greeks conceived of the landscape as animated and beset with mythographical stories. Callimachus does not shy away from situating the gods in a poetical narrative which explains the presence of a particular phenomenon in the landscape. One can imagine that in his Περὶ νυμφῶν the gods or supernatural beings with their manifestations would have been listed, but his paradoxography eschews discussion of divine features. The emphasis here is on the unchangeable nature of the *paradoxa*, which contrasts with the Ancient Greek conception of the term μῦθος as describing a story i.e., a narrated story with a start and an

[573] Harrison 2000, 102-21 says that Herodotus represents animals as avenging the death of their relatives on the model of divine retribution.
[574] Lang 2009; Kazantzidis 2014.
[575] Bulloch 1984 conceived of Callimachus as pinpointing inconsistencies in the Greek belief system.

end point. This aligns mythography at times closely with aetiology.[576] Yet because the Greek landscape was full of stories of divine metamorphoses, it was difficult to separate aetiology completely from paradoxography. Delattre, for example, sees a close connection between aetiology, antiquarianism, and paradoxography: 'L'étiologue se fait antiquaire, les faits qu'il collecte se transforment en cabinet de curiosités, et l'étiologie devient l'instrument par excellence de la paradoxographie.'[577]

Callimachus' *Aetia* is full of myths and aetiology, setting up a continuum across time and space to bridge the start and endpoint of his narratives.[578] Sistakou has noted that wherever Callimachus copies the use of *aetia* from pre-Hellenistic times, he comes closest to Herodotus.[579] Both Herodotus and Callimachus' poetry pair their expression of wonder with a curiosity about the origin of strange phenomena. Herodotus, for example, uses it when explaining natural phenomena and thus contexts which are normally the settings for his *paradoxa*. For example, Herodotus wonders at the reason why during Xerxes' march to Therme, lions only attacked the camels loaded with provisions, whereas humans were left unharmed: θωμάζω δὲ τὸ αἴτιον, ὅ τι κοτὲ ἦν τῶν ἄλλων τὸ ἀναγκάζον ἀπεχομένους τοὺς λέοντας τῇσι καμήλοισι ἐπιτίθεσθαι, τὸ μήτε πρότερον ὀπώπεσαν θηρίον μήτ᾽ἐπεπειράατο αὐτοῦ.[580]

The plethora of *aetia* in his poetry contrasts with the simple stating of marvellous facts devoid of any explanations as found in Antigonus' reception of Callimachus. The *raison d'être* of paradoxography completely undermines any explanatory function: it focuses on the astonishing result of a historical development and leaves out the explanation.[581] Yet in

[576] Delattre 2009 for a systematic survey of the basic aetiological concerns.
[577] Delattre 2009, 290.
[578] Hutchinson 2008, 59: the *Aetia* 'covers the Greek world, so it also covers the whole of human time' *pace* Harder 2010, 97, who thinks Callimachus' 'aetiological history as discontinuous as possible.'
[579] Sistakou 2009, 180n.15.
[580] '*I wonder at the reason of what forced the lions to attack nothing but the camels, a beast which they had not seen or experienced before* (Hdt.VII.125).' Cf.III.12, III108: τὸ δὲ αἴτιον τούτου τόδε ἐστί…
[581] Jacob 1983, 121-40 calls this process 'cutting out', whereas Schepens/Delcroix 1996, 390-94 think of it as 'extraction'.

Callimachus' paradoxography aetiological explanations do occur. The herons of Diomedes on the island Diomedia according to Lycus of Rhegium can distinguish between barbarians and Greeks (Antig.*Mir.*172). These birds are said to have metamorphosed out of the hero's companions. The question as always with Antigonus' texts is whether the material was sorted as paradoxography by Callimachus or was only later included by Antigonus or even an earlier paradoxographer into Callimachus' ἐκλογή. Lycus of Rhegium was used as a source in another more straightforward *paradoxon* (ch.139) - this time in a perfectly natural setting-, which is why we should assume also the former as having been included by Callimachus himself. Can this be a result of unclear categorisation on Callimachus' side? For all the ambitious work Callimachus undertook, even he was prone to making mistakes in his cataloguisation efforts and we cannot rule out that he might have made some mistakes along the way.[582] It is also possible that the reason here lies with Antigonus rather than Callimachus, if Antigonus drew these mythographical stories from the ἐκλογή of Callimachus and if this included an aetiological section or mixed aetiologies with *paradoxa*. There is a third option: Both aetiological and mythographical hints remain in a few passages, which shows how these items were developed, namely by shortening and condensing the original story which seems to have been done to varying degrees. The result was probably still a *paradoxon* even if it preserves some of the traces of its original aetiological/mythographical form. Far from confusing the categories of aetiology, mythography, and paradoxography, Callimachus demonstrated how a story could offer the potential to be used in different ways: as a *paradoxon* by leaving out the explanation and emphasizing the singular nature, or, for example, as an *aetion* with a clearly defined start and endpoint. What matters in the story about Diomedes' herons is still the result of the transformation which causes their curious linguistic abilities. The explanation of their

[582] Dover 1968, 20-26 for the wrong classification of Lysias' speeches.

legendary transformation seems to be a leftover of the original story and could easily be omitted. Callimachus' aetiological and mythographical stories therefore equalled paradoxography as extracts from their original context and their flexible deployment in new contexts. At the same time, he exploits the tension between scientific form and mythical subject matter.[583] His interests lay too much in the cultural contexts in order to commit to strict scientific standards. Aetiology is so prominent in Callimachus' poetry because it was repeated throughout contemporary science and historiography rather than reflecting Callimachus' desire to explain connections. The presence of *aetia* in his paradoxography is therefore coincidental.

e) Rejection of rationalising mythography

Greek mythography persisted and flourished throughout ancient Greece. Even when people were actively seeking scientific and historical solutions to problems, myths were not entirely abandoned and existed alongside more 'rational' explanations. Myths continued to shape the Hellenistic present and were extensively deployed by the Ptolemaic kings who tried to prove their descent from the Argead lineage and thus from Heracles. Ptolemy Soter promulgated rumours of his birth as an illegitimate son of Philip of Macedon and therefore half-brother of Alexander. Callimachus' engagement with mythology was not a matter of the past, but mythological material stands alongside historical footnotes and allusions to scientific innovations. Scholars and literati systematically collected and ordered myths. Taken together the reader could now spot some underlying patterns or repetitions, which helped to make sense of these originally isolated myths. The way myths were placed alongside each other in long lists and plain prose for different purposes is highly reminiscent of paradoxography.

[583] Sistakou 2009.

Paradoxography has a close relationship with a category of texts which tried to explain myths in rationalising fashion. Its subject matter concerns mythical stories which are rationalised as misunderstandings whether in cultural or in etymological terms.[584] It influenced particular the paradoxographers of the 1st and 2nd century AD who departed from the earlier conventions of paradoxography. Heraclitus the Paradoxographer, for example, who probably should be called 'the Mythographer' instead,[585] interprets each of his listed thirty-nine items through rationalistic, euhemeristic, allegorical, or etymological explanations in his Περὶ Ἀπίστων. Yet the text of the same name by the 4th century BC writer Palaephatus is a remarkably similar Hellenistic predecessor to Heraclitus with both investing considerable effort into finding rational explanations for myths which become objectified items. The explanation of wonder, of course, is undesirable for paradoxographers and damages the overall effect it has on its potential audience. The following pages will demonstrate how Callimachus explicitly rejects this rationalisation of mythical stories common in the 4th century which throws his paradoxography into sharper relief.

The mythographers of the century preceding Callimachus such as Euhemerus, Palaephatus, and Dionysius Scytobrachion were all part of the common project to provide rational explanations of myths.[586] The rationalising branch of mythography is the most interesting variety of this ubiquitous Greek habit, because it plays with fundamental questions of truth versus falsehood which also occupy us in paradoxography. Rationalising approaches such as those of Palaephatus saw a need to correct versions of myths which they deemed implausible. These stories were historicised i.e., a mythological story was explained as a distorted or ritualised version of a historical process. Therefore, a story seemingly untrue was brought in line with historical truth. This is slightly different to paradoxography where

[584] Stern 1999.
[585] Stern 2003, 51.
[586] Rusten 1982 on Dionysius Scytobrachion.

the exercise consists more of emphasising that something has been true all along, starting from its occurrence in the source to its pared down version as a paradoxographical note. Of course, items are also manipulated in order to sound 'truer' than before by adding geographical locations or emphasising their source origin. Our study will benefit from a comparison with Palaephatus' Περὶ ἀπίστων and Euhemerism. Although both were figures of the 4th century and therefore certainly familiar to Callimachus, only Euhemerus is named directly in Callimachus' extant poetry. Palaephatus will be our main point of comparison for Callimachus' approach to myths, both in his poetry and their delineation from paradoxography.

Because Callimachus engaged with the mythography of the Greek world on a deeper level he could not avoid the counter-mythographical approach of Euhemerus, who had tried to explain the belief in Greek gods with a historicising approach, i.e. he tried to explain why Greeks believed in a certain god by describing how they rose to prominence out of a primitive hero cult.[587] At the same time he did not shy away from giving his 'history' an exotic setting in the island of Panchaea. Callimachus' attitude towards Euhemerus and rationalism is best revealed through his poetry, which in this case informs the paradoxography. Euhemerus features in the dispute between Alexandrian scholars taking place in front of the Serapeum in the first Iambus. [588]

ἐς τὸ πρὸ τείχευς ἰρὸν ἁλέες δεῦτε,
οὗ τὸν πάλαι Πάγχαιον ὁ πλάσας Ζᾶνα
γέρων λαλάζων ἄδικα βιβλία ψήχει.[589]

[587] Most of what remains of Euhemerus comes from Diodorus (V.41-46) and the fragments of Ennius' translation of Euhemerus.
[588] Pfeiffer 1953, xxxix-xl stresses that this is the only attestation connecting Euhemerus with Alexandria.
[589] '*Come hither to the shrine in front of the walls, where the old man who invented the ancient Panchaean Zeus, chirps and scribbles his impious books.'*

Callimachus characterises Euhemerus as a demented old man who wrote ἄδικα βιβλία. Impiety is the charge levelled against the older 'historian' as Callimachus by contrast does not trifle with the gods, which are presented with human traits but ultimately as all-powerful gods. Instead of rationalising the gods away, Callimachus insists on the value of telling any kind of story– provided they are attested in literature. For Callimachus a story is not any less true if it involves the gods than if it revolved around natural phenomena. Callimachus here reacts against the devaluation of sources which invoked gods as one of its explanations.
Here Callimachus rejects the demythologising and strict approach of Euhemerus. Yet the latter captured a shift in Greek literature taking place in the 4th century which was moving towards demythologising the Greek past.[590] From what we can see directly in Euhemerus' work, he seems to have been mainly trying to explain the human origin of gods, which is a fundamentally different approach to Callimachus.

Palaephatus' Περὶ ἀπίστων originally consisted of five books, which were epitomised into one book in the 9th or 10th century. It is an unexpectedly useful comparative text written in the same plain prose style as paradoxography. For this reason, both categories of texts were held in low esteem by literary scholarship. Palaephatus' identity is not fully determined (he was either born in Egypt or near the Hellespont), but he most likely wrote within the Peripatetic context. Stern in his edition of the Περὶ ἀπίστων says: 'I shall be accepting the Aristotelian date which is indicated in the *Suda.* Although it can hardly be called certain, there is, it seems to me, no persuasive evidence to the contrary.'[591] Palaephatus' analysis of common myths and the way he debunks them to suggest his own theory for how they arose, owes a lot to Aristotle's evaluations of truth and falsehood.[592] This fact will be important for our conclusions about the Peripatetic facts of Callimachus' paradoxography.

[590] Brown 1946, 264-66. Other prominent exponents are Hecataeus of Abdera, Leon of Pella, and Megasthenes.
[591] Stern 1996, 4.
[592] Trachsel 2005.

After a preface with distinctly philosophical notes, Palaephatus lists forty-five short stories of myths usually concerning extraordinary humans or monsters rather than gods.[593] He is sometimes taken to be a Euhemerist, but his approach and choice of topics differ.[594] Palaephatus, even though never mentioned in Callimachus, is more important for us than Euhemerus. We preserve a relatively complete text from Palaephatus showing that he approached his systematic catalogue relatively coherently. Having composed a good fifty years before Callimachus and in prose, Palaephatus can provide some valuable insights into Callimachus' paradoxographical approach.

Palaephatus did not create a new vision of myth but manifests the changes that have occurred over the 4th century.[595] His approach aims not at undermining belief in the gods. Instead, his intention is to bestow these stories of heroes of the Greek past with more credibility by fitting them into a framework compatible with his own world. Thus, these differences are explained as misunderstandings between past generations and the current cultural expectations – he effectively acknowledges anthropological evolvement, all while insisting that the laws of nature are unchangeable.

The greatest difference between Palaephatus' rationalising approach and paradoxography lies in the subsequent treatment of the initial wonder. Whereas for paradoxography wonder is the ultimate foundation, Palaephatus' likes to take wonder as an excuse for ridicule both for the way people marvel instead of seeing the obvious flaws in such accounts as well as the unbelievable stories themselves.[596] Additionally, where Palaephatus likes to solve a problem and explain away the problem, Callimachus in his paradoxography dwells on the unusual character of a *paradoxon* and removes any explanations. In order to make the myths sound true Palaephatus removes them from their original location, for example, by relocating

[593] Festa's 1902 edition contains seven further stories, but these are interpolations and differ stylistically.
[594] Geffcken 1912, 573; Osmun 1956, 136.
[595] Hawes 2014, 39.
[596] Hawes 2014, 58-9.

the garden of the Hesperides to Miletus in order to make the story more palatable and less exotic.[597] Paradoxography, however, had no problem with exotic locations of wonders and merely abridged the story.

Later mythography likewise maintained a close relationship with paradoxographical material, as is the case for the Καινὴ ἱστορία by Ptolemaeus Chennos who wrote probably at the end of the 1st or beginning of the 2nd century AD for the emperors Trajan and Hadrian. His collection, which is only extant in Photius' summary, is a whimsical mix of mythological anecdotes with two passages based on Callimachus. The first (147b37-148a) about the tomb of Zeus or Cronos seems to refer back to Callimachus' first *Hymn* (8ff.), but is ultimately taken from the version of an author different from Callimachus.[598] 148a10-14 echoes Callimachus' *paradoxon* about Hyllus, son of Heracles, whose horn, which had grown on his head, was removed after a duel by Epopeus of Sicyon who carried the water of Styx with it (fr.413).[599] Of these two stories one belongs to Callimachus' paradoxography, the other to his non-paradoxographical *Hymns.* Chennos probably did not even excerpt Callimachus in the original, but this little digression goes to show how later mythography absorbed paradoxography along with much other material. What connects both Chennos and Callimachus is their interest in unusual versions of the same myth.

The existence of the rationalisers has in part helped to shape Callimachus' paradoxography especially in the aspects it rejects – such as the rational explanation of gods. Gods may be included in paradoxography but are a mere incidental presence. Rationalisers meet their

[597] Hawes 2014, 144.
[598] Tomberg 1967, 174: Ptolemy's version neither corresponds fully to the local story nor to a Euhemerist idea but might be behind what Callimachus was expressing.
[599] Tomberg 1967, 174-5: the ultimate source is probably the Κορινθιακά of Eumelus of Corinth, but the story was popular in antiquity, even if not in this version. Antig.*Mir.*158's version comes from Theophrastus via Callimachus.

material with suspicion in order to make it truthlike in contrast to the paradoxographers who put faith in their sources. Where rationalisers assume a pristine usually historical origin and the convoluted version of the present, paradoxography is restricted to the present.

f) Mythical paradoxography in Hellenistic poetry

Considering how interested Alexandrian scholars were in mythography, it is not hard to find plenty of allusions to it, yet its combination with wonder is rare. Guichard characterises both Posidippus and Apollonius as repeatedly mingling myth with paradoxography, yet the combination is rare for Callimachus. Direct references to wonder are sparse anyway in his poetry, which is why it is not surprising that he fails to integrate wonder into mythology at several prominent places. One such omission occurs in the *Hymn on Zeus* in which Callimachus redefines the centre of the world as having moved from Delphi to Crete. The *omphalos* in its physical shape as a polished white stone in Delphi was described by Callimachus' close model Hesiod in his *Theogony* 497-500 as a θαῦμα θνητοῖσι βροτοῖσι. Callimachus mentions the *omphalos* but chooses not to connect it to wonder. Of course, Callimachus was at pains to argue that the centre of the world had shifted away from Delphi towards Alexandria, but perhaps it is also because he deliberately stays away from connecting the divine with wonder.

Mythography is more important to Callimachus' contemporary Apollonius of Rhodes, whose Ἀργοναυτικά is pervaded by mythological accounts. He combines these myths with thaumatographical language. Guichard has analysed broadly three groups of wonders found in Apollonius' mini epic, which are a) wonders coming from the mythical tradition, b) monsters, and c) wonders brought about by gods.[600] The last is particularly often introduced

[600] Guichard 2012.

by τέρας and is usually a feature in Apollonius' landscape as a result of the Argonauts' journey or the gods. One such τέρας is Jason's spring in a completely dry landscape, which references both the *Iliad* (XIV.436-51) and Hesiod (*Op*.116-19; *Theog*.194-5). While monsters and divine wonders are not commonly found in Callimachus' paradoxography, the stories about Europa and Heracles fit Guichard's category of wonders with literary mythographic precedent. Apollonius frames his wonders in Homeric language by resorting to formulae like μέγα θαῦμα ἰδέσθαι or adjectives like ὑπέρβιος or περιώσιος. Contemporary paradoxography rarely looked to Homer (with Callimachus' θάμβος in fr.43 as a notable exception). Apollonius asks a lot of his readers in showcasing a great range of information of mythographical, scientific, and poetical nature about the Argonauts. He constantly challenges his audience to ascertain what is fact and what is fiction, especially when he implies to be inventing information, for which paradoxography was an additional outlet.[601]

[601] Goldhill 1991, 329.

V. Peripatetic reflections in Callimachean writing on wonder

In the previous chapters we have seen that the Callimachean *paradoxa* located in the Western Mediterranean not only dominate the other wonders in geographical terms, but also derive mainly from the Peripatetic works of Aristotle and Theophrastus. This suggests a closer connection between Callimachus and the Athenian school of thought. Indeed, the Peripatetics did not merely function as sources for Callimachus to excerpt from but have their fingerprints all over our texts and sources:[602] A few voices have identified paradoxography as a partly Peripatetic practice,[603] and Pseudo-Aristotle's Περὶ θαυμασίων ἀκουσμάτων proves that the Peripatetic School composed collections of strange phenomena. As we will go on to see in this chapter, paradoxography likely formed part of a larger Peripatetic effort at recording all knowledge in an encyclopaedic fashion without being of any excessive importance to the Peripatetic school itself.[604] Other Peripatetic interests, which often even overlap in title with Callimachean works, include the Διδασκαλίαι, Νόμιμα Βαρβαρικά*,* Πολιτεῖαι, Προβλήματα, Ἀδύνατα, and Ὑπομνήματα. There is also some similarity with Peripatetic historiography. We will conduct a brief survey of these to demonstrate that paradoxography is just one of several Peripatetic interests pursued by Callimachus.

The discussion of Peripatetic influence on Callimachus in the second half of the 20th century was dominated by Callimachus' apparent rejection of Aristotle's poetic concepts and particularly the Peripatetic Praxiphanes as evidenced by the title Πρὸς Πραξιφάνην. This reduced the number of ways scholars were willing to look for Peripatetic influences on Callimachus' writing. In this chapter we will put Callimachus' assumed negative views

602 Dihle 1961, 233 argues one should generally not underestimate the Peripatetic influence.
603 Fraser 1972, I.770-72; Giannini 1963, 258-62.
604 Vegetti 1992 for Aristotelian encyclopaedism in general.

towards Aristotle and the Peripatetic methods to the test and engage with more recent views which consider a more profound Peripatetic impact on Hellenistic scholarship and consequently on paradoxography.

It would detract from Callimachus' brilliance to assume that his poetic conceptions merely represent a negative reaction to Aristotle. Indeed, there are some parts of Aristotle's literary theories which Callimachus would have endorsed. The library of Alexandria seems to have been sufficiently well-stocked and guaranteed access to most of Aristotle's key works. Following the Peripatetic tendency to classify and systematise knowledge on a large scale, Callimachus' paradoxography should be contextualised as being one of many Peripatetic interests which caught Callimachus' attention, which included lists of topics as varied as dramatic contests, Olympic victories, problems, proverbs, and *adynata*.

While Callimachus borrows both large swathes of material and methodology from Aristotle and the Peripatetics for his paradoxography, his idiosyncratic conception of wonder blends this material with a Herodotean receptiveness for wonder. Rather than subscribing to Aristotle's elaborate philosophical conceptions of wonder and knowledge, Callimachus is inspired by Aristotle to react against him and to re-enchant a world which had become increasingly well-explored and explained.[605] Callimachus' relationship with Aristotelian wonder is a highly complex one and it will be explored in this chapter to determine what role paradoxography plays in Callimachean engagement with Peripatetic thought material.

[605] Aristotle.*PA*.645a15-36 avoids wonder in anatomical and biological systems. Zanker 1987, 118 considered the paradoxographers' endeavours as 'a perversion of Aristotelian scientific inquiry', while Priestley 2014, 87 explains them as trying to escape the rationalistic disenchantment of the world. Neer 2010, 68 observes the disenchantment of the 2nd century tourist as represented by Pausanias who has reduced Archaic wonder to a mere formality.

1. Peripatetic influence on Hellenistic scholarship

Several scholars along with Pfeiffer perceived an intellectual gap between Aristotle and the Alexandrian tradition, which had shaped the discussion around the library's intellectual independence.[606] Recently, however, voices like Dorothea Hadjimichael have questioned this assumption and have stressed the continuation of the Peripatetic spirit into Hellenistic Alexandria.[607] It is important to stress that Pfeiffer became increasingly receptive to the idea of Peripatetic influence. A re-evaluation of paradoxography in this context is in order since it has so far only been approached to a limited degree. We will start our discussion with the first tangible Peripatetic influence on the library which started well before Callimachus. Aristotle's ideas came to Alexandria through his pupils as the Ptolemies were actively seeking out experts to enhance their new cultural institutions.

a) Peripatetics in Alexandria

At the beginning of the Alexandrian library stands Demetrius of Phalerum who represents the first strong link back to Aristotle's school.[608] A former student of Theophrastus, he brought large numbers of Greek texts to the library of Alexandria when exiled from Athens. As an adviser to Ptolemy Soter, he would have surely made a personal impression on the newly founded institution and would have advised to continue the systematic cataloguing of knowledge practised by the Peripatetic school.[609] Demetrius' influence is tangible in the work of Hellenistic poets: Callimachus seems to have used his collection of fables,[610] with

[606] Garrod 1946, 16 adopted by Pfeiffer 1968, 88n.2.
[607] Hadjimichael 2019, ch.4.
[608] For Demetrius influencing the structure of the Museum cf. Bayer 1942, 97-108. Pfeiffer 1968, 99-104. Demetrius arrived under Ptolemy I not II as claimed by Susemihl 1891, 6-9, 138 + de Vleeschauwer 1963, 58-62. Schütrumpf 2006 doubts Demetrius' influence on the library.
[609] Even if his exact role in the library is disputed, Pfeiffer 1968, 99-104 + Fraser 1972, I.114, 314-5, 689-90 assume his influence on the library.
[610] Adrados 1999, 410-96.

Scodel suggesting that the story of the swan and the fox in *Iambus* 2 (fr.192.8-9) derived from Demetrius' collection.[611] Likewise, the treatment of the *Seven Sages* in *Iambus* 1 probably already occurred in Demetrius.[612] Romano wants to see both Demetrius' *On Old Age* and *On Dreams* as models for Callimachus' *Aetia* prologue.[613]

The second Peripatetic directly present at court is represented by the philosopher Strato of Lampsacus (355-269 BC), who was engaged as teacher to Ptolemy Philadelphus (together with Philetas and Zenodotus) and later became the head of the Peripatetic school in Athens.[614] He shared the paradoxographical interest in animals and brought personal copies of Aristotle's works to Alexandria.

b) Museum structure resembled Lyceum

The reason why Demetrius and Strato came to Alexandria in the first place was that Ptolemy sought to establish a new Athens on the Nile and provided refuge as well as patronage to anyone who came. Athens frequently served as the location for Ptolemaic benefactions. The Ptolemies intended to set up a new intellectual centre to rival Athens, an approach repeated later by the Attalids in Pergamon. The institution of the Museum with its attached library was directly modelled on the Lyceum in Athens.[615] It must be assumed that the Museum tried to recreate at least some of the Peripatetic spirit.[616] The Lyceum operated like a university but was connected with the temple of Apollo Lyceus.[617] Both institutions possessed amenities like cloisters, gardens, common meals, and a shrine to the Muses, which

[611] Scodel 2011, 372; Acosta-Hughes 2002, 173; Matelli 2000, 433-38.
[612] Stob.I.1.172.
[613] D.L.V.81; Del Corno 1969, 138 doubts *On Dreams*' authenticity.
[614] D.L.V.58.
[615] Fraser 1972, I.312ff. Str.XVII.1.8 for an ancient description of the Museum.
[616] Lynch 1972 doubts the parallel. One important difference is that the Peripatetic school was self-sufficient, while the Museum was a state-sponsored institution. He does concede that scholarship from the 3rd century BC emigrated increasingly to Alexandria from Athens due to the scale and financial support of scholarship there (p.155).
[617] Economides 1972 for its precise location.

gave its name to the Museum.[618] The Lyceum's intellectual strong points were biology and history, but its interest in the world should really be classified as all-encompassing.

Aristotle himself was of significance to the Ptolemies due to his famous pupil Alexander, to whom they tried to establish a dynastic connection via Ptolemy Soter, presented as Philip II's illegitimate son by Ptolemaic propaganda.[619] Strabo is usually the starting point for most theories about the connections between the Lyceum and Alexandria because he said: 'Aristotle was the first known person to make a book-collection and the taught the kings of Egypt how to organise a library.'[620] This statement can be taken as metaphorical at best. Aristotle, of course, preceded the Ptolemaic dynasty and never visited Egypt. Pfeiffer and Fraser have interpreted it to mean that the presence of part of Aristotle's own library made a tangible impact on the organisation of the Alexandrian library[621] or Strabo simply refers to the Aristotelian spirit that was adopted by the Alexandrians.

c) Influence on Callimachus

Antiquity showed considerable laxity in the application of 'Περιπατητικός' to scholars who showed no obvious connection to Peripatetic school. Many scholars were called so especially by later authors writing after the 1st century BC because they had spent some time in Athens as a member of the Lyceum or because their work showed some affinity to the Peripatetics.[622] Leo and Brink bestowed on them the label of 'Halbperipatetiker'.[623]

One of Callimachus' students who certainly fell into this category was Hermippus: to him we owe a list of Aristotelian titles in the Alexandrian library composed around 200 BC; he

[618] For Athens, our information derives from Aristotle's will.
[619] Erskine 1995, 41-48.
[620] Str.XIII.1.54.
[621] Pfeiffer 1968, 99; Fraser 1972, I.320.
[622] Schorn 2003.
[623] Leo 1901, 102; Brink 1949, 904.

was called both 'Callimachean' and 'Peripatetic'.[624] As we will go on to see this does not imply that the Callimachean and the Peripatetic approach were the same: prominent voices such as Brink and the young Pfeiffer have added arguments to the contrary.[625] While many Alexandrians of the 3rd and 2nd century BC were called Peripatetics by later generations,[626] Callimachus was never labelled a Περιπατητικός or a member of the Athenian Peripatetics.[627] Wehrli broadened the definition of a Peripatetic to someone writing in a Peripatetic genre which would apply to Callimachus in several categories. The mere identification of his literary activity with a Peripatetic genre, however, surely does not suffice as a criterion for Callimachus, considering he wrote on a multitude of topics with some genres lying outside of Aristotelian interests, especially as regards his poetry. Themes such as paradoxography, city foundations, or the names of Olympic victors map exactly on to Peripatetic interests. Instead, one should consider someone a Peripatetic who demonstrates the same encyclopaedic drive towards knowledge which expresses itself through the extensive and comprehensive collection of information in a wide range of fields regardless of whether these had been treated by Aristotle and his pupils. The identity of the Peripatetic school changed considerably from being interested in history and biology to later rhetoric and philosophy. Later authors had a different understanding of what is a typically Peripatetic interest to those closer in time to Aristotle and Theophrastus. Philosophy, which was of fundamental interest in Athens, certainly never caught on in Alexandria to any significant degree.

Even if Callimachus was not considered to be a Peripatetic, it would have been usual for a Hellenistic Greek from a well-to-do family to visit the Peripatetic school first-hand in Athens. As a citizen of the Cyrenean elite it would not be far off the mark that he was sent

[624] Schorn 2003, 59: 'Callimachean' in Ath.II.58f, V.213f, XV.696f; 'Peripatetic' only later according to Bollansée 1999, 13. Both according to West 1974, 282.
[625] Brink 1946; Pfeiffer 1928, 320-21 (not 520f. as in Pfeiffer 1968, 95).
[626] Schorn 2003.
[627] Brink 1946, 12-16; Pfeiffer 1968, 95.

to Athens for education, even if this is not explicitly attested.[628] After growing up in Cyrene, he moved to Alexandria to work as a school master in an Alexandrian suburb (if we follow the information provided by the *Suda*: γράμματα ἐδίδασκεν ἐν Ἐλευσῖνι)[629] before being presented to court and apparently staying at the Museum for the rest of his life.[630] We cannot rule out occasional voyages of Callimachus outside of Egypt. There is ample precedent for sending intellectuals on diplomatic missions. He is confirmed as a public benefactor to the city of Athens donating a large amount for a local defence project in 248/7 BC, casting doubt on his self-styled image as an armchair scholar.[631] The dedicatory inscription places Callimachus' connection to Athens on a more solid basis than before. This dedication probably happened under Ptolemaic auspices. If the benefaction was combined with a visit to Athens, then this stay must have happened relatively late in his life and unlikely constituted the primary Peripatetic influence on him.[632] Should Callimachus have ever set foot in Athens, he certainly would have not neglected to pay a visit to the philosophical schools including the Lyceum, but so far, our evidence points to a relatively late date.[633] Overall, Callimachus' self-presentation as an armchair scholar rings true with his life centring around Alexandria. Any Peripatetic focus in his work must derive from the intellectual composition at the Alexandrian Library.

It is likely that Callimachus engaged with early Peripatetic literary criticism, but unfortunately none of these works by Heraclides of Pontus, Aristoxenus, Demetrius of Phalerum, Dicaearchus of Messana, Phaenias of Eresus, Chamaeleon of Heraclea, Hieronymus of Rhodes, or even Theophrastus have survived to prove this. Consequently,

[628] Herter 1937, 84-85 for arguments against his studies in Athens. His supposed friendship with Aratus in Athens is fiction. His disciple Polemon studied in Athens, cf. Angelucci 2011, 329.
[629] For this claim, see Pfeiffer 1968, 157-58. Cameron 1995, 5-11 vehemently rejects the *Suda*'s claim.
[630] Test.Pf.1.
[631] Oliver 2002 based on an earlier suggestion by David Malcolm Lewis.
[632] Oliver 2002, cf. Asper 2011, 157-58.
[633] Lynch 1972, 148, 151. Still, he need not to have gone to Athens himself, with schools teaching Aristotle's philosophy existing outside of Athens such as on Rhodes.

past scholarship has tried to determine Callimachus' relationship towards the Peripatetic school based on a single transmitted title. Callimachus' personal views towards the Peripatetics are transmitted in a very fragmentary fashion and not sufficient to form a clear picture. We will only briefly digress on Callimachus' role as a critic of the Peripatetics.

Pfeiffer and Brink had argued for Callimachus' anti-Aristotelian inclinations on the basis of the title of the fragmentary treatise Πρὸς Πραξιφάνην which could be interpreted in both ways – as a constructive response to criticism or a vile attack, which Callimachus was clearly capable of, depending on whether πρός is interpreted as meaning 'on, about' or as 'against.'[634] Several scholars have deduced from the *Scholia Florentina*'s reference to the *Aetia* prologue that Πρὸς Πραξιφάνην was representative of his anti-Peripatetic convictions. Despite what some of these scholarly voices imply, Callimachus is unlikely to have rejected Aristotelian teaching per se. We should be prepared to give him more credit as an eclectic scholar who adapted highly idiosyncratic methods and convictions. The main fact we know about Πρὸς Πραξιφάνην is that it praises Aratus' Φαινόμενα.[635] Even if the preposition in the title is interpreted as describing antithesis to Praxiphanes' beliefs, Callimachus' probably merely defended Aratus' didactic poetry but did not criticise the whole Peripatetic project outright.

Callimachus' and Aristotle's ideas about how poetry should be written differed significantly. According to the *Poetics* poetry was appropriate for the universal while history was reserved for the particular (1451b). Callimachus rejected this theory, but he also shows more nuanced reactions to Aristotle's tenets, for example, in iambic poetry. Aristotle had stated that iambic poetry is characterised by its being directed at particular personalities.[636] Callimachus,

[634] Brink 1946, 12-16 summarises the extensive scholarly discussion of this topic. Cf. Pfeiffer 1968, 95; Cameron 1995, 376. Lefkowitz 1981, 125 deliberates whether the *Scholia Florentina* only count Praxiphanes among the Telchines without knowledge of the piece's content due to the title, which renders the argument cyclical.
[635] Brink 1946, 25-26; Cameron 1995, 212-13.
[636] *Po.*1451b12-15.

however, deconstructs this claim by demonstrating the need for a productive scholarly discussion by starting his collection of *Iambi* with a fable about the *Seven Sages*. In the *Iambi* he never spends more than a few verses attacking a single person.[637] He converts the traditional iambic vitriolic invective to generic criticism of his scholar peers assembled at the Serapeum in *Iambus* 1. Callimachus' response to Aristotle would have served as a demonstration to the contrary that it was possible to write invective iambic poetry without targeting one specific person as the genre was conceived in the past.

Aristotle's literary output was vast. Even if Callimachus can be shown to be at odds with Aristotle's ideas on poetic unity especially as concerns the *Aetia*, the assumption about Callimachus' rejection of Aristotle cannot be extended to every type of text, especially in the case of a poet as individualistic as Callimachus. We should therefore distinguish between Aristotle's theories on poetry and other practical institutions brought forward by the Peripatetics, which could have found their way to Alexandria via different channels.

Instead of getting distracted by a discussion on Callimachus' reaction to Aristotle's poetry, it is more sensible to look at Aristotle's techniques through the lens of those works which we know to have been accessible to the Hellenistic poets. Predominantly, it is important to analyse the relationship between Callimachus and the (pseudo-) Aristotelian writings on wonder.

[637] It is unclear how extensive the criticism of the pederastic schoolmaster in *Iambus* 5 was due to its fragmented state. Its fragments show more mockery than invective.

2. Peripatetic paradoxography

In Athenaeus[638] we possess an ancient author who explicitly connects Aristotle to the wonder literature. The Cynic Cynulcus says: 'I wonder at the exactitude of Aristotle…Whence did he learn what the fishes do, or how they sleep, or how pass their time? Was it from some Proteus or Nereus surfacing from the deep? For he has written down such things, as the comic poet has it, as "marvels for dullards (θαύματα μωροῖς)."[639] The criticism is aimed at Aristotle's lack of hands-on experience as perceived by his Imperial audience. There are many counterexamples which demonstrate that Aristotle did have substantial experience of many, but not all topics he wrote about. The criticism might be born out of a lack of judgement on Cynulcus' part, but what is even more interesting is that he puts Aristotle down as a purveyor of wonder stories pandering to a simple audience. Is he here referring to the Περὶ θαυμασίων ἀκουσμάτων or does he classify several of Aristotle's works as fanciful?

a) Connecting Peripatetic and Callimachus' paradoxography

One text falling into his category is the Pseudo-Aristotelian treatise Περὶ θαυμασίων ἀκουσμάτων.[640] Its attribution to Aristotle was already recognised as false in antiquity. A pre-paradoxographical collection of wonders written by Aristotle is generally ruled out. Many *paradoxa* he is credited with are not known from any of his extant works. Still, the transmission history of Περὶ θαυμασίων ἀκουσμάτων was entangled with Peripatetic practice. The most important inquiry is that into its date of composition. Fraser dates it to the early Hellenistic period. He sees Callimachus as a reviser of the Peripatetic practice, who also bestowed the final form on paradoxography.[641] Flashar considers it to be roughly

[638] Düring 1950, 41-47 noticed that Athenaeus contains 112 citations of Aristotle's zoological works, with half alone coming from the *Historia Animalium.*
[639] VIII.352d-e. Schneider discussion in Cresswell's translation 1891, 300-2.
[640] Best accessible in the Loeb edition by Hett 1936.
[641] Fraser 1972, I.454, 771n.19. Cf. Richardson 1994, 15-16; Asper 1997, 211-12.

contemporary with Antigonus' treatise.[642] Several of its features speak for its contemporaneity with Callimachus or at least a relatively early composition of its core, even if Aristotle's authorship can be firmly ruled out. Perhaps it even looked to Callimachus as a model, as there are several correspondences between both – with the simplified versions found in the Peripatetic text.

The Pseudo-Aristotelian treatise was organised geographically, which indicates that its basic organisation dates from the 3rd century and a time close to Callimachus.[643] It overlaps significantly with Callimachus' sources. In form and shape it largely resembles the majority of paradoxographical lists with the only caveat that source citations are distinctly rare by comparison: the only sources mentioned are Hanno (ch.37), Xenophanes (37), Polycritus (112), Callisthenes (132), Eudoxus (173), and the Φοινικικαὶ Ἱστορίαι (134). Yet Priestley suspects that this may point to an early date of composition before the conventions became more solidified – most likely under Callimachus.[644] The rest of its sources which can be assembled are taken from the likes of Theophrastus, Timaeus and Theopompus – all authors of significant interest to the Peripatetic school at the time. In its choice of historians and Peripatetics the sources broadly resemble those used by Callimachus and Antigonus, which speaks for an early date to its core. Of its sources, none is younger than Timaeus, while the oldest source is Aristotle.[645] This comes with the caveat that the Aristotelian material mainly derives from the 9th book of the *Historia Animalium* whose own date of composition is less clear. Theophrastan material surfaces with its own footnotes in ch.37 which cites the *Periplus* of Hanno and ch.38 Xenophanes. The section on water in his collection seems to be taken from Phaenias, one of Aristotle's oldest pupils as well as one of Theophrastus.[646] Phaenias, who seems to have written mainly on plants, is mentioned twice directly as a

[642] Flashar 1972, 52-5.
[643] Brown 2002, 23.
[644] Priestley 2014, 77n.91.
[645] Müllenhoff 1870, 426-27.
[646] *Sud*.s.v.Φανίας. F34-35 Wehrli. Engels 1998, 290.

source in Antigonus' Callimachean excerpt (155+171).[647] Lacking a specific mention, chapter 156 still deploys Phaenias who in turn took his story from Eudoxus. Phaenias seems to be also the intermittent source for Eudoxus' wonders in Antig.*Mir.*162 which is mirrored by Περὶ θαυμασίων ἀκουσμάτων ch.54. The heavy focus on the Western Mediterranean arises due to the dominance of Timaeus' sources, even if their real extent is disputed, and those of Lycus.[648] *Aud.*79 and Antig.*Mir.*172, for example, treat the birds on the island of Diomedes. While Callimachus himself attributes it to Lycus, Geffcken sees Timaeus as the origin.[649] Likewise, ch.139 in Antigonus, where the story by Lycus describes a Sicilian spring emitting smoke, recurs in *Aud.*113 yet without a source.[650] Overall the focus on Italy and the Western Mediterranean next to Asia Minor, Thrace, and Illyria places it close to Callimachus.

Sources cited in Callimachus' version are usually omitted in Pseudo-Aristotle, which shows that the two texts seem to be related but were deployed for different purposes. Callimachus' text helps us to reconstruct some of its sources. Although large sections of the Περὶ θαυμασίων ἀκουσμάτων cannot be ascribed to Timaeus with certainty and might after all derive from Lycus,[651] it contains the same scepticism about lake Avernus as that attributed to Timaeus in Callimachus, albeit with significantly differing wording:

> Ὃ δὴ καὶ περὶ τὴν Ἄορνίν τι δοκεῖ γίγνεσθαι καὶ κατίσχυκεν ἡ φήμη παρὰ τοῖς πλείστοις. 2. ὁ δὲ Τίμαιος τοῦτο μὲν ψεῦδος ἡγεῖται εἶναι… (*Mir.*152b).[652]

while Pseudo-Aristotle reads:

> Περὶ τὴν Κύμην τὴν ἐν τῇ Ἰταλίᾳ λίμνη ἐστὶν ἡ προσαγορευομένη Ἄορνος, αὐτὴ μὲν, ὡς ἔοικεν, οὐκ ἔχουσά τι θαυμαστόν (*Aud.*102).

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[647] Lavagnini 1922, 27 on Phaenias' Τυράννων ἀναιρέσεις ἐκ τιμωρίας.
[648] Müllenhoff 1870, 429-80. Günther 1889 proves passages 79-114 and 130-36 derive from Timaeus.
[649] Beckmann 1791, 157.
[650] Thphr.fr.159; Vitr.VIII.3.8; *PF.*29. Plin.*Nat.*XXXV.179 mixes the two separate strands to the story. Öhler 1913, 100ff. suspected this to feature in Theophrastus' περὶ ὑδάτων.
[651] Müllenhoff 1870, 426-39.
[652] Plin.*Nat.*XXXI.21; *PF.*28. See Geffcken 1892, 31, 91; Öhler 1913, 43; 97ff.

It is interesting that Antigonus introduces this like a well-known fact whereas Pseudo-Aristotle feels the need to explain that such a lake exists. The difference in awareness makes it difficult to ascribe both passages to the authority of Timaeus. Perhaps the difference can be explained by different audiences: Callimachus and Antigonus aimed at a highly educated readership, while the Peripatetic text seems to be more didactic in nature, perhaps indicating its use as a textbook. The lack of narrative arches in paradoxography facilitated later inclusions to the list, which was clearly the case for Περὶ θαυμασίων ἀκουσμάτων.[653] The fact that sources are rarely cited indicates its different purpose to that of Hellenistic paradoxographical collections. Its orientation was clearly less bibliographical than that of Callimachus' collection. Within paradoxography there was apparently room for different manifestations which largely corresponded either to the Aristotelian tradition with a rather general character or the Alexandrian tradition with more bibliographical references.

b) Anonymous paradoxographers

Where does the false ascription to Aristotle come from? The Peripatetics' research activity was dynamic and did not hesitate to add updates to texts. Its corpus generally had an encyclopaedic ambition and subjectively covered almost every aspect in the known world, with many topics already partially covered by Aristotle.[654] The coherence of the Peripatetic organisation of knowledge meant that the compilers' names became largely irrelevant. As the Peripatetic tradition usually looked back to the work of its founder, the attribution to Aristotle was an attempt to fill the gap created by the anonymous Peripatetic collector. Occasionally Aristotle is a stand-in for the Peripatetic tradition as a whole,[655] at other times

[653] Examples are ch.152 Apollonius of Tyana, ch.155 from Pseudo-Aristotle's Περὶ Κὸσμου, ch.168 Herodian and Pseudo-Plutarch's *De Fluviis*, also ch.83, 99. Ch.51 talks about an olive tree which only existed after Hadrian built the Pantheon.
[654] For Aristotle's range of research see Jaeger 1934, 324-41.
[655] Düring 1950, 36-9 for examples of Aristotelian material in works of later pupils.

his name is inserted out by default if the information has no originator in order to make a claim more credible. At multiple points Aristotle is quoted but was clearly not used first-hand, which happens surprisingly early in the tradition.[656] In Alexandria, the catalogue system required an assignment of each work to an author, and many Peripatetic works were automatically ascribed to Aristotle or Theophrastus who acted as placeholders. All the Peripatetic zoological works were transferred to Alexandria in the 3rd century, but only separated out shortly before or during Callimachus' time.[657]

The same seems to have happened with the names of his equally prominent pupils Theophrastus and Strato. Paradoxographers like Antigonus of Carystus continued to ascribe Theophrastan material to Aristotle.[658] Theophrastus covered material different from Aristotle which seems to have been more congenial to Callimachus. While the Callimachean section includes two direct attributions to Theophrastus (130+158), there are none in the significantly longer section by Antigonus. For our paradoxography this means that information was attributed to either Aristotle or even his successor Theophrastus irrespective of whether they had originated the *paradoxon*. Their names were used as stand-ins for the whole Peripatetic tradition.

c) Schoolbook context

The large collections undertaken by the Peripatetics seem to have been employed also as didactic material in schools. Ancient school teaching mainly consisted in breaking down knowledge into lists to aid memorisation. Parsons has alluded to the overlap that exists between fragments of school exercises or notes to the topics covered by Callimachus' prose

[656] Fraser 1972, II.1078n.380. Düring 1950 distinguishes passages which explicitly named Aristotle from mere attributions.
[657] Regenbogen 1940, 1371.
[658] E.g., *Mir.*6, cf. Regenbogen 1940, 1370.

works.[659] Callimachus' prose lists could theoretically have been deployed for the same purpose – they were all based on the systematic listing of material and the collection of large swathes of material.[660] The school textbook form would of course be not too far removed from Callimachus' likely short career as a teacher in Eleusis on the outskirts of Alexandria. His cataloguing efforts made remote literary material more accessible not only to scholars in the library, but perhaps also for teaching in more popular contexts. This might partly help to explain why Callimachus appears surprisingly often in literary papyri outside of Alexandria and was after Homer and Euripides the most widely read poet in Egypt in Roman times.

There are two good examples to illustrate the popularity of Callimachus' prose list themes in Egypt in a school context. The earlier one, the Guéraud-Jouguet Schoolbook, dating roughly to the reign of Ptolemy IV (221-205 BC)[661] contains a list of Macedonian month names, of rivers both from the Greek world and beyond next to a syllabary and a few text passages such as Euripides, the *Odyssey* and epigrams celebrating buildings erected by the Ptolemaic dynasty. The papyrus covers topics which are relatively close to Callimachus' own preferences, apart from the syllabary and passages of New Comedy. Next to its obvious literary and philological concerns, it overlaps in the Macedonian month names with Callimachus' Μηνῶν προσηγορίαι κατὰ ἔθνος καὶ πόλεις and for the rivers with περὶ τῶν ἐν τῇ οἰκουμένῃ ποταμῶν (frr.457-59). There is also the chrestomathy in the Berlin Papyrus (P.Berol.inv.13044) from the 2nd or 1st century BC: here we encounter several lists of islands, mountains, and rivers next to the *Seven Wonders*, so the topics of Callimachus' paradoxographical collections are mirrored in later papyri used in a didactic context. Rossum-Steenbeek studied these later sub-literary papyri which draw on literary texts. She concluded that they retain too few traces of previous studies on these subjects in order to

[659] Parsons 2011.
[660] Schenkeveld 1994; Rossum-Steenbeek 1998, 15; Wendling 1891, 70ff.
[661] Guéraud/Jouguet 1938: MP^3 2642.

provide clues about the names of its sources or any books that were used for their composition. The later a papyrus, the more watered down the information appears.[662]

Overall, however, the papyri emerging from the school context tend to list terms relating to a subject field rather than giving a short summary of stories. Even though the subjects covered in these papyri partially overlap with Callimachus' interests as transmitted by the title of his prose works e.g., names of fish, lists of rivers, the dogs of Attis, a list of philosophers,[663] one should refrain from concluding that our paradoxography necessarily derives from the same context. There is a big difference between recording a list of terms relating to a topic to making systematic extracts from texts. Short extracts seem to have partially replaced a reading of the original text. Lists like the Berlin papyrus were probably used as a memory aid for teachers or students rather than scholars.[664] Yet the thematic overlap between paradoxography, Peripatetic interests, and the content of these didactic papyri deserves to be noted.

2. Systematisation, collection, and separation into disciplines

a) Peripatetic works available in Alexandria

We cannot assume that all Peripatetic works were available in the Alexandrian library – despite the fanciful claims about the scale of its holdings which mainly date from later times.[665] The problematic transmission history of the Aristotelian texts has made this topic

[662] Rossum-Steenbeek 1998, 154.
[663] Harrauer/Sijpesteijn 1985, 105 provide an overview over school papyri containing lists.
[664] Rossum-Steenbeek 1998, 138.
[665] MacLeod 2000, 5 accepts the number of 400,000 books, which is at the upper end of most calculations, in the library without further discussion.

an uncomfortable one to analyse considering the level of uncertainty one operates with. Several elaborate theories exist about what happened to the Aristotelian works. One basic rule applying to all these theories is that there existed both Aristotelian works destined for publication (exoteric) and those destined for the inner circles of the Peripatetic school, consisting of lecture notes and informal copies (esoteric). Depending on which category each Aristotelian text belongs to, it has a very different history of transmission to the others. The exoteric works seems to have circulated more widely than the esoteric.

We would expect at least the exoteric works destined for publication to be available in Alexandria.[666] Zeller concluded that most esoteric works were available in Athens and Alexandria after Theophrastus' death.[667] We are operating, of course, with many unknown variables. Recent studies on the whereabouts of the Alexandrian library show that variation between the texts was huge and that barely any of the Aristotelian texts surviving today are identical with those Callimachus would have known. Three catalogues of Aristotle's works are transmitted from antiquity coming from Diogenes Laertius, Hesychius, and Ptolemy-el-Garib (the latter is transmitted in Arabic).[668] The authorities on the Aristotelian catalogue are Moraux and Düring, who have made significant advances in navigating the scarce evidence in Hellenistic times for Peripatetic works. Düring believes that Diogenes Laertius' catalogue (V.22-27) goes back to the 3rd century Alexandrian scholar Hermippus who drew

[666] Pajón Leyra 2013 advanced the theory that several copies of the Aristotelian corpus circulated after Aristotle's death in the less well-documented 3rd and 2nd century BC in the intellectual centres albeit in different proportions. Moraux 1951, 312-21 interjected that the works might have existed but were only studied in educational institutions like the Museum. Howald 1920 has analysed which esoteric works could have existed in Alexandria during Hellenistic times

[667] Except for Aristotle's *PA, GAs,* and *MA* for which there is not positive proof. Zeller 1885, 137-60.

[668] Bibliography on the ancient Aristotelian corpus: Moraux 1951; Regenbogen 1950, 1950.

on older catalogues of Aristotelian works.[669] According to Moraux it is a copy from the time of Ariston of Keos in the 2nd century BC.[670]

Bound up in the question of the Alexandrian library's holdings is the fate of Aristotle's own library. Its history after the Stagirite's death is confusing at best and exceeds the scope of this chapter, but a short summary is in order.[671] According to Tanner the esoteric works came to Alexandria either shortly before or after Alexander's death.[672] The copies Callimachus relied on would have been those copied at Macedonian Mieza from the works Aristotle worked with to teach Alexander. Tanner here relies on Strabo's story that these works in the Lyceum found their way as part of Theophrastus' inheritance from Aristotle to Skepsis.[673] Here they were buried for some time and subsequently sold on, copied, and partly re-edited by Andronicus before finally being transferred to Alexandria. According to Athenaeus, Neleus directly sold the books in Skepsis to an agent of Philadelphus by which route most of these books came to Alexandria.[674] On this basis Hermippus produced the list of Aristotle's works on which our knowledge depends still today.[675]

Hermippus ὁ Καλλιμάχειος most likely compiled several catalogues in Callimachean style.[676] His catalogue references the *Historia Animalium* and the now lost Ἀνατομαί, but no other biological work by Aristotle. The Ἀνατομαί, however, were popular in the 3rd century and we have every reason to believe that the library of Alexandria would have owned copies

[669] Düring 1956. Keaney 1963, 59 rightly objects that the lack of alphabetical organisation makes it unlikely to be a product of Alexandrian activity. The Theophrastan catalogue in D.L.V.42-50, however, follows an alphabetical order and might therefore be Alexandrian, cf. Moraux 1951, 214n.17.
[670] Moraux 1951, 27-153 for a full list, but Moraux objects to Hermippus' version (pp. 221-33). Keaney 1963 supported Moraux against Düring's attacks, denied its Alexandrian origin, and stressed its late Peripatetic features.
[671] Cf. Bidez 1943.
[672] Tanner 2000.
[673] Hort 1916 falsely claimed that Aristotle's will included his books and his garden. This only applied to Theophrastus's will, cf. D.L.V.52-53.
[674] Ath.I.3a-b. Düring 1956 believed that the Ptolemies bought up Aristotle's and Theophrastus' published books from Neleus, but not Aristotle's personal books which Neleus is supposed to have taken to Skepsis.
[675] Blum 1977 review by Herter 1980, 162.
[676] He continued the biographical work of Callimachus' Πίνακες, cf. Pfeiffer 1968, 188.

of it as well as most Aristotelian works.[677] Still, there is a distinctive lack of evidence for several biological books and treatises on natural philosophy in Alexandria, which are also underrepresented in Alexandrian scholia on the topic.[678] The main witness for the presence of these Peripatetic works on biology and natural philosophy are indeed the paradoxographers of the 3rd and 2nd century BC. They draw heavily on the Peripatetic biological material deriving from Aristotle and Theophrastus. Thus, Pajón Leyra detects allusions to the *Meteorology* in both Callimachus' paradoxography and Eratosthenes' fragments. According to Schneider Antig.143 is derived from the *Meteorology* and mirrors Pliny (*Nat*.XXXI.82). Pliny's book XXXI, however, is heavy on quotations from Theophrastus which is why we cannot rule out that the source for Antig.*Mir.*143 is the same Theophrastan Περὶ ὕδατος as in the following paradoxon, which would fit together with 141 and 142 which also seem to derive from Theophrastus.[679] Consequently, we remain uncertain whether the Alexandrian library held a copy of the Aristotelian *Meteorology* or only works by his successor as head of the Lyceum.

b) περί-literature

The comparison with the Peripatetics is particularly useful in order to think about the people who first excerpted the primary texts. It could help us understand whether these texts were intended to be read on their own or whether they merely aided the reading of the texts they summarised.

Part of the reason why Peripatetic and Alexandrian production of second-order literature as described above arose in parallel, is that literature had by then moved from its performative

[677] Düring 1950, 60-61 assumes a nearly complete set in Alexandria; Düring 1956, 17.
[678] Listed by Moraux 1951, 313.
[679] Pajón Leyra 2013, 729.

functions to being a predominantly written medium.[680] This was accompanied by a move towards sub-literary types of writing i.e., texts concerned with literature which are not literary themselves. This includes scholia, commentaries, epitomes, lexica, paraphrases, word-for-word discussions (e.g., ἐπιμερισμοί, ζητήματα, ἀπορήματα, προβλήματα), and in general what Sluiter calls 'περί-literature'. It is not certain these were recognised as separate genres even in Callimachus' time, but they would have made for colourful content in the section πίναξ τῶν παντοδαπῶν of Callimachus' larger catalogue.[681] In Alexandria, lexicography had established itself before Callimachus extended his interests to a broad range of these types of secondary literature. Geffcken called this the 'Kommentar-Atmosphäre' of the Alexandrian era.[682] Sluiter has discussed some of the criteria which underlie commentary writing. One of the most important aspects represented by exegesis is that of canonization and digestion of the literary heritage. Once scholars write more about a text, its status is elevated for posterity.

At the same time, paraphrasing a text simplifies the often highly elevated linguistic register and makes it more accessible to a greater audience.[683] Secondary literature in general has a tendency to imply that at least part of its information comes from oral instruction,[684] since communication from real people in this context was thought to be superior to information coming from books.[685] And perhaps the most relevant is that commentaries and similar texts like textbooks had to be updated regularly in order to ensure that they reflected the current state of scholarship. Consequently, these texts exhibit an awareness that they are not the final product and meant to continue for long as they became outdated very quickly. For paradoxography this expressed itself more in form of the novelty factor that was sought in

[680] For Sluiter 2000, 185 this secondary literature established itself in the 4th century.
[681] Sluiter 2000, 199.
[682] Geffcken 1932, 408.
[683] Sluiter 2000, 188.
[684] Sluiter 2000, 190-92. Some betray a 'schoolroom character', cf. Praechter 1909, 38.
[685] Alexander 1990.

the wonders. Here also old texts could be sold as surprising if the information was tweaked in a way that made the information sufficiently exciting.

This information was also bundled into compendia in order to serve as a base for further literary products.[686] Although particularly popular in Roman times, compendia and encyclopaedias were pioneered by Peripatetics and Alexandrians.[687] Rossum-Steenbeek agrees with Schepens about their function as reference books for scholars and poets,[688] while acknowledging that usage and readership of these compendia probably soon diverted from the original. Paradoxography was a popular choice for inclusion in these compendia even if most of our evidence derives from significantly later collections such as Pliny's *Natural Histories.*

c) Update of the Aristotelian library to Alexandrian standards

We know of later examples where Peripatetic texts were repurposed to fit the requirements of Alexandrian researchers. One example is Aristotle's *Historia Animalium*, which also played a prominent role in our paradoxography. Aristophanes of Byzantium in the 2nd century BC produced an epitome together with passages from Theophrastus and the Peripatetic collection Ζωϊκά.[689] Aristophanes himself makes clear the purpose of this work:

> ἵνα μὴ διῃρημένην ἐν πολλοῖς τὴν ὑπὸ Ἀριστοτέλους περὶ ζῴων πραγματείαν ἐπιπορεύῃ, συνηγμένην δὲ ὁμοῦ πᾶσαν τὴν ἐφ᾽ ἑνὶ ἑκάστῳ ζῴῳ ἱστορίαν ἔχῃς.[690]

This passage demonstrates well that a theoretical treatise such as Aristotle's was deemed impractical and first had to be adapted to be useful for the Alexandrian scholars whose

[686] Schepens/Delcroix 1996, 403-404 as was done especially by poets.
[687] Wendel 1935, 1355-57; Pfeiffer 1968, 67ff.; Fornara 1983, 190.
[688] Rossum-Steenbeek 1998, 158; Schepens/Delcroix 1996, 403-9.
[689] Edition Lampros 1885, cf. Slater 1982, 341.
[690] '*So that you would not have to peruse Aristotle's treatise about animals, which is spread over many parts, but you would have the story of each animal assembled in one place* (Lampros 1885, 2.1.7).'

priority was the quick location of specific knowledge. For this purpose, they employed techniques such as selection, extraction, and reorganisation of the material. Sometimes we can even see direct evidence for how Callimachus' texts and the poetic production in Alexandria were pervaded by Aristotelian principles of organisation. *Iambus* 2*,* for example, endorses the Aristotelian classification of animals from the *Historia Animalium.*[691] Aristophanes' epitome proves several things at the same time: a) Aristotle's primary text was available in the library (as should be expected of the published texts of one of the most influential philosophers of the time) and of interest to Hellenistic scholars, b) Callimachus' had access to the primary version of the text and could have made a first-hand excerpt, c) Alexandrian interest in animals.

Brink's article banished Callimachus' Πρὸς Πραξίφανην into the corner of anti-Aristotelian literary criticism. Yet although he lists the large number of works attested by Callimachus which clearly indicate collections of material such as Περὶ Ἰχθύων, Περὶ ὀρνέων, Μηνῶν προσηγορίαι κατὰ ἔθνος καὶ πόλεις, etc., Brink does not go on to discuss them. Indeed, he dismisses them as not Aristotelian in spirit due to Callimachus' anti-Aristotelian views on literary criticism supposedly expressed in Πρὸς Πραξίφανην. This list of titles, however, shows clearly that Callimachus also wrote on topics outside of the realm of literary criticism. Considering the efforts that went into compiling this information and its breadth, these lists owed their method to the Peripatetic school.[692]

Recent voices have reasserted the connection between Callimachus' oeuvre and the Aristotelian systematisation of knowledge.[693] One can be partial to the idea of collecting knowledge without subscribing to Aristotelian philosophy or its conception of poetics. Wilamowitz-Moellendorff recognised that Callimachus' scholarly working methods tended

[691] Greene 2011, 169.
[692] These texts are perceived as Peripatetic activity by Janko 1991 and even Pfeiffer 1968, 67 and Brink 1946, 12.
[693] Vegetti 1992.

to be Peripatetic when he says: 'Kallimachos (als Gelehrter) dürfte wohl Peripatetiker, in dem Sinne wie seine Schüler, mit besserem Recht heißen.'[694] Wilamowitz-Moellendorff saw earlier than most scholars the need for a reconsideration of the Peripatetic compilations, which instead of criticising the 'naïve' adaption of bare facts without a background check, focuses on the needs that these lists of facts were intended to fulfil.[695]

The Peripatetics compiled lists of objects in order to make knowledge more readily accessible. Encyclopaedism was one of the pillars of the Peripatetic project in the Lyceum, which encompassed areas as varied as literature, history, political theory, biology, and astronomy.[696] The Alexandrians' output of catalogues, commentaries, and prose works resembles that of the large Peripatetic corpus. The challenge consists in establishing where exactly Callimachus fits on the scale between the Peripatetics and their encyclopaedic systematisation of knowledge on the one hand, and, on the other, Hellenistic scholars and grammarians. All too often it is simply ascribed to chance that both Athens and Alexandria developed independently this all-encompassing aim to organise the totality of knowledge into treatises. I will go on to argue that the Peripatetics represent one of the driving forces for Callimachus' urge to compile material.

Demetrius of Phalerum, the Peripatetic philosopher, combined the organisation of knowledge at the library of Alexandria with a demonstrable influence on Callimachus' writings. He already practised the collection of stories with his Αἰσωπείων λόγων συναγωγαί, a collection of fables.[697] Συναγωγή is of course the same word used by the *Suda* to describe Callimachus' collection of paradoxographical stories, which demonstrates that this term was used in Alexandria in Hellenistic times for the compilation of prose texts.

[694] Wilamowitz-Moellendorff 1924, 214.
[695] Ibid., 213.
[696] Vegetti 1992, 601-607.
[697] D.L.V.80-91.

Fables are usually brief allegorical stories which explain a situation or moral using an anthropomorphic animal or object, which could be explained in a paragraph and neatly itemised. Callimachus, of course, made use of a collection of fables as in *Iambus* 4 about the olive and the laurel.[698] While Demetrius' collection was repeatedly suspected of surviving as material for orators,[699] our collection of paradoxographical stories could have served a similar purpose for writers or poets. We have established that even though Callimachus was not an Aristotelian he used Aristotelian methods of compiling knowledge due to his direct familiarity with Peripatetics such as Demetrius of Phalerum.

Paradoxography was therefore only one of many literary categories which was systematically catalogued and listed in Alexandria. *Paradoxa* in their compact form were easy to handle with its information retrievable on demand, similar to how the crux of a fable can be summarised relatively succinctly. The footnotes describing the literary source for the wonders do not carry any precise indications about where they derive from beyond the name of the literary source. The information that something is found in Timaeus still leaves all of Timaeus' history for perusal, which is still a big task even for a highly trained scholar. We should, however, not underestimate the sophistication of the Alexandrian library system: scholars potentially compiled content summaries, which would have made the retrieval of information considerably easier. All in all, the cataloguing systems both in Alexandria and Athens were likely highly sophisticated, even if the paradoxography only partly reflects this.

[698] Of course, Callimachus relies on a broader corpus which exceeded Aesop's fable and seemingly comprised Oriental stories such as the *Streitgespräch* in *Iambus* 4 probably taken from the *Life of Ahikar* (first pointed out by Diels 1910, cf. West 1969, 118-20; Acosta-Hughes 2002, 192).
[699] Cautious voices in Holzberg 1993, 24-25. Della Corte 1986, 87 says that collection 'conteneva un centinaio di favole in prosa.' For Jacobs 1894, XVI the collection 'probably numbered about two-hundred', cf. Provenzo 1976, 25

d) Unexpected absence of animal wonders

It makes sense for Callimachus' paradoxography to contain more references to Theophrastus than to Aristotle, considering it largely omitted the discussion of animals. Theophrastus was known as an author of works on botany and subjects as varied as water and metals, while Aristotle upheld the study of biology within natural philosophy.

Although animals are not prominent in his paradoxography, the *Historia Animalium* surfaces in several of Callimachus' key poetic images. Among them is the poet's wish in the *Aetia* prologue to shed his skin in old age to be reborn – a process described for insects like the cricket (*HA.*600b-601a), and the drinking of dew (*HA.*532b10 and 556b16). The *Historia Animalium* is of paramount importance in this investigation because all early paradoxographical texts (Callimachus, Antigonus, Pseudo-Aristotle) contain several of its *paradoxa.*[700] Antigonus openly acknowledges that he predominantly relies on it when he praises Aristotle as his source of choice for animal specialities (*Mir.*26).[701]

The *Historia Animalium* is one of the only remaining paradoxographical source texts still largely intact (albeit with a complicated transmission history). Along with the Προβλήματα it shows the hands of several authors.[702] Its last books are generally thought to be spurious. The first six certainly come from Aristotle himself,[703] but later books look like later additions by other Peripatetics. As with many Aristotelean works and especially the Περὶ θαυμασίων ἀκουσμάτων, we should not presume Aristotle to be the sole author, but for the later works to have been created by his younger followers presumably after the master's death in 322 BC. Books VII-IX from which the majority of paradoxographers usually take their material, are spurious and later additions to Aristotle's text. In our paradoxographical texts, books VIII and IX feature particularly heavily. They existed in a separate treatise as confirmed by

[700] Animals in *Aud.*118, 135, 161.
[701] Antig.*Mir.*16a, 19.5, 20.1, 22.2–3, 25c, 27–88, 90–115, 144, 169.1.
[702] Jaeger 1934, 329.
[703] Louis 1964, XVII.

Athenaeus and Antigonus of Carystus,[704] but the story might be even more complicated than that. Düring believes that in antiquity there existed at least three different editions.[705] Book IX of the *Historia Animalium* likely circulated separately in antiquity as περὶ ζῴων.[706] It is the origin for most Aristotelian *paradoxa* in Antigonus and was probably a compilation of Aristotelian and Theophrastan material. It represented a πάρεργον to the previous eight books and did not look ἐξηγητικῶς or ἱστορικῶς according to Antigonus (ch.60).[707] Significantly, Callimachus shows no knowledge of the 9th book, which in turn is prominent in the Pseudo-Aristotle's paradoxographical text. This indicates that this book was written later and probably unknown to Callimachus whose work can therefore be assumed to be older.

In chapter 26, Antigonus calls the Aristotelian text he has in front of him a συναγωγή out of which he compiles part of his ἐκλογή. The original *Historia Animalium* was probably not a συναγωγή, but a subsequent collection of Aristotelian facts could easily bear such a title. Here finally emerges the difference between a συναγωγή, a collection of stories which paraphrases works assembled by one author, and an ἐκλογή, which selects stories from a variety of authors and is more eclectic in character. Antigonus considers himself to be writing an ἐκλογήν, while the collections of Aristotle and Callimachus which only dealt with wonders by a single author and which Antigonus was relying on, were συναγωγαί. The συναγωγαί were not necessarily Callimachus' and Aristotle's primary collections but were potentially compiled by an intermediary. Antigonus promises in ch.60 χωρὶς τῆς περὶ τοὺς βίους τῶν ζῴων ἐντρεχείας, to excerpt both this Aristotelian συναγωγή identified by Nebert as book IX as well as the other books by Aristotle on animals, which occupy most of chapters

[704] Düring 1950, 50.
[705] Ibid., 50.
[706] Kroll 1940, 3f., 30. Düring 1950, 48 suspects that there were three editions in antiquity circulating under different titles. The title περὶ ζῴων ἱστορία seems to derive from Andronicus (first century BC). Eratosthenes knows a περὶ ζῴων πραγματεία (*Cat.*34); cf. Keaney 1963, 52-8.
[707] Nebert 1895, 368.

60-116.[708] Antigonus indeed claims to know seventy of these Peripatetic books about animals (ch.60):[709]

> τὰ γοῦν πάντα σχεδὸν ἑβδομήκοντα περὶ αὐτῶν καταβέβληται βιβλία καὶ πεπείραται ἐξηγητικώτερον ἢ ἱστορικώτερον ἐν ἑκάστοις ἀναστρέφεσθαι. πρὸς τὴν ἡμετέραν ἐκλογὴν ἐκποιεῖ τῶν προῃρημένων αὐτῷ τὸ ξένον καὶ παράδοξον ἔκ τε τούτων καὶ τῶν ἄλλων ἐπιδραμεῖν.[710]

Rist believes the text to have been begun 354 BC and finished around 339 BC, while others like Jaeger believe in a later composition.[711] D'Arcy Thompson pinpoints our version to Aristotle's stay on Lesbos before he went on to teach Alexander in Mieza due to the cluster of references to Asia Minor and Lesbos. For the longest time there existed a theory that Aristotle integrated material from Alexander's campaigns in the East into his *Historia Animalium*, which the king sent him in order to support his former teacher's biological research.[712] This story is based solely on later sources such as Pliny (*Nat.*VIII.17.44), Athenaeus' Δειπνοσοφισταί (IX.398e), and the *Epistola Alexandri ad Aristotelem* based on an Arabic translation of a Syriac translation of a lost Greek original. This myth has now been put to rest.[713] All three texts asserting this story derive from the tradition of late Antique wonder books. The authority of Aristotle justified the bulk of the extraordinary information in them. Pliny's story for example follows the tenet that Libya always produces something new, which is taken from book IX of the *Historia Animalium.*[714] Pliny's indirect praise of

[708] Nebert 1895, 367-68.
[709] Pliny only knows fifty (*Nat.*VIII.44).
[710] '*He has written and composed almost seventy books about these things, and he tried to make them more explanatory than historical in each book. Regarding our excerpt it suffices for him to treat lightly among the chosen ones the foreign and strange from these and other stories.'*
[711] Rist 1989, 16, 212-17; Jaeger 1934, 330.
[712] Especially Jaeger 1934. This is rejected by Nuyens 1948 who thinks the biological works were written during Aristotle's stays in Athens. Lee 1948 proves that the HA's most frequent place names point towards Lesbos, Assos, and Macedonia, and therefore places this work to ca.347-335 BC. Thompson 1913, 13: 'I take it then as probable, or even proven that an important part of Aristotle's work in natural history was done upon the Asiatic coast, and in and near Mytilene.'
[713] The story was challenged by Schneider 1811, reprinted and translated in Cresswell 1891, 293-303. Further challenges are collected in Zeller 1879, 32n.1.
[714] Romm 1989, 570.

Aristotle should be compared to Antigonus' claim that his own ἐκλογή is a mere excerpt of Aristotle' συναγωγή (ch.60, examples are chs.32 + 66), which implies that the Peripatetic's authority is his insurance policy against any challenges to the truth value of his information. The bulk of the *Historia Animalium* is certainly older than Alexander's travels to the East and potentially even older than Aristotle's teaching of Alexander.[715] One may be doubtful if the relationship between Alexander and his teacher was really as close as it is presented in Pliny considering Alexander had Aristotle's nephew Callisthenes put to death.[716] As Chroust first claimed, the assertion of a close relationship between the two supported less the already extraordinary notoriety of the young Macedonian than it increased the significance of the Peripatetic.[717]

Recent studies on the text have shown that not even books VII-IX included material that could have derived from Alexander's campaign. All of Aristotle's knowledge of India and Persia reflects the state of knowledge before Alexander's conquest. The animals which Nearchus, Onesicritus and co. reported on are not found in Aristotle[718] and his knowledge is outdated in comparison with Onesicritus and Nearchus. Callisthenes is the only Alexander historian who could qualify as having contributed to Aristotle's *Historia Animalium* in the 330s[719] and there are overlaps to be found between them.[720] Callisthenes seems to have been one of the historians in the Peripatetic sphere of influence even if his exact relationship to Aristotle beyond familial relationship remains unclear and Aristotle's influence on him is uncertain.[721] A Delphian inscription praises Aristotle and Callisthenes for their πίναξ on

[715] Romm 1989, 567; Louis 1964, XV-XVIII for an overview of the scholarship about the date of its composition. Louis settles on 347-42 BC as dates for Aristotle's stay at Assos and Mytilene.
[716] Lloyd 1968, 6-7. Ross 1923, 6 thinks the story may be true in some more limited degree.
[717] Chroust 1973, 132echoed by Romm 1989, 569.
[718] Bigwood 1993, 538.
[719] Bosworth 1970 argues against the connection between Callisthenes and Aristotle, while Chares (Plut.*Alex*.55) believes in their personal closeness, cf. Lane Fox 1973, 94-95.
[720] Prandi 1985, 14-18. These overlaps occurred in his book on Alexander which probably included discussions of fauna and flora (Callisthenes: Ael.*NA*.XVI.30; *Aud.*132).
[721] Bosworth 1970, 413 suggests that the deployment of archaic poetry for historical reconstruction might have been one of these overlaps, cf. Callisthenes *FGrHist* 124F23, 29; Arist.*Pol.*1306b39, 128a37.

Pythian victories.[722] Yet Callimachus turned more to Theophrastus than Aristotle. Theophrastus had more time to integrate new findings from the East taking place at the end of Alexander's life. Aristotle died already a year after Alexander.[723]

Kathryn Stevens's study comes to a similar conclusion: she found that Aristotle uses marvels from the East usually as 'exceptions to rules, extreme zoological phenomena, or examples to "prove" counter-intuitive or surprising claims - a scientific equivalent of the "eastern marvel" strand in other genres of Greek writing.'[724] The Eastern wonder here remains very much exotic and is only patchily reported, whereas Theophrastus reports with more consistency and depth about Eastern wonders. The one isolated reference to Megasthenes in Callimachus' paradoxography, which even mentions his Ἰνδικά, therefore probably reached Callimachus via Theophrastus (ch.132), just as many of the other *paradoxa* seem to have come via this route.[725] Although Aristotle's version of the *Historia Animalium* seems to have been hampered by a lack of material, its later additions made it attractive enough for paradoxographers. The fact that the paradoxographers focus especially on the later, probably post-Aristotelian books only reaffirms their close connection to Theophrastus.

Considering how prominent the *Historia Animalium* is in paradoxography in general, its absence in Callimachus' paradoxography is striking, but can be explained by the fact that Callimachus did not treat animals in what remains of his paradoxography. As much as Antigonus relies in the first part on the *Historia Animalium,* it is lacking in the Callimachean part. As was the case with Herodotus, the material sounds like it could be lifted out of the *Historia Animalium*, but proving a direct link is difficult. There are several Callimachean

[722] Bosworth 1970, 408.
[723] Pajón Leyra 2011, 256-63 succinctly summarises how the Alexander historians influenced the Peripatetics. Bretzl 1903, 1-7 for botanical knowledge transmitted via Theophrastus.
[724] Stevens 2016, 145.
[725] Thphr.*HP*.IV.7.3.5ff; *CP*.II.5.2; Plin.*Nat.*XIII.141. Ar.*Mu.*4.396a23 probably only goes back to Posidonius.

treatments of animals which mirror the Peripatetic interest in animals. Düring thinks that Callimachus used the Peripatetic writings on animals for his Περὶ ὀρνέων (fr.414-428).[726] This collection seems to have been compiled in order to sort birds occurring in the literature or maybe even aid the composition thereof.[727] There are alone three mentions of birds in connection with wonders in Callimachus' paradoxography, which include: the birds on the island of Diomedes who can recognise the nationality of its visitors (172), the prophetic birds consulted by the Eneti (173), and the two crows in the city of Crannon (fr.408).[728] The text was certainly familiar to Callimachus considering that he mentions its material outside of his paradoxography.

The relative absence of animals in Callimachean paradoxography is even more unusual, as two of his potential inspirations for paradoxography did write about animals. For one there is Philetas whose works combine Peripatetic interest in animals and plants with hints of paradoxography.[729] The Peripatetic Strato of Lampsacus, Theophrastus' successor as head of the Lyceum, wrote both Περὶ τῶν ἀπορουμένων ζῴων and Περὶ τῶν μυθολογουμένων ζῴων (D.L.V.59). Chronologically, he precedes Callimachus by a few years, which is why some scholars speculate whether he could have decisively influenced the creation of paradoxography.[730] It is more likely, however, that he was an indirect source of paradoxographical information for later paradoxographers (seeing that he is never mentioned) rather than a paradoxographical author. Strato's output seems limited to the category of wondrous animals, while ancient scholars clearly saw Callimachus' multifaceted engagement with marvels as the true origin of paradoxography. Callimachus himself seems

[726] Düring 1950, 60-61: fr.415, 421, 427. Cf. Partsch 1909, 562n.16. Sistakou 2009, 179 merely attests an Aristotelian character to the collection.
[727] Blum 1977, 197.
[728] Krevans 2005, 90.
[729] Spanoudakis 2002, 211, 214; 68-72 about his relationship with the Peripatetics.
[730] Vanotti 2007, 24 and Kazantzidis 2018a, 33. Wehrli 1950, 67 believes Strato criticized rather than created marvels.

to have left the *paradoxa* about animals largely to other Hellenistic poets both to his predecessors like Philetas or contemporaries such as Archelaus, since his remaining paradoxography displays no sign of any interest in animals.

e) Overlap between other Peripatetic and Callimachean interests

The Peripatetic encyclopaedic and systematic habit of recording information was one of the major influences on Callimachus' paradoxography and his other lists. Callimachus and the Peripatetics devoted thought to the systematic recording of information. One example is the Πίναξ καὶ ἀναγραφὴ τῶν κατὰ χρόνους καὶ ἀπ᾽ἀρχῆς γενομένων διδασκάλων,[731] based on Aristotle's Διδασκαλίαι which recorded the Athenian dramatic competitions. Blum considered the Διδασκαλίαι especially worthy of attention, since they clearly exceeded the realm of interests normally attributed to the library.[732] Fragment 454 shows that Callimachus really discussed the chronology of dramatists. This text is most likely not part of the bibliographic tradition unlike the Πίνακες which focused on authors.[733] It demonstrates, however, Callimachus' willingness to explore a multitude of different subjects with encyclopaedic ambitions, of which paradoxography was only one of many.

There are a few examples of subjects, Callimachus engaged with that were also of interest to the Peripatetics:

Callimachus' Νόμιμα βαρβαρικά (*Barbarian customs*) reflects his Peripatetic interests.[734] Aristotle's Νόμιμα βαρβαρικά looked to the 5th century Hellanicus of Lesbos as a model. Nicolaus of Damascus has preserved for us in his παραδόξων ἐθῶν συναγωγή a fair amount

[731] *Sud.*s.v.Καλλίμαχος. Frr.454-56; cf. Pfeiffer 1968, 81, 132.
[732] Blum 1977, 50-92 read with Herter 1980, 162.
[733] Schmidt 1922, 49; Regenbogen 1950, 1423; Blum 1977, 198-208.
[734] Herter 1931, 403. Lesky 1957-58, 754 is reminded of Ionian historiography.

of the Νόμιμα βαρβαρικά,[735] which shows that ethnographical material could also be of interest to a paradoxographer. Perhaps there even existed a *Roman* or *Etruscan Customs.*[736] The Peripatetic school had developed an interest in non-Greek Italy and Rome, which they realised in works such as Νόμιμα βαρβαρικά or the Greek Πολιτεῖαι. Callimachus betrays his interest in these stories for example through his reference to the siege of Rome by the Peucetians and the valour of Γάϊος ὁ Ῥωμαῖος.[737]

Paradoxography potentially lurked also in works with titles normally known from other contexts. Welcker assumed that Heraclides Ponticus'[738] περὶ πολιτειῶν comprised a lot of unexpected material: 'So erklärt es sich denn auch, warum die Fragmentensammlung verhältnissmässig so wenig über die Verfassung und so viel, was zur historischen Einleitung und Einkleidung gehört, dann Merkwürdigkeiten der Orte, Sagen, Ableitungen von Namen, Anekdoten, Seltenheiten, litterarische Personen u.s.w. enthält.' That the fragments of bespoke Heraclides depend on Aristotle's Πολιτεῖαι has already long been assumed.[739] The Peripatetics composed a collection of ca. 158 Πολιτεῖαι of individual cities, most of which are known through titles and in rare cases fragments. The foundation of the city Rhegium by the Aeolid Iocastus was known to Callimachus (fr.618).[740] Aristotle's or perhaps that of his students' Ἀθηναίων πολιτεία is the only complete constitutional history but does not show any signs of this broad range of topics.

The collection of constitutions contained discussions of places in Sicily such as Syracuse, Agrigento, Gela, Zancle, Himera, Catania, Leontini, and Heraclea Minoa, while for Magna Graecia the Peripatetics researched Croton, Locri, Metapontum, Naples, Rhegium, Sybaris,

[735] Dümmler 1887, 192-95.
[736] Aristotle maybe wrote an *Etruscan Customs,* cf. Fraser 1972, I.764.
[737] Fr.106, cf. Fraser 1994, 183-88.
[738] Welcker 1844, 460 thinks Περὶ πολιτειῶν blended his Περὶ τῶν ἐν τῇ Ἑλλάδι πόλεων and Περὶ νήσων. Ceccarelli 1989, 905-09 summarises our knowledge of Heraclides Ponticus.
[739] Holzinger 1891, 436-46; Holzinger 1894, 58. Dilts 1971, 7-9 with bibliography.
[740] Müllenhoff 1870, 450. Pfeiffer *ad loc.* believes Callimachus took this from Timaeus.

and Taranto. Aristotle's local historiography in the West extends as far as Marseille and Cyrene. These were also places of interest in Callimachus' writings about the West. The geographical overlap with the Peripatetic interests is striking. Even if the practice of constitutional histories did not catch on in Alexandria, the concern with the Western Mediterranean did and is distinctly visible in Callimachus' remaining poetry and especially the paradoxography.

The constitutions seem to have been connected to foundation stories in the form of prose κτίσεις: Plutarch indeed grouped them together as Κτίσεις καὶ Πολιτεῖαι.[741] Ion of Chios' 5th century prose Χίου Κτίσις was the first in a row of works on city foundations although written by someone better known for his dramatic work. The *Suda* knows a Callimachean Κτίσεις νήσων καὶ πόλεων καὶ μετονομασίαι[742] and an Ἄργους οἰκισμός, which might be an extract of the former.[743] Yet Apollonius was more famous for his Κτίσις-poetry than Callimachus. Ultimately, Callimachus' literary production reflects as much Peripatetic influence as it reveals the interests of his scholar colleagues. Bulloch tentatively suggests that Alexandrian methods of interpretation and criticism were anticipated by the Aristotelian 6-book Προβλήματα.[744] Accordingly the *Aetia*'s question-and-answer structure as evidenced in fr.43 could have been partly inspired by Aristotle. A familiarity with the Προβλήματα might help to explain how the Περὶ θαυμασίων ἀκουσμάτων as a text which eliminates explanations to well-known facts could justify an inclusion in the Aristotelian oeuvre, whose main concern was the discovery of knowledge. As a practice exercise in finding explanations, one could see at least some scope for its inclusion.

[741] Plut.*Mor.*XIV.1093c.
[742] Pfeiffer 1949, 339. The 4th century AD book list published in *P.Turner.*9, F I.3 may contain the mention of Καλλιμάχου Κ[τίσεις], cf. Cameron 1995, 53.
[743] Hecker 1842, 5.
[744] Bulloch 1985, 555.

Aristotle's 'apologies' of Homer consisted in solving problems of various kinds posed by his epics:[745] One such problem was Achilles dragging Hector's corpse around Patroclus' funeral pile, which violated the traditional Greek reverence towards the dead and raised an ethical problem for the *Iliad'*s central character. Aristotle exculpates Homer who had come under fire from Plato: Aristotle's mentor had questioned the veracity of this claim and the questionable implications of this episode.[746] Aristotle tried to explain the problem ethnographically as emerges from Porphyry's commentary:

> διὰ τί ὁ Ἀχιλλεὺς τὸν Ἕκτορα εἵλκε περὶ τὸν τάφον τοῦ Πατρόκλου…ἔστι δὲ λύειν, φησὶν Ἀριστοτέλης, καὶ εἰς τὰ ὑπάρχοντα ἀνάγοντα ἔθη, ὅτι τοιαῦτα ἦν, ἐπεὶ καὶ νῦν ἐν τῇ Θετταλίᾳ περιέλκουσι περὶ τοὺς τάφους.[747]

Aristotle solves the 'problem' by drawing on a contemporary funerary rite. The argument goes that Achilles as a Thessalian would have been accustomed to this rite which in turn in a Panhellenic epic sticks out for its apparent barbarity. The same custom had occupied Callimachus as revealed by a scholiast Scholia to *Il*.XXII.397: ὁ δὲ Καλλίμαχός φησιν ὅτι πάτριόν ἐστι Θετταλοῖς τοὺς τῶν φιλτάτων φονέας σύρειν περὶ τοὺς τῶν φονευθέντων τάφους.[748] It seems unlikely that the scholiast only had Callimachus' fr.588 in mind on the same topic:

> πάλαι δ᾽ἔτι Θεσσαλὸς ἀνήρ
> ῥυστάζει φθιμένων ἀμφὶ τάφον φονέας.

A scholiast on Ovid's *Ibis* (ll.331-32)[749] reveals that Callimachus told the whole story of Simon who in Achillean fashion dragged the corpse of Eurydamas, the son of Meidias. Eurydamas had murdered his brother Thrasyllus. Heitz assumed that Callimachus used

[745] Heitz 1865, 258-79; Hintenlang 1961.
[746] *R*.III.391b5-7.
[747] Fr.166 Rose.
[748] *Schol.Il.*XXII.398.
[749] *Utque vel Eurydamas ter circum busta Thrasylli / est Larisaeis raptus ab hoste rotis*. Whereas Bentley had assumed based on Ovid's text that Callimachus would have included this in the largely unknown *Ibis*, Pfeiffer advocates for its inclusion in the *Aetia.*

Aristotle here directly, but there is no guarantee as to which of Aristotle's texts it might have been:[750] the Προβλήματα are the most likely place for this discussion, but popular contenders are also the Πολιτεῖαι perhaps on Thessaly, following an analogy with the Πολιτεία of the Cretans (fr.519 Rose) or indeed a text already familiar from the paradoxography, the *Historia Animalium*. Aristotle elsewhere also tries to explain a curious detail through contemporary habits (fr.160 Rose). Callimachus' *paradoxa* sound remarkably close to the 'problems' put forward – albeit without the corresponding solutions. Thus, paradoxography shows its potential for further usage of its material, mostly likely as riddles posed to a not nearer defined audience, which either required solving or simply produced an emotional reaction.

This seems to be the point to address another prominent genre instigated by the Peripatetic school, which should be discussed here due to its potential for confusion with paradoxography. The ἀδύνατα are found throughout Greek and Latin poetry. Modern scholarship had long considered these to be part of the rhetorical tradition but lacked appropriate rhetorical terms in ancient texts. Recently scholarship moved towards identifying them with proverbs and for listing them as a subcategory of the former, which is also suggested by Plutarch whose proverb collection contained a section περὶ τῶν ἀδυνάτων.[751] Callimachus collected these ἀδύνατα, albeit under the terminology of παροιμίαι, which approximates Aristotle's terminology: αἱ παροιμίαι μεταφοραὶ ἀπ᾽εἴδους ἐπ᾽εἶδός εἰσι (*Rhet*.1413a17). For a definition it is best to look at Dutoit's comprehensive study of the subject: 'le poète, pour représenter un fait ou une action comme impossibles, absurdes ou invraisemblables, les met en rapport avec une ou plusiers impossibilités naturelles.'[752] In Dutoit's definition we immediately see two characteristics marking them as particularly close to paradoxa: a) they both address the probability of a certain event. Yet

[750] Heitz 1865, 275-6.
[751] For studies περὶ παροιμιῶν by the Peripatetics cf. Rupprecht 1949, 1735.
[752] Dutoit 1936, IX.

while paradoxography insists on the reality of a particular phenomenon which exists despite the laws of nature, the proverbs think the event impossible and contradicting the laws of nature. b) They both concern predominantly natural phenomena such as rivers suddenly running in reverse, animals behaving abnormally, etc. It is doubtful that the lists in which these ἀδύνατα were popularly collected ever ascribed the phenomena to their sources, simply because the collector did not have to worry about the veracity of the information. Lachmann summarises: 'Das *adynaton* ist eher als eine Gedankenfigur zu bezeichnen, die es erlaubt, die bestehende Ordnung nicht nur als ihr absolutes Gegenteil zu imaginieren, sondern auch als etwas ganz anderes, das nach unbekannten Gesetzen funktioniert.'[753] Here it is worth keeping in mind Aristotle's *Poetics* which explicitly prefers for poetry the impossible over anything that is believable and possible at the same time: ὅλως δὲ τὸ ἀδύνατον μὲν πρὸς τὴν ποίησιν ἢ πρὸς τὸ βέλτιον ἢ πρὸς τὴν δόξαν δεῖ ἀνάγειν. Πρὸς τε γὰρ τὴν ποίησιν αἱρετώτερον πιθανὸν ἀδύνατον ἢ ἀπίθανον καὶ δυνατόν.[754] Aristotle effectively conceived of different levels of falsehood.[755] Aristotle's invitation to creative freedom opened by ἀδύνατα was eagerly taken up by Callimachus.

A demonstration of an ἀδύνατον is found in the *Hymn to Delos*, a text in which the laws of nature are overturned: on her desperate search for an ideal place to give birth, Leto is offered shelter by Delos. At the birth of Apollo suddenly everything in the immediate natural surrounding is described as turning golden including the small rivulet Inopus (205-8):

ἡ δ᾽ἀρητὸν ἄλης ἀπεπαύσατο λυγρῆς,
ἔζετο δ᾽Ἰνωποῖο παρὰ ῥόον, ὅν τε βάθιστον
γαῖα τότ᾽ἐξανίησιν, ὅτε πλήθοντι ῥεέθρῳ
Νεῖλος ἀπὸ κρημνοῖο κατέρχεται Αἰθιοπῆος.[756]

[753] Lachmann 2002, 112-116, 113.
[754] '*Overall, the impossible should be applied to poetic composition, the ideal or to popular belief. Poetry makes something plausible and impossible preferable to something implausible but possible* (*Po*.1461b8-11).' Cf. 1460a25-26: προαιρεῖσθαί τε δεῖ ἀδύνατα εἰκότα μᾶλλον ἢ δυνατὰ ἀπίθανα.
[755] Wilpert 1972.
[756] *'She readily ceased from pitiful wandering and sat by the Inopus stream which the earth sends forth in deeply when the Nile descends in full swell from the Aethiopian cliffs.'*

The normally relatively dry and narrow Inopus spontaneously overflows with water as a result of the momentous birth of Apollo. This swelling of the Inopus was a common theme in Greek literary and scientific discussion and seems to have had a long tradition as an ἀδύνατον even if the association with Egypt is a Callimachean invention.[757] We have already discussed the underground connection with the Nile in the previous chapter. This poetical episode effectively combines an ἀδύνατον with a popular paradoxographical theme.

We should also be open to the possibility that these pieces of popular wisdom circulated as generally acknowledged facts so that paradoxography did not exclusively deploy literary texts for its sources. A small indication is offered by Antig.*Mir.*27: Antigonus connects the information about the male and female halcyons found in Alcman fragment 26 with the popular assumption that the female carried the elderly male on its back. He offers no source for this statement, which had induced scholars to argue that there was no precedent for this claim. Gutzwiller, however, has unearthed some prior literary passages containing allusions to the same popular belief.[758] The item is included by Antigonus but not backed up by a literary source. Potentially because it was known to most of his readers, it did not have to be underpinned by a source. This contradicts the novelty aspect that Callimachus' paradoxographical items normally draw out by defamiliarising well-known concepts. We saw that Callimachus at least in his poetry played with well-known wonders (the gold-digging ants in fr.202), but his general emphasis is on obscure stories. In Antigonus' Callimachean section even popular stories carry a source indication (unless we count the mythical items).

The Alexandrian poets' interest in popular beliefs is obvious in the popular conceptions of meteorology in Aratus' Φαινόμενα and is concentrated compared with earlier centuries when

[757] Lyc.*Alex.*574-76; Paus.II.5.3; Str.VI.2.4; Plin.*Nat.*II.229, cf. Call.*Dian.*171.
[758] Gutzwiller 1992, 206.

folkloric knowledge appeared scattered throughout the literature. The fact that popular beliefs appear in bigger clusters in Hellenistic times is also due to the Peripatetics' efforts at gathering this information. Yet because popular wisdom was widely known without help from literary texts, it is particularly difficult for us to know whether a piece of information derives from a widely circulating story or is based on Peripatetic scholarship.

Gutzwiller believes that popular imagery lies behind the nautilus epigram (fr.5), which was visualised as a sailor in popular versions of the story:[759] Callimachus copied the nautical language from Aristotle's description of the nautilus shell (*HA*.622b5-15 and *HA*.525a22-25) and deliberately intensified it.[760] Some formulations sound remarkably close: for example, the nautilus is characterised in both as a navigator who ἐπιπλεῖ the sea. Aristotle's passage is not only mirrored by Callimachus, but also by Aelian and Pliny. There are grounds for assuming that this story lived on as a paradoxographical item. The corresponding note in Plin.*Nat.*IX.88 calls the nautili *miracula*, yet Aelian seems not to regard them as a wonder (*NA*.9.34). The connection between Callimachus and Pliny seems particularly close in the latter's 9th book.[761] Callimachus probably converted the nautilus story into a paradoxographical note subsequently used by Pliny, while Aelian followed the pre-paradoxographical Aristotelian version. This is one of the few instances where we can connect Callimachus with animal paradoxography.

Prescott assumed that Callimachus' interest in animals which at times sounds remarkably close to Aristotle, was developed further in his Ὑπομνήματα[762] and that the nautilus shell poem is an example for the result of this interest. There are three independent mentions of the Ὑπομνήματα in connection with Callimachus, but it is uncertain which exact form they

[759] Gutzwiller 1992, 197.
[760] Prescott 1921; Gutzwiller 1992, 196; Selden 1998, 309-11.
[761] Prescott 1921. Pliny drew heavily on Callimachean material for his 9th book.
[762] Wilamowitz-Moellendorff 1924, 213 discussed the systematic production of ὑπομνήματα in Alexandria and saw it as an objective way of summarising information. While Wilamowitz-Moellendorff perceived the ὑπομνήματα as a team effort, he insists that Callimachus compiled the paradoxography himself.

took.[763] Normally a word for commentary, it is possible that here it designates notes on a particular topic: the passages in question overlap with topics which could have been easily assigned to his work on nymphs, barbarian customs, or the rivers of the world.[764] What should be stressed is the similarity of the ὑπομνήματα to our *paradoxa* through their bite-sized length. The *paradoxa* are too short to contain much detail apart from the wonders' locations. The equally short ὑπομνήματα can serve as a helpful comparison. This succinct note taking is reminiscent of the Peripatetics who used these as basis for teaching. As brief lecture-style notes they contained the main arguments or points of an argument.[765] According to Ammonius: ὑπομνηματικὰ δὲ καλοῦνται ἐν οἷς τὰ κεφάλαια μόνα ἀπογράφονται.[766] Euphorion of Chalcis who for some time also studied in Athens with the Peripatetics and was associated with the library of Antioch,[767] wrote mythological stories titled similarly Ἱστορικὰ ὑπομνήματα.

Callimachus' pupils Ister (ὁ Καλλιμάχειος) and Philostephanus seem to have produced similar plain prose lists.[768] The *Suda* records the varied titles of Ister's works which are reminiscent of Callimachus' interests: Περὶ ἰδιότητος ἄθλων, Πρὸς Τίμαιον ἀντιγραφαί,[769] and even Ὑπομνήματα.[770] As the name suggests, ὑπομνήματα functioned as 'reminders' of a larger context. Considering that in poetical contexts mere allusions to a story sufficed due to metrical constraints, and poets rarely narrated the full extent of a story, these paradoxographical notes would have been very useful for the compositional process. They also functioned as a concise way of transmitting information and would have been an appropriate medium for the Alexander historians to send information from the East back to

[763] Frr.461-64. Hecker 1842, 5 was uncertain about whether Callimachus wrote these or whether it was Zenodotus. For the treatise Ὑπομνήματα Ἱστορικά: Ath.III.95f.
[764] Blum 1977, 196-98; Krevans 2004, 182 + 2011, 120.
[765] Jane Lightfoot 1999, 217-20.
[766] Ammon.*in Cat.*4.5-6 in Busse 1895.
[767] Plb.V.93.8.
[768] Pfeiffer ad Call.fr.464; Harding 2016.
[769] Ister, *FGrHist* 334T3.
[770] Ister seemingly shares Pseudo-Aristotle's as well as Callimachus' own preoccupation with Timaeus.

Aristotle or indeed his pupil Theophrastus. It seems to be more than coincidence that both Euphorion and the early Alexandrians operated with ὑπομνήματα and were in contact with the Peripatetics. Important is the variety covered by these notes. Ὑπομνήματα describe a specific form of presentation rather than content. Among other subjects it could have easily covered the sheer topical variety of paradoxography.

For the influence of Peripatetic historiography on Alexandria, Fuhrer suggested also looking at Callimachus' pupils, Ister and Philostephanus due to their intellectual proximity.[771] Judging by their remaining fragments, their interests corresponded to special branches of historiography comprising mythography, local history, ethnography, chronology, and, of course, paradoxography.[772] While Aristotle had promoted the universality of poetry (καθόλου), he limited history to events narrated καθ'ἕκαστον. Callimachus' poetry and the didactic poems of his contemporary Alexandrians violated this system by transcending the boundaries set by Aristotle. Callimachus' poetry assumed more functions compared to 5th and 4th century lyrical texts and encroached on topics and methods previously limited to history. This was potentially a move against the prevalence of prose writing which had only increased in popularity from the 5th century until Hellenistic times.

The Peripatetic School after Aristotle seems to have participated in the development of 'tragic history'[773], a branch of Hellenistic history which shifted history closer to poetic patterns. It seems to have been particularly practised by the Peripatetics. Its exponents were amongst others Cleitarchus, Callisthenes, Theopompus, and the Peripatetics, Duris of Samos, and Phylarchus. The discipline moved against the matter-of-fact historiography of Thucydides and later Polybius and looked back to the long-criticised works of Herodotus.[774]

[771] Fuhrer 1996, 119; Fraser 1972, I.511; Pfeiffer 1968, 150f. For Ister cf. Pearson 1981, 136-144; Fraser 1972, I.511f., 777. For Philostephanus, cf. Fraser 1972, I.513f., 778.
[772] Momigliano 1990, 54-79; Gabba 1981, 53-60.
[773] Von Fritz 1958 identifies tragic history as peripatetic *pace* Walbank 1957, 418f.
[774] Walbank 1990, 253; Hose 1994, 29-36. Psychagogic tendency in contrast to Thucydides cf. Strasburger 1968, 468f.

The ‘tragic’ orientation of the historiography of Duris and Phylarchus is relatively certain. For Duris we can ascertain connections to Peripatetics like Theophrastus, which has been suggested but should not be assumed.[775] Incidentally, Duris wrote the only known work with the title Περὶ ἀγώνων predating that of Callimachus.

The trend towards dramatic history transcended the Lyceum and reached further.[776] Timaeus at least according to Polybius was a fellow exponent of tragic history and heavily criticised for that reason. This is important considering that Timaeus heavily influenced both Callimachus and the Peripatetics. If we had more Timaean material, we would probably see that his version of history partially influenced paradoxography.

Tragic historiography apparently offered paradoxographical material to some degree. It stands beside historians following Herodotus’ model, so Ctesias, Theopompus, and the Alexander historians who all to different degrees aimed at entertaining their audiences and scattered paradoxography throughout their texts.

4. Aristotelian Knowledge vs. Callimachean Wonder

a) Rejection of Aristotle’s philosophical approach to Wonder

The concept of wonder has been discussed extensively in the context of philosophy and in turn its effect on contemporary literature. For Aristotle it is especially easy to distil his elaborate conception of wonder since he alludes to the feeling several times over the course

[775] E.g., Brink 1960; Kebric 1974.
[776] Eduard Schwartz created the term ‘tragic historiography’ in the 1890s. For historical texts leaning towards poetry/tragedy see the literature in Fuhrer 1996, 117.

of different works. Famously, Aristotle just like Plato located the start of philosophy in wonder: διὰ γὰρ τὸ θαυμάζειν οἱ ἄνθρωποι καὶ νῦν καὶ τὸ πρῶτον ἤρξαντο φιλοσοφεῖν.[777] From here it was only a small step which connected wonder with learning in general:

> καὶ τὸ μανθάνειν καὶ τὸ θαυμάζειν ἡδὺ ὡς ἐπὶ τὸ πολύ· ἐν μὲν γὰρ τῷ θαυμάζειν τὸ ἐπιθυμεῖν μαθεῖν ἐστιν, ὥστε τὸ θαυμαστὸν ἐπιθυμητόν, ἐν δὲ τῷ μανθάνειν τὸ εἰς τὸ κατὰ φύσιν καθίστασθαι.[778]

For Aristotle θαυμάζειν starts because of *aporia*. This is conveyed in the following passage in Aristotle's *Metaphysics* which constructs wonder as the start of a process of inquiry, ultimately leading to escape from ignorance:

> ὁ δ'ἀπορῶν καὶ θαυμάζων οἴεται ἀγνοεῖν (διὸ καὶ ὁ φιλόμυθος φιλόσοφός πώς ἐστιν· ὁ γὰρ μῦθος σύγκειται ἐκ θαυμασίων)· ὥστ'εἴπερ διὰ τὸ φεύγειν τὴν ἄγνοιαν ἐφιλοσόφησαν, φανερὸν ὅτι διὰ τὸ εἰδέναι τὸ ἐπίστασθαι ἐδίωκον καὶ οὐ χρήσεώς τινος ἕνεκεν.[779]

Aristotle considers ordinary wonder as a result of ignorance,[780] but it may be considered positive if it incentivises to further inquiry. The wonderer is first concerned with things close at hand before moving on to more fundamental questions. The ἄλογον is the main source for the wonderful as the unexplained, contradicting experience and reason (*Poet.*1460a13-14). As soon as this ignorance is surmounted through further knowledge wonder disappears. For Priestley Aristotle's 'search for explanations is ultimately aimed at dispelling wonder as phenomena and replacing it with knowledge', whereas in paradoxography 'knowledge and wonder are brought together… despite the heavy reliance of the paradoxographical authors

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[777] '*It is on account of their astonishment that men both now begin and at first began to philosophize* (*Metaph.*982b17)', cf. Plat.*Tht.*155d. Fantuzzi/Hunter 2004, 59-60 for Plato's and Aristotle's role in Hellenistic poetry.

[778] '*Both learning and wondering are mostly pleasant; for in wondering resides the desire for learning, so that the wondrous is desirable, since in learning one is converted into the natural state* (*Rh.*1371a32-3).'

[779] '*A man who is puzzled and wonders believes himself ignorant (thus even a lover of myths is somehow a philosopher, for myth is composed from wonders). Thus, since men practised philosophy in order to escape ignorance, it is obvious that they started to pursue understanding for knowledge's sake and not for its utility* (*Metaph.*982b17-20).' Llewelyn 1988, 178.

[780] Gastaldi 1989; Pinotti 1989.

on Aristotle as a source for their material, it is remarkable how removed ... their works are in their aims and outlook.'[781] Ἀθαυμαστία sums up Aristotle's ideal.

Aristotle's and Plato's attitudes to wonder are mainly negative.[782] Wonder is an ambiguous mental state since it acts on the one hand as a driver to knowledge, but it also obscures the subject matter as expressed by Theaetetus: Καὶ νὴ τοὺς θεούς γε, ὦ Σώκρατες, ὑπερφυῶς ὡς θαυμάζω τί ποτ᾽ἐστὶ ταῦτα, καὶ ἐνίοτε ὡς ἀληθῶς βλέπων εἰς αὐτὰ σκοτοδινιῶ.[783]

Poulakos and Crick summarised that for Aristotle wonder is the beginning of philosophy and its ultimate purpose, but it is an emotional state that is suffered rather than summoned. This is fundamentally different to paradoxography, which actively evokes wonder and thus rejects the Aristotelian conception of wonder.[784]

b) Cognitive gaps: paradoxography eschews explanations

We have seen that Callimachus integrated wonders as one of many 'categories' into his texts, while references to wonder in the *Aetia* are rare. According to Aristotle, wonder could only be aimed at inexplicable phenomena, while the feeling disappears as soon as an explanation is found (*Met*.982b-983a). Even if Callimachus did not closely follow Aristotle, the fact that wonder operates by obscuring explanations would have been obvious. Paradoxography, as we have seen, deliberately suppressed an explanation in order to make it possible for the reader to wonder at the story, even if the wonder might have an explanation elsewhere in Greek literature. It is not surprising that the *Aetia* which is all about uncovering the reasons

[781] Priestley 2014, 86.
[782] Hunzinger 1995, 60 + n.54.
[783] *'By the gods, Socrates, I am lost in wonder at them. Contemplating these things sometimes makes me quite dizzy* (155d).' Beagon 2011, 80-81 for a succinct overview of philosophical attitudes to wonder both in positive and negative terms.
[784] Poulakos/Crick 2012.

for remarkable phenomena within a set time frame,[785] neglects to employ material from a genre which eschews explanations.

Paradoxography exploited the cognitive gap between the reader's understanding of the world and the fact that such a marvellous feature existed. By cutting out the explanation, the reader or perhaps the paradoxographer himself is encouraged to fill the gap with his own explanation. Aristotle's famous *aetia* are differentiated according to essence, motion, matter, and purpose (*Met*.983a-b),[786] while Callimachus' *aetia* describe the 'origins' of something and encompass several of Aristotle's meanings of *aetion* all in one. Outwardly, the *Aetia* concern customs by humans, but passim the poet confronts us with different interpretations of what an *aetion* might be. This includes the medical or the divine explanation for Cydippe's illness, the reason for naming certain Sicilian cities, or the reason why the Icians worship Peleus. Callimachus' *Aetia* cover a spectrum of methods in order to explain a phenomenon, which are incongruous with Aristotle's clearly defined conception of the term.

During Hellenistic times there was a high awareness that multiple explanations existed for the same phenomenon between which an individual was forced to choose. Thus, Callimachus repeatedly pitches competing versions of myths against each other, for example the locations of Zeus' birth in the first *Hymn*, the explanations for Cydippe's fever (frr.67-75), or the three genealogies of the Graces in one of the first *aetia*, which Clio caps with a fourth definitive version. Poets exploited the embarrassment felt by people at not being able to explain certain things. Wherever this was the case, wonder served to articulate these gaps of knowledge. Herodotus had been confronted by the very same problem of having to choose between different versions (κρίσις), which is obvious from the very start of his *Histories* where he lists several reasons for the outbreak of the Trojan War (I.1-1.5.2) before narrating

[785] Fantuzzi/Hunter 2004, 55 define an *aetion* as a history in a limited time span.
[786] Priestley 2014, 107.

his personal view on the matter (I.5.3).[787] It is overwhelmingly obvious that Herodotus was aware of the problematic nature of his sources: 'Herodotos' discussion of sources is the unique element of his voiceprint, so far as the evidence goes; …he discovered the *problem* of sources.'[788] The key to his popularity in Hellenistic times is that also the Alexandrian poets grappled with *aetia* and varying explanations for the same phenomenon. Callimachus' engagement with discussing variant stories, earned him later the nickname πολυίστωρ (Str.IX.5.17), a term one could equally apply to Herodotus.[789]

The *paradoxa* present a way of narrating a wonder while lacking a definitive explanation for it. Both *paradoxa* and *aetia* draw out the special statues of a situation but were differentiated according to their subject matter. As Acosta-Hughes and Stephens remarked: 'If the *Marvels* catalogues violations of nature's norms, many of the *Aetia* catalogue phenomena that violate social norms or expectations…'[790] Not every wonder in the paradoxographical collection was explained in antiquity (at least according to the records we have). By insisting on wonder, a world which had become increasingly measured and understood, could maintain some of its enchantment and offered an alternative way of articulating one's environment.

c) Aristotle's and Callimachus' approaches to the same material differ

An analysis is possible wherever there are some surviving source texts, which is especially the case for the *Historia Animalium.* A direct comparison shows that the paradoxographers extracted interesting facts while largely ignoring their original context. Antigonus ch.73 takes the information about the parrotfish from *HA*.508b12. In the Peripatetic treatise it was

[787] Priestley 2014, 107. See Hdt.I.95 for three different versions of a story before adding his own.
[788] Fowler 1996, 86.
[789] Priestley 2014, 108.
[790] Acosta-Hughes/Stephens 2012, 17.

embedded in a longer discussion, while the paradoxography has deleted most of its background context to make it more succinct. After expanding on the connection between stomach and teeth in animals which chew the cud, the parrotfish is characterised by Aristotle as an outlier since he only has a single-chambered stomach.[791] In Antigonus the information is reduced to the parrotfish chewing the cud: although one might have considered the parrotfish as more exceptional with comparable cud-chewers in mind, the paradoxography seems to find it more miraculous without this background. Similarly, Antigonus' note on the cattle horns in Phrygia (ch.75) derives from *HA*.517a20-30, a much longer exposition, yet here the cattle are located καὶ ἐν Φρυγίᾳ καὶ ἄλλοθι.[792] The comparison is not possible with Callimachus as none of his passages in Antigonus derive from the *Historia Animalium.*

There are also smaller observations to be made along these lines. For example, according to Aristotle's *Poetics* the marvellous is especially associated with coincidence. Based on the presence of the chance event involving the Mitys statue in Argos in both Aristotle (*Poet.*1452a) and Callimachus, Prioux suspects more overlaps between Callimachus and Aristotle, but usually these remain mere hints.[793] The inclusion of the Mitys statue could also be explained by Callimachus' systematic interest in statues attested elsewhere. Coincidence is favoured as an explanation over divine intervention. Callimachus resembles Aristotle in his rejection of the divine as an explanatory mechanism. His paradoxography is careful to eliminate the mythographical or divine aspect, unlike his contemporary Aratus whose Φαινόμενα are pervaded by Stoic thought material and a belief in a decisive higher power. The Mitys statue is a rare exception for where Callimachus' and Aristotle's positions align as usually the differences dominate.

[791] Jessica Lightfoot 2018, 96-97, cf. *PA*.675a4.
[792] Cf. Plin.*Nat.*XI.125; Ael.*NA*.II.20.
[793] Prioux 2007, 174.

The only aspect that moves Aristotle to wonder is a perfect system. For him wonder about nature increases for those who understand it better.[794] Instead of contemplating individual wonders like Callimachus, Aristotle asks his reader to wonder at the totality of systems and nature in general: δυνάμενοί γε τὰς αἰτίας καθορᾶν … ἐν πᾶσι γὰρ τοῖς φυσικοῖς ἔνεστί τι θαυμαστόν … Τὸ γὰρ μὴ τυχόντως ἀλλ᾽ ἕνεκά τινος ἐν τοῖς τῆς φύσεως ἔργοις ἐστὶ (*PA.*645a15-36). While paradoxography creates wonder by leaving phenomena unexplained, for Aristotle wonder can therefore increase with more knowledge, which differs from our normal assumptions about paradoxography. Are these two positions really as incompatible as they appear here? Callimachus was aware of the connection between wonder and causation, yet what remains of his paradoxographical items seems to actively undercut this causal link. His only remaining poetical allusion to wonder occurs in the passage on the Sicilian cities where the poetic persona persists in questioning the Muses out of sheer amazement about the catalogue of Sicilian cities. [795] Fragment 43 shows the poet's interest in catalogues or long lists of almost the same kind as we find in the paradoxography: largely unconnected enumerations of items. The brevity and quick succession of the Sicilian cities betrays more the fickle and associative mind of the scholarly poet rather than Aristotelian scholarship, but Callimachus does treat curiosity as a drive for knowledge. His poetical persona does not deny validity to Aristotle's quest for knowledge and is just as interested in the *aetia*, but his interest is deliberately characterised by Callimachus as pedantic and even superficial in this passage.[796]

Aristotle believed that some genres were more appropriate to address the wonderful: this meant poetry more than rhetoric and epic over tragedy.[797] This opens a space for wonder collections in the form of the Περὶ θαυμασίων ἀκουσμάτων and the genre of paradoxography

[794] Lennox 2010 + Leunissen 2010, 76-111 for the connection of this passage to Aristotle's teleology.
[795] Fr.43.84-87.
[796] Fantuzzi/Hunter 2004, 59-60 lay out the philosophical aspects of this passage referencing Plato and Aristotle.
[797] Lachmann 2002, 134.

in general. Sheer and naïve wonder itself was not unacceptable to Aristotle provided it was channelled in the right places and did not obscure the empirical process which it often precipitates. This explains why each of Aristotle's works approaches wonder very differently. The biggest contrast exists between the *Historia Animalium* and the *Metaphysics, Rhetoric,* and *Generation of Animals.*[798] Considering that the latter and the *HA* deal with similar subject matter, it is even more interesting to understand which circumstances changed Aristotle's approach to the latter.

The *Generation of Animals* occasionally raises the expectation that something may be marvelled at (τοῦτ᾽ἄν τις δόξειεν εὐλόγως θαυμάζειν, *GA.*771a18), before going on to dismantle it altogether: αἴτιον δ᾽αὐτὸ τὸ θαυμαζόμενον τοῦ μὴ θαυμάζειν (771a26–7). In the same passage concerning theories on animals' ability to give birth once or several times, he provides explanations for everything which is labelled worthy of wonder at first glance. His meticulousness does not leave much room for speculation, and he effectively avoids using the divine as an explanation.[799] In one passage in the *Generation of Animals* which discusses the Herodotean story of fish conceiving without copulation (756b3-8; Hdt.II.93), he describes Herodotus' ideas of fishes' special status a θαυμαστόν, which approaches the meaning of 'fanciful' and is therefore considered to be wrong.[800] Here Aristotle effectively introduces wonder in order to dismantle it.

Otherwise, Aristotle's works steer clear of paradoxographical language especially his anatomical and biological writings. The *Historia Animalium* with its ca. 100,000 words contains merely five mentions of θαῦμα including its cognates. One comment on mice reproduction as θαυμασιωτάτη (*HA*.580b10-11) stands out without explanation.[801] Largely,

[798] Priestley 2014, 81.
[799] Lloyd 1968, 157.
[800] Priestley 2014, 74.
[801] Priestley 2014, 75n.81.

the popularity of the *Historia Animalium* does not derive from the fact that its author considered its content to be wonderful or included paradoxographical terms in there.

Far from being only interested in establishing the laws of nature which govern what animals looked like, the Peripatetics including Aristotle paid particular attention to the abnormal in order to test their theories as Giannini says:

> 'la loro attenzione non era alla regola, alla legge generale nel fenomeno, bensì incurantemente alla eccezione; l'abnorme, il raro, già di per sè interessanti, venivano in primo piano; quando si studiavano le meraviglie e le abnormità della natura si credeva di penetrare direttamente nei segreti delle forze naturali.'[802]

Aristotle's technique consists in dividing up and defining his material. Any animal which seems not to conform to the known rules, is classified as a particular εἶδος of a γένος rather than dismissed straightaway.[803] As a result Aristotle is constantly prepared to amend his conception of the world. Paradoxography on the other hand entertains a more rigid view of the world, in which wonders do not conform to the accepted standards. Although both Aristotle and Callimachus contemplate the connection of nature with wonder, their approaches differ fundamentally.

d) Fusion of Aristotelian and Herodotean methodology

Callimachus' paradoxography differs from both Herodotus and Aristotle in completely eschewing explanations.[804] This is one of the reasons why paradoxography has been thought to be the expression of less curious minds (Giannini) or 'pseudo-scientific' (Schepens/Delcroix).[805] While Herodotus had a desire to provide explanations in order to be considered trustworthy, paradoxography had largely different aims built on radically

[802] Giannini 1963, 259.
[803] Li Causi 2002, 141; Pellegrin 1982, 25-71, 96-137.
[804] Priestley 2014, 87: 'The paradoxographers' lack of interest in *aitia* is unusual, both in terms of background and contemporary intellectual trends.'
[805] Giannini 1963. Schepens/Delcroix 1996, 378, 390ff.

different methods. Schepens and Delcroix assume that by omitting explanations, paradoxographers 'endeavour to inspire his readers with a true sense of the marvellous'.[806] Zanker, however, considered paradoxography to be 'a perversion of Aristotelian scientific inquiry.'[807] We should most likely see paradoxography as a reaction against a world which in ancient standards had been mapped and systematised so profoundly – especially in the centre of the new paradoxographical production.[808]

Yet the fact that paradoxography includes no explanations, merely sources, shows that it encourages the reader to verify the information rather than leave him in a state of bewilderment. Many of Aristotle's realisations are based on first-hand observations and inquiry, a process which Callimachus does not preclude with his paradoxography.[809] Vague phrases like 'it is said' at least which we have already encountered in Herodotus, leave open the option for doubting the presented information and to start one's own first-hand observations.[810]

Priestley considers Callimachus' wonder displayed in fr.43 as resembling Herodotus. While Aristotelean philosophy at least partly lies at the root of his wonder, he still retains some Herodotean methods[811] and effectively fuses these two distinct ways of inquiry. Priestley compares them directly:

> 'For Plato and Aristotle, wonder is connected with *agnoia* and *aporia* and the "desire to learn" (τὸ ἐπιθυμεῖν μαθεῖν); the escape from *agnoia* and *aporia* is effected through *philosophia*. The notion of inquiry, however, is omitted in these formulations. Callimachus articulates his desire to 'learn by inquiry' ([τὸ πυ]θέσθαι), and then proceeds to question Clio.'[812]

[806] Schepens/Delcroix 1996, 392.
[807] Zanker 1987, 118.
[808] Priestley 2014, 87.
[809] Priestley 2014, 87.
[810] Bigwood 1993, 541.
[811] Fantuzzi/Hunter 2004, 55.
[812] Priestley 2014, 105.

Πυθέσθαι is repeated in the *Iambus 6* in a response to Herodotus, with the speaker being λίχνος … καὶ τό … πυθέσθαι (ll.45-6). Callimachus' *Aetia* effectively combines both narrative and an option to enquire further. In fr.43 Callimachus' poetical persona is in dialogue with Clio with both parading their knowledge through vastly different contributions: while the poet rattles off a bitty list of Sicilian cities and their rivers, the Muse each time narrates a full story. The Muse provides substance to Callimachus' rather succinct list, which in its brevity is reminiscent of our paradoxographical texts, but also provides certainty since her information will be ultimately superior to any human inquiry. Thus, while Herodotus' inquiry was riddled with mistakes and the Peripatetic approach too obsessed with listing, Callimachus' approach to gaining information is shown as ideal.[813] The insertion of divine beings with superior knowledge, however, pays homage to his third major model, Hesiod, rather than being an endorsement of this type of explanation. As someone who collected interesting facts but omitted explanations, Callimachus knew that his selection was largely a random one and that he faced similar κρίσις problems to Herodotus or Aristotle.

The focus on the natural world is mirrored by some Peripatetic works: the paradoxographical interest in objects turning to stone when thrown into water appears in the zoological works of Aristotle (*MA*.51+95) and the Προβλήματα (937a14). We have seen plenty of discussion of nature in Herodotus, especially for water, animals, and ethnography. Descriptions of plants sound positively paradoxographical in the case of cannabis (IV.74-5) and lotus (IV.177). Herodotus' treatment of human wonders differs from the paradoxographers. When Herodotus describes unusual people, he either names individuals or the names of specific peoples, whereas the paradoxographers tend towards very general statements which border on the medical or anatomical e.g., men have more teeth than women (Antig.*Mir.*68).[814]

[813] Priestley 2014, 106.
[814] Priestley 2014, 79.

Callimachus appears much closer to Herodotus in his willingness to maintain a readiness to marvel next to exalting the status of wonder than Aristotle who sees wonder and knowledge as diametrically opposed. In the few instances in which Aristotle's knowledge of Herodotus shines through (only one direct mention in the *HA*.523a17: Ἡρόδοτος διέψευσται), Aristotle describes Herodotus as ignorant about correct explanations (ἀποροῦντος τὴν αἰτίαν, *HA*.579b2-4). Aristotle rejects Herodotus, yet still uses his material: in the comment above, Aristotle dismissed Herodotus' explanation for why the lioness supposedly gives birth to only one cub, but this very item is not only taken up by Antigonus but constitutes the only proper mention of Herodotus in this corpus (Antig.*Mir*.21). Since Antigonus included ample sections of the *Historia Animalium*, he would have known Aristotle's criticism of this story. The similar wording suggests that in this place he drew on Herodotus directly, but apparently chose to ignore his condemnation by the Stagirite.[815]

Aristotle was already forced to rely on the information provided by Ctesias expressed in phrases such as: 'εἰ δεῖ πιστεῦσαι Κτησίᾳ'. Aristotle had qualms about using his material due to its fantastical nature e.g., for the manticore (*HA*.501a24-b1). Yet he is ultimately comfortable with phenomena which do not conform to his range of experiences, provided he can find a suitable explanation for its existence.[816] Aristotle is still confident enough in his own methods to include Ctesias' evidence wherever this seems appropriate. He deploys hypothetical propositions in order to judge where Ctesias could be trusted and where he cannot.[817] Aristotle probably exercised a certain fascination on Callimachus considering the Stagirite tried to make very elaborate arguments based on information he had barely a chance to verify for himself – a situation which an armchair scholar like Callimachus could probably empathise with.

[815] Vergados 2007, 739 says Antigonus used Herodotus directly *pace* Riemann 1967, 60-1.
[816] Sassi 1993 called this a 'semicritical model'.
[817] Li Causi 2002, 150.

This chapter showed that we must radically reassess the role of the Peripatetics on Alexandrian and particularly Callimachean scholarship which goes beyond structural similarities between the Museum and the Lyceum. The range of Aristotelian treatises which can be proven to have directly influenced Callimachus, remains small. Although the *Historia Animalium* carries great significance for paradoxography overall, its influence on Callimachus is surprisingly small even though it was available in Alexandria. Callimachus' interest in animals seems to have been exercised not along paradoxographical lines but focused on specific categories like birds or fish. Paradoxography here emerges as one of many disciplines that seem to have been imported from the Peripatetic School perhaps via representatives such as Demetrius of Phalerum or Strato. The most important text for comparison remains the Περὶ θαυμασίων ἀκουσμάτων, whose smaller concentration on bibliographical sources, speaks for a different purpose of paradoxographical collections in Athens.

VI. The Purpose of Callimachus' Paradoxography: Poetry vs. Prose

After contemplating the methods and precedent of Callimachus' paradoxography from different angles, it is now time to analyse the possible purposes for which Callimachus wrote paradoxography. This requires firstly looking at the contexts in which paradoxography occurs, which includes papyri discovered in Egypt as well as later Byzantine manuscripts. Wonders or lists discussing the subjects normally occurring in paradoxography appear on papyri written for educational purposes. The Roman consumption of wonders seems to have differed from the Hellenistic one as wonders appeared either scattered in encyclopaedic collections or were regarded as an exotic Greek genre consumed in easy-to-access literature in public book stalls.[818] In the second part we will look at possible performative aspects of paradoxography and its different manifestations at the Alexandrian court before analysing its relationship with poetry. The secondary nature and simple prose form in which the *paradoxa* occur in Antigonus disguise the original purpose of Callimachus' collection. We have already discussed how much we can deduce about Callimachus' sources and the geographical location of its wonders, so that this chapter will focus more on stylistic aspects and the organisation of the collection while drawing on some earlier conclusions we have drawn.

[818] For the latter Gel.IX.4.1-5.

1. Widespread popularity

Paradoxography challenges some of our previous assumptions about the readership of Alexandrian scholarship. Traditionally restricted to a strictly highbrow readership in Alexandria which would have been primed to understand the densely allusive poetry, our paradoxographical evidence occasionally points into the opposite direction. In Roman times Callimachus had advanced to be the most widely read poet after Homer and Euripides according to papyrological finds in Egypt outside of Alexandria. While one may explain Homer's presence with his unquestionable position in the Greek school curriculum, it is slightly more surprising that Callimachus' highly erudite poetry seems to have been widely appreciated everywhere in Egypt. He belongs to the ten most frequent authors among the Oxyrhynchus papyri[819] and enjoyed similar popularity in provincial towns as Hermopolis and Antinoopolis, in Fayum villages such as Karanis and Tebtunis. Uncertain is whether this situation also reflects the first half of the 3rd century BC, as not much remains of Callimachus from the Ptolemaic period.[820] Since its composition in plain prose would have made it easily accessible for everyone, one would have assumed paradoxography to have tipped the scales further in favour of a broader readership of Alexandrian literary production. It is important, however, not to let its subsequent success as an independent genre disguise our evidence for the period directly following Callimachus.

a) Readership outside of Alexandria

The shape of paradoxography's literary form is important in order to better understand its potential audience. Its double-character as both containing elaborate poetry and straightforward prose probably correlate with the different audiences it was aimed at.

[819] Krüger 1990, 214-15; Harder 2002a, 70-81 esp.77.
[820] Roberts 1953, 269-70.

Especially for Callimachus we need to be aware of a small primary audience, which corresponds to the scholars at the Museum and other cultural centres, and a bigger, secondary audience: the latter judging by several papyri finds in Egypt consisted of the Ptolemaic Greek-reading middle class from tax farmers to schoolteachers.[821] This is not to say that poetry would have not been understood by the broad population: the Gallus papyrus found at Qasr Ibrim suggests Greek mercenaries as its immediate readership. Our papyri reveal the occasional need for reading aids as evident from the Victoria Berenices papyrus[822] on which the reader had scribbled a prose paraphrase of the text – Callimachus' narrative was obviously hard to follow.[823]

There are defenders of paradoxography as 'popular literature' with a high distribution-level.[824] Antigonus after all had access to Callimachus' collection in Pergamum a century later. This claim is certainly true for later Hellenistic and Roman times, but for the period close to Callimachus this is hard to justify. Schepens had classified paradoxography as court poetry, partly based on the relative lack of papyrological evidence of paradoxography around the time the genre came into existence.[825] Apart from POxy2637 (2nd century AD) which potentially mentions Philostephanus' Περὶ παραδόξων ποταμῶν[826] and POxy218 (3rd century AD) exhibiting a vaguely paradoxographical character[827], there is a papyrus dated to the 2nd century AD (inv.7 1B.7/J (b) which contains the text of Apollonius Mir.49.1.1-6

[821] Asper 2011 argues for a similarly heterogeneous but predominantly Greek readership with sensibilities resembling the Ptolemaic elite. Cameron 1995 tried to construct a framework in which Hellenistic poetry was predominantly performed orally e.g., at symposia, but most scholars argue for a bookish elite: Gentili 1988, 174-76; Goldhill 1991, 223-224; Williams 1968, 35; Zanker 1987, 18; Grant 1982, 260.
[822] Parsons 1977 read with Parsons 1993, 169, cf. Asper 2001, 115n.216.
[823] Parsons 1993, 169.
[824] Gabba 1983, 14ff., Jacob 1983, 121ff.
[825] Schepens/Delcroix 1996, 404-408 (brief summary of the papyrological evidence: p.433).
[826] Pfeiffer 1968, 288 but suggested by Lobel.
[827] Pajón Leyra 2014 is a re-edition of the papyrus, cf. Schepens/Delcroix 1996, 385-86 + n.38. Fraser 1972, II.1089 n.451 approaches the idea that this papyrus might have contained Archelaus' Ἰδιοφυῆ (proposed by Crönert 1901, 529-30) with caution. Crönert 1901, 530 dates it to the 2nd century AD.

about Pythagorean figures.[828] PLitLond112 (3rd century BC) first published as PPetrie9 contains some ethnographic stories in the style of Βαρβαρικὰ νὀμιμα.[829] Very few papyri survive from this time, which suggests that paradoxography had not reached the level of broad popularity in the generation after Callimachus which it would later achieve. Callimachus was probably not writing with a popular audience in mind.

b) School context

In the previous chapter, we have already dedicated some thought to the role Peripatetic scholarship played in school textbooks. There are some indications that Callimachus formed part of the predominantly Greek school curriculum as emerges from the schoolbook dating to ca. 217-210 BC from the Fayum (P.Kairo.inv.65445).[830] Rossum-Steenbeek who especially looked at papyri from a later period identified papyri as either being based on one literary work or containing catalogues of living creatures, phenomena, and events in different sources, several even covering subjects discussed by Aristotle.[831] They effectively collected, organised and excerpted information from a variety of sources. This modus operandi is of course reminiscent of paradoxographical literature, but these sub-literary papyri mostly date to a much later period and do not necessarily tell us that this was common practice during Callimachus' time. It is nevertheless worth looking at the 2nd century BC Laterculi Alexandrini (P.Berol.inv.13044) offering catalogues of sculptors, painters, grammarians, lawgivers, architects, engineers, the Seven wonders of the World, islands, mountains, rivers, springs, and lakes.[832]

[828] Its content probably derives from Bolos. Discussion in Giannini 1964, 123-24. According to Pajón Leyra 2014, 30n.5 there was supposed to be a forthcoming edition on this papyrus by Dirk Obbink and Ivanoe Privitera.
[829] Lumbroso 1922; Schepens/Delcroix 1996, 433; Pajón Leyra 2014, 304-05.
[830] Asper 2001, 115.
[831] Rossum-Steenbeek 1998, 119-20.
[832] Rossum-Steenbeek 1998, 138n.42. Later geographical Latin catalogues are listed in Riese 1878 and Regenbogen 1950, 1466ff. They include texts with similar interests: e.g., Hyg.*Fab*.223 *Septem opera mirabilia*,

Based on a later papyrus with a more extensive prologue, which shares similar characteristics with the Laterculi Alexandrini, Rossum-Steenbeek assumes that these geographical and historical lists were used in educational contexts. Paradoxography in these contexts seems to have been primarily presented in the form of the Seven Wonders and less through wonders about natural phenomena. Landscape features seem to have been included for the sake of sheer size rather than any other specific properties, which explains why the Seven Wonders, which are primarily perceived as imposing buildings, are so popular.

There are also papyri listing writers, philosophers, catalogues of books, fish, birds, and rivers, which seemingly exceeded the scope of school teaching.[833] The ancient habit of list making clearly exceeded the educational frame and pervaded every-day life. The educational papyri are slightly closer in time to Callimachus than the papyri with clearly paradoxographical language, which indicates that Callimachus' list making activities should be seen both in the context of Peripatetic organisation and wide-spread ancient educational techniques. Yet as before it does not seem likely that paradoxography itself became part of the school curriculum anytime soon after Callimachus.

c) Reading/research aid for scholarship

Monique van Rossum-Steenbeek's survey of sub-literary papyri[834] distinguishes between digests — extracts of summaries of texts, which may supplant a consultation of the primary text — and ancillary works which should be read alongside the text they describe. The latter often provide additional information (like those we normally find in the scholia), but through their form they are usually too brief in order to be able to convey the gist of the main text. These texts supported the reading of the original text. This applies to the Callimachean

276 *Insulae maximae* and Lucius Ampelius' *Liber memorialis* with catalogues of famous mountains, rivers, and islands (6.6ff.) and the *Seven Wonders* (8.18ff.).

[833] Harrauer/Sijpesteijn 1985, 105.

[834] She defines them as papyri written in literary hands which deal with literary texts but are not literary themselves.

diegeses (Τῶν δ Αἰτίων Καλλιμάχου διηγήσεις in P.Mil.Vogl.1.18), whose summaries help us to reconstruct some sections in *Aetia* books III and IV, the *Iambi*, *Lyrica*, and the *Hecale.* The language of the diegeses resembles that found in our paradoxographical collections: they refer to the author and introduce their statements with phrases such as φησὶν (ὅτι), ἐξῆς (φησι), ἱστορεῖ περὶ, λέγεται ὡς, which often govern an accusative with infinitive construction for the rest of the paragraph. Antigonus' *paradoxa* are introduced by similar phrases, especially using verbs such as φάναι, λέγειν, φάσκειν, and ἱστορεῖν. Most of the authors' names are kept in oratio obliqua all the way to the last transmitted paradoxon, which demonstrates the dependency of this information on Callimachus' original paradoxographical collection. The use of each specific verb does not reveal much about Callimachus, apart from the association of ἱστορεῖν especially with historiographical authors which occurs more frequently in the Callimachean part. We should ascribe the choice of specific words to Antigonus rather than Callimachus.

Although Antigonus' extracts are short and similar in their language to these ancillary papyri, Antigonus' collection was likely intended to replace rather than support Callimachus' original text as each of the *paradoxa* could be read on their own. Antigonus' aim was to create his own collection of *paradoxa* worth hearing. His collection could be read on its own even if its catalogue form might strike the modern reader as tedious. There is still a considerable amount of his personality inserted into the text to render his text cohesive enough to be read as a whole.

Antigonus as a receiver of paradoxography seems to have been out of keeping with later exponents of the genre: normally, paradoxographers liked to extract marvellous stories from their predecessors without referring back to the primary text. The tendency was rather to keep these texts short. Overall, the purpose of Antigonus' collection was probably closer to Callimachus than the later paradoxographers considering that both could consult the

generous bibliographic resources on demand as seems to be implied by the set-up of Antigonus' collection. Callimachus' and Antigonus' audiences were likely scholars who might want to further research a phenomenon.

Our analysis has shown that far from being a popular literature Callimachus' primary audience for his paradoxography existed closer to the Museum itself in a tightknit community of scholars and royal patronage which preferred to import the wonders of the world rather than disseminate this knowledge.

2. Material designed for court life

We should be careful not to overestimate Callimachus' aspirations to be a serious researcher: 'es zeigt sich, was wir immer wieder feststellen können, daß Kallimachos eher Sammler als Forscher war.'[835] Howald's deliberations on what differentiates a collector from a researcher help to situate Callimachus' comments about himself closer to that of a simple gatherer of information who paints a more sociable and less serious character of himself than the type of contentious scholar from whom he repeatedly tries to disassociate himself from. He lambasts those who excessively criticise his poetry (e.g., the Telchines) in the *Aetia* prologue. According to Howald, collectorship aligns naturally with curiosity, a character trait which Callimachus has evoked repeatedly for himself and probably nowhere else so obviously as in his dialogue with the Muse about the cities of Sicily (fr.43). The combination of collectorship and curiosity resulted in later centuries in the establishment of curiosity cabinets by those who could afford such luxuries. The Ptolemies certainly could have, but instead of curiosity cabinets which serve as a private indulgence for the owner and a perhaps

[835] Howald 1943, 13.

a select few who are shown these objects, Ptolemy Philadelphus opted to exhibit his ability to purchase exotic curiosities by parading exotic animals through Alexandria. Ptolemy collected exotic animals, which were also discussed in Archelaus' paradoxographical poems. Marvellous rivers and islands could not be physically collected and were therefore collected in writing, as Howald remarks:

> 'dann auch Kollektionen von Curiosa, nur dadurch von den Kuriositätenkabinetten moderner Fürstensitze verschieden, daß die Objekte nur auf dem Papier und nicht in realen Schaukästen ausgestellt waren.'[836]

For paradoxography overall, we must assume a strong alignment between conversation topics at the court and the subject matter covered by its affiliated scholars.

The language of later authors describing the goings-on during that time clearly mirror paradoxographical language: Diodorus, for example, references Agatharchides who described a snake collected by Philadelphus 'as an amazing (παράδοξον) sight and unbelievable (ἀπιστούμενον) to those who heard about it.' The snake was domesticated 'so that its tameness became a marvel (θαυμαστήν).'[837] It should be noted that here both the animal as well as its behaviour as a result of human influence are considered marvellous. Recitations of paradoxography in short digestible portions are therefore part of the cultural setting in which Callimachus would have prepared his paradoxography.

a) Imported wonder

There were plenty of wonders to be admired in Alexandria. Next to excellent craftsmanship, the Ptolemies imported exotic animals into the city. There are several sources testifying to

[836] Howald 1943, 14.
[837] D.S.III.36.3-IV.37.7, cf. Hunter 2008, 381.

this peculiar interest: Alexander of Myndus reports that φέρεσθαι γὰρ πάμπολλα τὰ ζῷα ταῦτα εἰς τὴν Ἀλεξάνδρειαν (Ath.IX.390d). Diodorus reports:

> ὁ γὰρ δεύτερος Πτολεμαῖος περί τε τὴν τῶν ἐλεφάντων κυνηγίαν φιλοτιμηθεὶς (repeated in Plin.*Nat*.VI.29) καὶ τοῖς τὰς παραδόξους θήρας τῶν ἀλκιμωτάτων ζῴων ποιουμένοις μεγάλας ἀπονέμων δωρεάς ... καὶ τῶν ἄλλων ζῴων ἀθεωρήτους καὶ παραδόξους φύσεις ἐποίησεν εἰς γνῶσιν ἐλθεῖν τοῖς Ἕλλησιν.[838]

Callixenus of Rhodes describes the display of strange animals as part of the procession of Ptolemy Philadelphus.[839] We even have visual evidence of this in the paintings of curious animals found in the Hellenistic Marisa tombs in modern day Israel, which depict animals from the Nile Valley and the interior of Africa and some mythical animals (including a mantichore and a griffin which we would with Ctesias have located in India or Central Asia).[840] Their similarity to the Shatby Stag Hunt Mosaic from the Alexandrian palace area suggests an artistic proximity to the royal Ptolemaic court.[841] Athenaeus' reference to a ὑπόμνημα περὶ τῶν ἐν αὐτοῖς (i.e., the royal palace) τρεφομένων even implies that Philadelphus himself wrote about animals living in the royal zoo.[842] Further, the Vita Arati seems to preserve an epigram in honour of the court poet Aratus. It likely formed part of a supposed work by Philadelphus titled Ἰδιοφυῆ (the title is identical with Archelaus' collection of *paradoxa*!).[843]

Düring believes that all these testimonies amount to nothing more than a basic interest in rare animals rather than being part of any systematic study of zoology or biology in Alexandria.[844] This is correct to the degree that neither paradoxography nor indeed Callimachus' Ὑπομνήματα on fish or birds qualified as systematic treatises on the subject with scientific aspirations. The Alexandrian interest in this topic is selective and subjective,

[838] D.S.III.35.
[839] His description is contained in Ath.V.203e-206c, cf. Rice 1983.
[840] Peters/Thiersch/Cook 1905; Kloner 2003 for an archaeological analysis.
[841] Jacobson 2004, 35.
[842] Ath.XIV.654c.
[843] Maass 1898, 79 attributed the poem to Archelaus. The epigram is contained in *FGE* p.84; *SH* 712, cf. Fraser 1972, II.1090n.459 and Cameron 1995, 323.
[844] Düring 1950, 56n.1 lists all the sources on this topic.

which was expressed both through the Ptolemies' rather amateur ambitions of collecting as many exotic animals as possible, as well as through the literature which chose to focus on the abnormal or on what appeared interesting or novel to them.[845] On the other hand, animals and precious stones were probably the most easily 'importable' wonders for the Ptolemies. For the rivers, lakes, and islands the paradoxography had to compensate through its description of these wonders which had to replace a first-hand visit to these places.

b) Sympotic conversation topic

Considering that we see manifestations of this interest in *paradoxa* in Alexandria, it is likely that these would have been part of the conversation topics at court. Wonders were germane to dinner conversation through their entertainment factor as exemplified by the topics discussed by an institution not too dissimilar to Alexandria. The following report about the regular post-dinner activities at Corpus Christi College, Oxford around the end of the 19th century seems to replicate what has been assumed for the setting of discussions around wonders in Hellenistic Alexandria:

> 'For, on the latter occasions, after refection and potation, the Fellows and Probationers might remain in the hall to sing or employ themselves in any other innocent recreations such as became clerics, or to recite and discuss poems, histories, the marvels of the world, and like subjects.'[846]

The lighthearted conversation topic of wonders seems to be a cross-cultural phenomenon. In Alexandria, it would have blended with the erotic and playful poems traditionally recited at ancient banquets.

[845] Düring 1950, 56-57.
[846] Fowler 1893, 52.

Callimachus himself tells us that he used symposia in order to discuss his research with other guests. In the case of fr.178 it is the Ician stranger, Theogenes, whom he questions about his island of origin and why Peleus is being worshipped on this island. Granted, he stresses the fact that he is leading this conversation also because he and the Ician guest have not indulged in the wine so far, but the concept of combining a social occasion with research is still valid. Callimachus offers us two more sympotic settings combined with research: in fr.43.12-17 luxuries including the food, flowers, and oils pale into significance considering the interesting stories he has heard on these occasions. The next line that remains after the lacuna shows that we are already deep in the catalogue of the Sicilian cities. Due to the lacuna, it is less clear how the setting and the catalogue are connected. He is famously in conversation with the Muses at this point, but the start of the *Hymn to Zeus* demonstrates how quickly a Hellenistic poet can transition from the libations poured to the god to the narrative. Also in this case, we are confronted with a catalogue, this time of Arcadian rivers. Callimachus therefore twice connects a symposiastic setting with catalogues of information, which one initially would have thought as incompatible with normal conversation. That informal conversation and the recitation of repetitive information are affiliated to such a degree is only further proof of what scholars have suspected for a long time: symposia and social occasions in the royal quarters were opportunities to showcase the poets' newest poetical achievements.

It is less likely of course that Callimachus would have rattled off a list of paradoxographical phenomena in the form in which it occurs in Antigonus' text as plain prose. Asper suggested that *paradoxa* could have served as entertainment during symposia, but he doubts that the Callimachean *paradoxa* in Antigonus' treatise as they stand would have been sufficient material to work with considering that the *paradoxa* are rather brief.[847]

[847] Asper 2004, 49.

Alan Cameron who keenly defended the oral performance of Hellenistic poetry, has pointed out that particularly riddles were appropriate conversation topics at symposia. The intellectual challenge of their decipherment represented a light-hearted yet engaging social occupation. Successful and unsuccessful attempts were met with their appropriate reward such as flower garlands or punishment in the form of unmixed wine.[848] A concrete example of such a riddle seems to have been Archimedes' famous cattle problem, which in the letter to Eratosthenes is sent 'to those who study such things in Alexandria'.[849] Its conciseness would have made it an ideal example of what Bing has called an 'Ergänzungsspiel', the tendency of Hellenistic poems to demand from its reader a willingness to puzzle information together rather than just consume it.[850] Cameron suggested that *paradoxa* both in the form of short poems as well as Callimachus' prose mirabilia inhabited a similar role of entertainment, albeit not requiring its audience to guess anything. *Paradoxa* could have been easily combined with other conversation topics. Paradoxography was just one of the topics constituting what German scholars call Buntschriftstellerei or ποικίλη ἱστορία.[851] This potpourri of topics encompassed broadly everything from anecdotes, apophthegmata, riddles, ekphraseis, to little catalogues.[852] Considering how varied a book collection could be, it is not surprising that dinner conversation was equally varied and reflected a sort of oral version of this hotchpotch of information.

c) Archelaus' epigrams performed at court

A contemporary of Callimachus, Archelaus of Chersonesus, takes centre stage in our discussion of a lyric version of paradoxography: he is the only poet from Hellenistic

[848] Cameron 2004, 81. Cf. Antiphanes F124; Clearchus in Ath.X.457c, 458f-59b.
[849] *SH* 201.
[850] Bing 1995.
[851] Priestley 2014, 84 associates the randomness of *Buntschriftstellerei* with later literature.
[852] Spoerri 1965; Bowie 2003.

Alexandria next to Posidippus of whom we retain substantial paradoxographical poetry.[853] Of five complete extant poems appear four in Antigonus of Carystus (chs.19+89), the fifth in Varro.[854] The exact nature of his Ἰδιοφυῆ is not immediately clear: some think it could have contained not only epigrams but also longer elegiac poems.[855] Archelaus provides the best insight into how paradoxography was consumed at court. According to Antigonus, Archelaus was one of 'those who explained *paradoxa* in epigrams to Ptolemy' according to Mir.19.4: καί τις Ἀρχέλαος Αἰγύπτιος τῶν ἐν ἐπιγράμμασιν ἐξηγουμένων τὰ παράδοξα τῷ Πτολεμαίῳ περὶ μὲν τῶν σκορπίων οὕτως εἴρηκεν.[856] The choice of ἐξηγουμένων demonstrates that these epigrams were both meant to educate and to astonish.[857]

Archelaus is indeed not the only one with poetical fragments quoted in Antigonus of Carystus. Other examples are Myrsilus of Lesbos (7), Philetas (8), Alcman (23), Aeschylus (115), Philoxenus (127) and possibly Clearchus (25). Yet of all these citations none of the poetical citations contain any word that designates them as a wonder, apart from Archelaus' poem quoted in chapter 89, which also happens to be his longest extant one:

πάντα δι᾽ ἀλλήλων ὁ πολὺς σφραγίζεται αἰών·
ἀνδρὸς γὰρ κοίλης ἐκ μυελοῦ ῥάχεως
δεινὸς γίνετ᾽ὄφις, νέκυος δειλοῖο σαπέντος,
ὃς νέον ἐκ τούτου πνεῦμα λάβῃ τέραος,
τεθνεότος ζωὴν ἕλκων φύσιν· εἰ δὲ τόδ᾽ἐστίν,
οὐ θαῦμα βλαστεῖν τὸν διφυῆ Κέκροπα.[858]

The poet plays with the notion of wonder. The actual process of how the wonder is produced is described as a τέρας, while it is οὐ θαῦμα that it produces a Cecrops-shaped being

[853] Wonder in Posidippus was first discussed by Krevans 2005, 89-92. Guichard 2006 endeavoured to find more references to wonder across the Milan papyrus.
[854] Var.*R.*III.16.4.
[855] *FGE* p.21.
[856] Cameron 1995, 323; *FGE* p.22; Susemihl 1897, I.465ff.; Westermann 1839, XXIIff. The mention of Ptolemy here is usually interpreted as meaning Philadelphus rather than Euergetes. For Euergetes I argues Fraser 1972, I.778-80, II.1086n.443; Gabathuler 1937, 94f for Euergetes II, based on Ath.II.61c.
[857] Sassi 1993, 457-65; Fraser 1972, I.778-9.
[858] '*The long age marks all things through each other: for from the man's hollow spine marrow, rotting from a pitiful corpse a terrible snake is born, which takes a fresh breath from this wonder, dragging a living creature from the deceased: if it is this, it is not a wonder that it produces a two-shaped Cecrops.*'

considering the mythical creature is well-known. The reader here is asked to wonder at the 'scientific' process of a snake's birth out of a corpse but accept the 'myth' of Cecrops' existence as credible. Even if an ancient audience would have not used labels such as 'scientific' or 'mythical', it is clear that Archelaus is playing with the language and nature of wonder. Archelaus here exhibits a pseudo-critical approach to wonder: he partly parodies the comments made by paradoxographers (and even Herodotus!) who approve or disapprove of wonders with very subjective reasoning.

In the other few remaining verses recorded by Antigonus, Archelaus provides a valuable clue as to how his paradoxographical poem was consumed by his audience:

ἐκ νέκυος ταύτην ἵππου γράψασθε γενέθλην,
σφῆκας· ἴδ᾽ἐξ οἵων οἷα τίθησι φύσις.

The exhortation γράψασθε implies that his audience is taking notes of what he is narrating, and as Vox has pointed out, might remind us of the scene in Iamb 1 in which Hipponax gives directions to the scholars assembled in front of the Serapeum.[859] Fraser had remarked this to be 'a curious expression suggesting an autoschediastic or symposiac performance'.[860] While in the *Iambi* the audience seemed to be ready to write down Hipponax' speech, here it is a bit harder to picture the setting. We probably cannot be certain that we are in a symposium setting here, but the fact that he has a listening audience here strongly suggests it. It might also just give us a hint that these topics were appropriate symposiac conversation topics and if we did not know that Antigonus does not reproduce Callimachus word for word, the loose notetaking would explain the simple language found in the paradoxography. It is here that

[859] Vox 1995, 281-83.
[860] Fraser 1972, I.887-9, II.1086.

we probably come closest to finding out what a performance of paradoxography looked like, which without Archelaus' verse would have remained mere supposition.

Besides Archelaus, Philostephanus, a Καλλιμάχου γνώριμος[861] and fellow Cyrenean, is also known to have treated paradoxographical subjects in verse. We have two badly preserved elegiac couplets by him on a Sicilian lake transmitted by Tzetzes.[862] It is unclear whether they form part of a larger poem or of a series of epigrams.[863] Capel Badino believes them to derive from a larger epigrammatic collection comparable with Posidippus' thematic sections. In this case the transmitted title περὶ παραδόξων ποταμῶν would be a subsection in this collection which seems to have dedicated considerable space to hydrography.[864]

Γαίῃ δ'ἐν Σικελῶν Τρινακρίδι χεῦμα δέδεικται
αἰνότατον, λίμνη καίπερ ἐοῦσ' ὀλίγη,
ἰσχυρὸν δίνῃσιν· ὃ πρὶν ποσὶ παῦρα τινάξῃς,
αἰφνιδίως ξηρήν σ' ἤλασεν ἐς ψάμαθον.[865]

Interesting is that the same paradoxon appears in our paradoxography in Περὶ θαυμασίων ἀκουσμάτων (ch.112) and the late Paradoxographus Florentinus (ch.30). The same pond was mentioned in passing by Callimachus in a paradoxon about an Indian fountain described by Ctesias.[866] There are no verbal correspondences. With Archelaus and Philostephanus we have therefore two writers of paradoxography in lyrical form who formed part of Callimachus' immediate vicinity at the Ptolemaic court. This cluster of lyrical paradoxography contrasts with Callimachus for whom no epigrammatic versions of paradoxography are known.

[861] Ath.VIII.331d.
[862] Tzetz.*H.*VII.670ff.
[863] Giannini 1964, 110-111; Schepens/Delcroix 1996, 400; Rossi 2002, 165.
[864] Capel Badino 2010, 38, 192-93.
[865] '*The most terrible stream shows forth in the Trinacrian earth of the Sicilians, forceful with its eddies, although the lake is small: before you disturb it a little with the feet, it suddenly drives you onto the dry sand.*'
[866] Antig.*Mir.*150.

The combination of marvels with an imperial setting recurs in Roman times. There are of course more sources for Roman imperial culture, which can ultimately help us to better understand the situation in Alexandria three centuries before even if in Rome the state-sponsored scholarship happened on a smaller scale than in Alexandria.[867] There are some examples for Roman court poetry concerned with paradoxography (prominently Martial's epigram about the Colosseum's inauguration), but the Roman engagement with science and paradoxography centred more around compilation than original research.[868] Still, both periods saw a close connection between imperial power and knowledge acquisition which went hand in hand.[869] Pliny, for example, according to Naas, configures imperialism as demonstrating its control over nature through its collection of sources.[870]

d) Unknown factor: Philetas' interest in paradoxography

We should not neglect one of Callimachus' favourite models, Philetas of Cos. He was not only the teacher of the young Ptolemy Philadelphus but also one of the main models for Hellenistic poets. The only problem is that very little remains of him making it nearly impossible to ascertain exactly which elements Callimachus borrowed from him. At least the programmatic end of Callimachus' *Hymn to Apollo* where the Melissae, the priestesses of Demeter, carry droplets of water to the spring (110-12), should be considered as a nod to Philetas who created the imagery of the garden of Demeter. Pfeiffer had connected this passage, which is probably a metaphor for bees feeding a stream with water, with Philetas' Demeter.[871] The element of water here functions as a metaphor for poetic craft, an image we encounter regularly in Callimachus and one that is borrowed from Pindar who uses nectar to

[867] Beaujeu 1957, 23.
[868] Naas 2000; Romano 1994; Parroni 1989, 489-90; Mudry 1986, 81-82.
[869] Flemming 2005, 449-63 for the progress of knowledge accompanying imperialism.
[870] Naas 2011, 57.
[871] Williams 1978, 92-94.

represent good poetry (perhaps even via Philetas).[872] More relevantly, Philetas was the author of a glossary on obscure Hellenistic vocabulary called Ἄτακτοι γλῶσσαι.[873] Callimachus, of course, was highly receptive to the idea of organising recherché vocabulary and we do occasionally see very obscure vocabulary used, but he was concerned with more 'tangible' curios.

Callimachus' poetry is profoundly influenced by his predecessor. He pays homage to him in the prologue to his *Aetia* (1.9-10)[874] which is continued by his imagery of the old and emaciated scholar/singer metamorphosing into a cicada (1.32-35). This image is taken from the persona which Philetas seems to have created for himself in his elegiac or epigrammatic poetry.[875] Either because he approached this poetic persona so closely or because the image was so compelling, we know of two statues of him in this guise: one in Cos, the other described by Posidippus in an epigram.[876] The Coan is widely acknowledged as the model for 'Callimachean slenderness.'[877] Most perceive him as a preeminent scholar on Homeric vocabulary as is implied by the line in Strato's comedy, which advises for anyone at a loss on this topic to consult Philetas.[878] Bing has opened up another line of enquiry for Philetas which would also be relevant for his role in the paradoxographical context. Within the Homeric words he seems to have been especially interested in local usages and customs, which may bestow an alternative meaning on these words and often seem to have aimed at deriving the maximum ambiguous potential out of both meanings.

[872] For Pindar Race 1981.
[873] Jacob 2000, 95; edition Dettori 2000.
[874] Wimmel 1958 discusses Philetas' role in the *Aetia* prologue, where he is merely acknowledged as a poet, not as a scholar.
[875] Bing 2003, 333.
[876] AB 63.
[877] First Calderón Dorda 1990.
[878] *PCG* VII.frag.1.

Pfeiffer in his 'Future of Hellenistic Studies' apportioned Philetas a key role in the development of Hellenistic scholarship.[879] As the first ποιητὴς ἅμα καὶ κριτικός,[880] Philetas anticipated the combination of scholarship with poetry, although for Pfeiffer he was first poet, then scholar.[881] His γλῶσσαι were still ἄτακτοι and it seems to have been mainly his pupil Zenodotus of Ephesus as the first librarian at the Alexandrian library, who introduced a new way of studying Homer through methodical lexicography. Philetas' interests indeed were not limited to linguistic considerations, but also seem to have stretched further as far as we can tell – perhaps even into a proto-form of paradoxography.

An example for these γλῶσσαι is what Athenaeus says about Philetas in XI.483a: Φιλήτας δὲ Συρακοσίους κύπελλα καλεῖν τὰ τῆς μάζης καὶ τῶν ἄρτων ἐπὶ τῆς τραπέζης καταλείμματα.[882] Instead of its original meaning as a goblet often combined with an adjective for 'golden', the Sicilians use the same word to describe breadcrumbs. Here local inhabitants are used as the sources for information and are the ones observing the customs similar to the situation in the paradoxographical texts. The title of his Ἄτακτοι γλῶσσαι made Pfeiffer assume that there was potentially no order at all to his observations,[883] just as the *paradoxa* in later paradoxographical collections appear to be largely uncoordinated.

There is deplorably little surviving from his poetry. Most of what remains of his Ἄτακτοι γλῶσσαι are prose paraphrases. Of his surviving fifty verses, there are two lines occurring in Athenaeus (II.71a) and Antigonus which could be taken from this collection as they sound very paradoxographical:

γηρύσαιτο δὲ νεβρὸς ἀπὸ ζωὴν ὀλέσασα

[879] Pfeiffer 1955, 71-72.
[880] Str.XIV.2.19.
[881] Romano 2011, 317 rightly points out that ancient κριτικοί evaluated poetry especially in terms of its acoustic qualities. Philetas' occupations are therefore not as different from each other as one might initially think. The *Suda* calls him a γραμματικὸς κριτικός.
[882] '*Philetas says that the Syracusans call the goblets by the name of remnants of bread and loaves from the table.*', cf. Dettori 2000, 90-91.
[883] Pfeiffer 1968, 90.

ὀξείης κάκτου τύμμα φυλαξαμένη[884]

The story goes that the bones of a deer that steps on the local thorny κάκτος plant, become unusable for crafting flutes. The story does not only sound paradoxographical but is found in Antigonus' of Carystus collection (Antig.*Mir*.8). Antigonus elucidates the story before the two verses:

> οὐχ ἧττον δὲ τούτου θαυμαστόν, καθωμιλημένον δὲ μᾶλλον τὸ περὶ τὴν ἐν τῇ Σικελίᾳ ἄκανθαν τὴν καλουμένην κάκτον· εἰς ἣν ὅταν ἔλαφος ἐμβῇ καὶ τραυματισθῇ, τὰ ὀστᾶ ἄφωνα καὶ ἄχρηστα πρὸς αὐλοὺς ἴσχει. ὅθεν καὶ ὁ Φιλητᾶς ἐξηγήσατο περὶ αὐτῆς εἴπας…[885]

Antigonus feels the need to elucidate these obscure verses, as he assumes his audience to be unfamiliar with the story. This casts into doubt the theory that Philetas already compiled paradoxographical material. His focus lay more on obscure references. The current instance could be a further example of literature on local nomenclature that appealed to Philetas, since κάκτος seems to have been a traditionally Sicilian word occurring in Epicharmus and Theocritus.[886] According to Athenaeus, however, the flute made from deer bone seems to have been a Theban invention, even if that does not seem to have been mentioned by Philetas.[887] Nor in fact is it clear that Philetas mentioned the Sicilian background of the story. The topic of the story does not seem to fit the rest of the fragments we know from his Ἄτακτοι γλῶσσαι. Antigonus provides no explanation from which part of Philetas' work this is taken, but Spanoudakis and Cessi suggest the Demeter.[888] Philetas is never directly credited as a paradoxographer. The rather succinct nature of the fragment and the fact that it seems to have been taken out of a longer poetic context, indicates that Philetas might have

[884] '*The deer may sing after losing its life if it avoided the prick of the sharp* '*κάκτος*'.'
[885] '*No less marvellous than this, but more widely known is the thorn from Sicily called κάκτος. When a deer steps on it and is pricked, its bones are soundless and useless for flutes. For this reason, Philetas spoke of it in the following terms …*'
[886] Epich.frr.159, 160, 161; Theoc.*Id*.10.4.
[887] Ath.IV.182b.
[888] Cessi 1912, 182.

integrated paradoxographical material but not that he composed a whole collection in this vein. His occupation with paradoxography seems to have been of a more incidental nature.

The couplet about the thorn plant seems in fact to take the form of a riddle or γρῖφος poem. A possible context for this poem could therefore be a παίγνια collection, which was consulted for entertainment at social occasions.[889] Still the verses sound more like Antigonus has coopted the verses into his paradoxography rather than that he drew on an already existing paradoxographical collection by Philetas. The way Antigonus describes the information taken from Philetas and cites whole lines of poetry, shows that the Carystean derives his information not from a prose list but Philetas' poetry:

> ᾧ καὶ φαίνεται Φιλητᾶς προσέχειν, ἱκανῶς ὢν περίεργος· προσαγορεύει οὖν αὐτὰς βουγενεῖς λέγων·
>
> βουγενέας φάμενος προσεβήσαο μακρὰ μελίσσας.[890]

The bougonia image was exceptionally popular in Vergil's times and could have travelled via Philetas to Rome. Its popularity could have received an additional boost from the prosaic paradoxographical notes.

Philetas appears comparatively prominently in the context of paradoxography. Antigonus names him twice directly before citing his poetry.[891] Philetas allegedly had an interest in the early forms of paradoxography,[892] even if he himself cannot be considered a founding member of the genre. He had a relatively close connection to the Peripatetics since Demetrius of Phalerum was personally known to him. He also shared the teaching of Philadelphus with Strato who would after 288 BC take over the Peripatetic School. In the previous chapter we have already observed his interest in thaumatographical stories about animals. Whereas the

[889] Reitzenstein 1893, 179-80 was the first to suggest that banqueters exchanged riddles with each other in the form of 'symposiastic *paraenesis*'. Spanoudakis 2002, 209-13; Manakidou 2012, 114.
[890] *'This also seems to have been of interest to Philetas, who was an exceedingly curious person: accordingly, he calls these [bees] 'cattle-born' when he writes: While speaking, you came upon the cattle-born bees with big steps* (Antig.*Mir*.19)*'.* Jane Lightfoot 2010, 54 conjectures φ<θ>άμενος.
[891] Antig.*Mir*.8, 19.
[892] Spanoudakis 2002, 19-29, 70-73.

engagement with animal wonders seems to have been usually a Peripatetic speciality, Philetas appears as a link between the Peripatetic tradition and Strato's treatise on the same subject.

With Antigonus characterising Philetas as ἱκανῶς περίεργος ('sufficiently curious') he implies him to be a poet interested in many things with no particular focus on wonders. It is therefore unlikely that Philetas wrote paradoxography as such. His interest will not have exceeded amateur interest, but he is still important as a link between the Peripatetics and Callimachus' occupation with wonders.

Overall, we encounter paradoxographical material in performative contexts even if somewhat faintly, judging from the example of Philetas and more clearly in Archelaus' case. The material, however, was adapted to its contexts so that a riddle poem was a coincidental further development of paradoxography and not its ultimate form. Indeed, this episode rather proves the versatility of the paradoxographical material. Having discussed its possible oral performance, we will now turn to its reception as a written medium.

3. Preparation for Poetry

Based solely on our paradoxographical sources, it is not clear to what extent paradoxography was turned into poetry or whether Callimachus ever wrote paradoxographical poetry. Yet the existence of Philostephanus' and Archelaus' paradoxographical sources indicates that there was some potential in this direction. Archelaus is exclusively known to us through his paradoxographical poetry. For Philostephanus we can be certain that he rendered

paradoxography at least partially in verse. The extant epigram preserved for Philostephanus about the Sicilian lake almost reads like a paradoxon and includes the geographical placement, but the source indication is missing. Its inclusion would have not been appropriate in a poem merely aimed at entertainment. While Callimachus had placed Xenomedes as a prominent prose source, the surprising effect of the inclusion of a prose source in a poem would quickly wear off if repeated several times in a row.

Callimachus' relationship to his material emerges even through his relationship with the Muses. His dream at the start of the *Aetia*, which transports him to Mount Helicon, links the *Aetia* with the epilogue ending with the line: αὐτὰρ ἐγὼ Μουσέων πεζὸν ἔπειμι νομόν. After his dialogue with the Muses in books I and II where Callimachus' persona grew gradually in confidence, the speaker seems to have fully assumed responsibility for the accuracy of his written material. The boost in confidence leads him to leave behind the traditional seat of the Muses on Mount Helicon which had inspired Hesiod to his poetry. The dual function of the Muses embraces both an inspiration to write beautiful poetry as well as to deliver the desired information. Callimachus seems to rely on both of their functions. At the same time, his poetic persona seems to be confident enough in his own state of knowledge and does not hesitate to emphasize when he himself is privy to information as in the case of the Lindians' profane speech (fr.7.19-20) or his confident recurring οἶδα in fr.43.[893]

The question remains of what happens when Callimachus goes himself to the πεζὸν νομόν. Interpretations have focused on him moving on to his *Iambi* or prose writing.[894] This would fit Murray's analysis of the Muses, who during the Hellenistic period advanced to presiding

[893] Kidder 2018, 132.
[894] Fr. 112. Clayman 1988 argues that the *Iambi* followed the *Aetia* in POxy.7.1011 and the *Diegesis.* This is rejected by Cameron 1995, 26. Hutchinson 2003, 58n.31 + Morrison 2011, 348 consider the possibility that prose scholarship is meant.

over scholarship and education in general rather than only over their designated specialities.[895] This development had already started with the schools of the Athenian Academy and the Lyceum.[896] I would like to extend this prose to include prose sources: Callimachus partly made the Muses redundant as sources of information by enquiring for himself rather than waiting for them to impart the information. Now he suggests a physical move away from poetry towards prose without completely abandoning writing in poetry.

The few glimpses of paradoxographical material in poetry indicates that there is a special relationship between paradoxographical prose and poetry which needs to be further explored. This section will therefore explore how paradoxographical collections functioned as a database for poetical composition. The purpose of the *paradoxa* collections could have ranged as the material for poetry either as preparation for whole catalogues or for individual deployment at the most convenient points for maximum poetic effect.[897] We will also spend some time on the question of whether Callimachus used this material to write any substantial paradoxographical poetry. After all, as Priestley speculates, the verb in Antigonus' introduction to the Callimachean part could denote a verse composition: πεποίηται δέ τινα καὶ ὁ Κυρηναῖος Καλλίμαχος ἐκλογὴν τῶν παραδόξων.[898]

a) Invitation to check information, not memorisation

Considering that 'the paradoxographer reduces explanatory detail to a minimum'[899], the paradoxographical notes were not intended to provide the full background to a story but only just enough of the essence and background information of a story, so that a person versed in

[895] Murray 2004, 385-86.
[896] Erskine 1995, 39-40; Murray 2004, 378.
[897] Cairns 2011, 335.
[898] Priestley 2014, 77n.89.
[899] Cameron 2004, 268. Also, Vanotti 2007, 26-29.

literature could relocate it in the library. An alternative way to look at these lists is to revert to Herodotus whose method of 'telling wonders', as it is called in Munson's 2001 book, is not intended as a complete account of wonders either in quantitative or qualitative terms. Although Herodotus regards these wonders as marvellous and thus bestows some mystique on them, the paradoxographical digressions encourage further research on the wonder in question in 'an inquiry … that the text declines to actualise but implicitly identifies as the task of the recipient'.[900]

With the most visible recipients of wonders usually being paradoxographers, further research on their part has demonstrably not happened very often. Still in rare cases, paradoxography provided enough basic information in order to locate the origin of the story. Some and especially later paradoxographers at least name the titles (like Antigonus) and occasionally even the specific books in which a specific datum is located. Apollonius' Ἱστορίαι Θαυμάσιαι, is particularly strong in this respect: it usually preserves the work titles next to the names of its sources, sometimes even indicating which book the information is taken from (chs.8, 14, 18, 33, 35, 38, 41, 46). The pseudo-Plutarchan *De Fluviis* also preserves the names of most of its sources including some invented ones, which relegates it more to the pseudo-scientific realm.

The level of detail provided appears increased relative to the information offered by Callimachus. For Callimachus' paradoxography the absence of work titles is indeed striking. Paradoxography usually merely cites the author and in Callimachus' case never the title of a work by a particular author. The fact that Antigonus' collection preserves few working titles for Callimachus' sources and that he adds some of his own, indicates that these were not contained in Callimachus' original collection. For someone with a profound knowledge

[900] Munson 2001, 234 *pace* Hunzinger 1995, 55-9 who claims that Herodotus and his character are all occasionally driven to enquiry.

of literature the indication of a title is superfluous if the rough content of a work is already familiar, something which would apply to Callimachus as well as the scholars in Alexandria.

Perhaps Callimachus could easily leave out such detailed footnotes since he was expecting his audience to consist of 'ideal readers', a term coined by Annette Harder: she uses this term to describe readers who are able to understand all of Callimachus' poetic allusions due to sharing a similar environment to the poet and therefore having all the opportunities to immediately look up information in the relevant literature.[901]

Callimachus' own overview of Greek literature in the form of his Πίνακες would have at least superficially helped him and his fellow-scholars to find the original text passages. Jacob considered these notes to be 'short cuts and lateral paths' for readers who now had all the knowledge gathered in one place rather than having to read all these books themselves.[902]

If we look at the other remains of Callimachus' prose treatises, then Περὶ ὀρνέων (fr.414-28) as the most substantial is the most helpful in this regard. Its specialised nature is an indication that this collection at least may have been used as an aide-memoire. Even the most educated readership would not have been able to recall the details surrounding all the birds in Greek mythology, so we could interpret Callimachus' collection both as a starting point for further research as well as a commentary. The latter could be consulted on demand by looking up the information collected under each type of bird. These collections were either designed as databases for further use or as an end in themselves.

Probably the most important question to be asked about Callimachus' paradoxography is whether it was ultimately intended as an aide-memoire for himself or as a source of information for other scholars. Jacob has rightly recognised that Callimachus was the

[901] Harder 2002b, 223, with discussion 224-25.
[902] Jacob 2000, 94.

primary beneficiary of his own work. He facilitated the process of poetic composition by making his information easily recoverable. As systematic indices, pagination, or tables of contents were not invented yet or rather impossible to impose on papyrus scrolls, these citations were probably the best Callimachus could do in order to make the full information recoverable. In this way the prose treatises cannot be called books per se, but in spirit more akin to databases. Asper also considered Callimachus' prose treatises to have more in common with 'Zettelkästen' and 'Datenbanken' than proper secondary literature.[903]

Asper therefore thought that most of these works preceded the poetic works for whose purposes they were compiled. He also notes the high frequency with which topics mentioned in the transmitted prose titles appear in his extant poetry. It is truly remarkable that these lists were apparently not only used and read in Hellenistic times but transmitted on to later centuries independent of their original purpose. This reveals less about the compelling style of these lists but about their usefulness to an ancient audience with antiquarian and encyclopaedic interests. Considering how quickly paradoxography gained in popularity, Callimachus' notes were probably not limited to his personal use but circulated in Alexandria.

Overall, the impression one derives is that of a preliminary collection of notes intended for his own work and perhaps that of a close circle of fellow scholar-poets who indulged in a similar fascination with mere facts organised in catalogue form inspired by the Peripatetic School.

b) Catalogue poetry

[903] Asper 2004, 48.

Catalogues listing information existed in antiquity both in poetry and prose,[904] and we should not underestimate the role played by Homer's Catalogue of Ships. The Hellenistic poets showed a particular propensity towards catalogue poetry, so it remains for us to explore whether the contemporary trend towards catalogues also helped shape Callimachus' initial conception of paradoxography. There are no paradoxographical catalogues in Callimachus' extant poetry. This does not mean that they never existed, but we should not assume this as a given considering how unpredictable Callimachus preferred to remain throughout his poetry. There are, however, several poetic and non-paradoxographical catalogues in his remaining poetry such as the rivers of Arcadia in the *Hymn to Zeus* and the Sicilian cities (*Aet.*fr.43), which we have already encountered. One may also add the fleeing islands in the *Hymn to Delos.* We may also remember the catalogue of Callimachean water wonders in Ovid's Metamorphoses. For Weber the geographical catalogues represent the Ptolemies' political interests in particular areas, especially since some contain references to contemporary Ptolemaic concerns.[905]

Most catalogues did not arrange information by pure chance: the examples above are examples for geographical organization, while the constellations in Aratus' Φαινόμενα endeavour to follow a similarly spatial arrangement. Callimachus' geographical arrangement would have aligned with this apparently early Hellenistic tendency. As discussed, Antigonus' thematic arrangement of his *paradoxa* resembles the one we have observed in Herodotus, such as the section on Arabia (III.107-113): the feeling of wonder here constantly increases, while the connections and transitions between the wonders are far from arbitrary: the movement of winged snakes leads to the bat-like snake movement which finally ends up in a discussion on birds; from there we move on to spices collected by birds followed by spices whose collection does not rely on winged creatures. The transitions in the Arabian

[904] Overview in Regenbogen 1950.
[905] Weber 1993, 316-17. Enumerated places of Ptolemaic interests: *Del.*16-22, 41-54; 70-205; cf. Theoc.*Id.*15.100ff.; XVII.68ff.

excursus are connected through oblique motives, which only emerge after some contemplation. Romm has attributed a similar catalogue effect to Ctesias' ethnographic θαύματα.[906] In Antigonus *paradoxa* are linked through key words which function as jumping-off points.[907] Here it is worth quoting Krevans: 'Moreover, when entries are viewed in relation to one another, and within the wider context of the work as a whole, it is usually possible to discern more complicated principles of arrangement, whereby certain keywords are used to create implicit and explicit links which allows skilful transitions between entries.'[908] Jessica Lightfoot also points to the loose yet compelling enumeration of animals putting things in their mouth found in *Aud*.9-12.[909] The slightly later Θηριακά by Nicander connects each snake merely with the previous one by latching on to a particularly characteristic as was the case in Herodotus' paradoxographical excursus.[910] This might be another example for how the 2nd century BC understanding of catalogue poetry visibly differs from its earlier more geographically oriented predecessors.

It might be worth looking to another contemporary Hellenistic poet who seems to endorse a different way of organizing information: in Posidippus' Λιθικά, the first section of a collection of epigrams transmitted in the Milan papyrus,[911] we have a poetical catalogue which is both underpinned by current Ptolemaic power politics and is remarkably rich in paradoxographical terminology such as τέρας, θαῦμα, θαυμάσιος, τειρατοεργός, and

[906] Romm 1992, 91.
[907] For the loose links, cf. Jacob 1983, 128; Hansen 1996, 4-5; Jessica Lightfoot 2018, 82-99.
[908] Krevans 2011, 125.
[909] Lightfoot 2018, 89.
[910] Seminar paper 'Organizing Snakes: Nicander's Literary and Biological Catalog' given by Kathryn Wilson. Consulted under https://classicalstudies.org/annual-meeting/150/abstract/organizing-snakes-nicander%E2%80%99s-literary-and-biological-catalog (last visited 24/03/2022).
[911] It is contested whether the Λιθικά really came first in the papyrus. The different positions are summarised in Guichard 2006, 122n.6.

καινός.[912] This cluster of expressions of wonder is largely limited to the collection of stones and does not occur in the other sections.

The most important parallel between Posidippus and Callimachus' prose books remains the clear thematic overlap. An obvious example are the sections entitled λιθικά as well as οἰωνοσκοπικά. The former corresponds with the large number of *paradoxa* on stones, while the latter is reminiscent of Callimachus' treatise Περὶ ὀρνέων. There are also smaller correspondences which indicate that the two poets were interested in similar themes. The section on omens, for example, contains an epigram (AB 25) with three omens of which two relate to weddings. Stories about birds in Hellenistic times often concerned omens or predictions issued based on special types of birds. Although Posidippus dealt with birds in a different section, this may remind one of Callimachus' last fragment of his Περὶ ὀρνέων which has the corncrake (κρέξ) act as an unlucky charm for weddings[913] or the passage on Sicilian cities which features the harpasos bird as a bad omen for builders.[914]

Posidippus' stones are faithfully connected with a location: their origin is mostly exotic and they predominantly originate in rivers. Ultimately, they are connected to nature and sometimes even 'contain' nature with the origin of a few stones located in rivers.[915] The combination of rivers and stones sounds like a compelling parallel to Callimachus' paradoxographical collection. The imagery would later significantly influence Dionysius Periegetes and perhaps the *De Fluviis* by Pseudo-Plutarch. Within the Λιθικά there are not only key terms but also narrative techniques which echo those in paradoxography. A striking example are the last two lines of AB 8 restored by Austin and Bastianini:

…ὃ καὶ τέρας, εἰ πλατὺν ὄγκον

[912] In the classification system of Giannini (1963, 1063) they broadly adhere to group 1, which describes the realm of *physis*.
[913] Krevans 2005, 89-90.
[914] Fr.43.61-65.
[915] Elsner 2014, 162.

ἔνδοθεν ὑδρηλὴ μὴ διαθεῖ νεφέλη.[916]

Here the carnelian is compared to other carnelians for its clarity. Most of these stones contain blemishes, but a stone without them is infinitely more valuable. The author shows clear knowledge of other stones but here also uses a typical paradoxographical method in singling out a stone for being exceptional even compared with similar stones. The stone particularly stands out for its size combined with its clarity. The case is similar in AB 13 where the stone shows a distinctive behaviour according to whether it is dry or wet. The engraved lion can only be seen in a dry state. This stone is differentiated from all other stones which usually share the same properties when wet or dry. For Posidippus stones can either differ from all other stones but also stones of the same type. Callimachus' paradoxography usually focuses more on specific wonders especially for the bodies of water, but this is also because rivers as non-movable items are less collectible than stones or animals. Callimachus' rivers were also clearly tied to a geographical location which unequivocally identified them. The contrast with Posidippus shows how differently Callimachus' paradoxographical collection operated. Instead of a general description of a type of wonder, Callimachus prepared concrete wonders to be deployed in order to root stories in specific locations rather than vague exotic ones as in Posidippus whose stones come from Arabia (AB 7, 16), India (1, 8) or Persia (11).[917]

The end of the section (AB 16-20) moves away from exquisitely carved gemstones to rough and uncarved rocks and boulders which excel in nothing but size. Just as the gemstones stand out for their minute carvings, the boulders do for their size. We may remember that size was one of the features that marked wonders for Herodotus. Posidippus' versatile Λιθικά

[916] '*This too is a marvel if a moist cloud does not spread over the wide surface from the inside.*'
[917] The Indian Hydaspes in AB 1 probably inhabited a prominent position as the first mentioned entity of the collection. As the easternmost boundary of Alexander's empire it also symbolised the exotic East.

conveniently demonstrate the many 'modes' which wonder could assume and Posidippus used this to display his own versatility.

The aim of the Milan papyrus' arrangement was the quick location of epigrams rather than meaningful juxtapositions. A valuable comparison might be the order as found in Callimachus' collection of epigrams. Pfeiffer acknowledged that his arrangement of the epigrams hardly reflected Callimachus' own[918] (the same goes for the collection of his contemporary Asclepiades of Samos). The order was pieced together from various manuscripts but approximates what one might expect from a Hellenistic collection. Instead of being organised thematically, the epigrams gained additional meaning from neighbouring ones. We can derive more poetical meaning from these collocations than from simple lists. The editor of the Milan papyrus had a more effective referencing system in mind. The order does not seem to be authorial but is still a Hellenistic one, demonstrating a particular interest in the collection's overlap with contemporary prose and particularly wonder books such as Callimachus' paradoxographical collection.[919] Both were aimed at the quick retrieval of information. Posidippus' stones are arranged in ascending order of size from carved to uncarved stones, which could be both explained a means of organizing the stones as well as a poetical decision. Many of the poems include locations but they are arranged thematically like the paradoxographical collections. This change in arrangement probably took place in the generation after Callimachus. This fits the assumed date of the papyrus of the late 3rd or 2nd century and coincides with Antigonus' thematic arrangement. Posidippus' original order was probably more varied[920] but later generations aimed for a different presentation, which aligned more with those of contemporary prose books.[921] Together with the background of

[918] Pfeiffer 1953, XCIV.
[919] Krevans 2005, 96.
[920] While Krevans 2007, 141 supports the poems' arrangement as fundamentally aiding the retrieval of information, others have judged some juxtapositions to be down to poetic intention, cf. bibliography in n.45.
[921] Johnson 2004, 79.

paradoxography, the Milan papyrus sheds a new light on how knowledge and its poeticised versions were collected in the generations post-Callimachus.

Likewise, the titles of Posidippus' collection (headings for other Hellenistic epigram collections are unfortunately not preserved) suggest a closer relationship with prose works. Most of Posidippus' sections are titled with a collective term in the neuter plural ending in –κα. This ending is, of course, appropriate for a collection of epigrams but is also popularly associated with didactic poetry. The latter is often characterised by a particularly episodic character and just as distinctive is its origin in prose works.[922]

Posidippus' case is a compelling example for how Callimachus' paradoxographical collection and his other prose works could have been deployed. Posidippus' reliance on technical material for his Λιθικά[923] as well as the bird omens is well-acknowledged. The first two sections seem to have been an exercise in *enargeia*[924] which aimed at turning learned treatises into verse.[925] For gemstones we are in the unique position of having proof of prose books which existed at the same time. Theophrastus' Περὶ λίθων seems particularly close in its material to Posidippus' twenty stone poems. Lelli has remarked that the ending –ανθος, which Posidippus attaches so often to stones is very Theophrastan in style.[926] Theophrastus is also one of Callimachus' major sources for his paradoxography even if his treatise about stones is never mentioned by title anywhere in paradoxography. There is even evidence that Archelaus based his poems on scientific material based on this passage in Artemidorus: πολλοὶ δὲ καὶ ἐκ τῶν Ἀριστοτέλους Περὶ ζῴων καὶ Ἀρχελάου καὶ τῶν Ξενοκράτους Ἀφροδισιέως παρακηκοότες ὑφ᾽ οὗ ἕκαστον ζῷον θεραπεύεται.[927] Yet paradoxography is

[922] Henriksson 1956, *passim*.
[923] Smith 2004.
[924] For a definition of *enargeia* see Zanker 1981.
[925] Gutzwiller 2019, 358.
[926] Lelli 2004, 96.
[927] *'Many have interpreted it wrongly from Aristotle's books* About Animals*, from those of Archelaus, and those of Xenocrates of Aphrodisias how every animal is treated* (Artem.IV.22)*.'*

far removed from the versification of the so-called exact sciences. Indeed, Callimachus never commits himself to one science to stick to for the length of one poem. The serious tone in Aratus' Φαινόμενα contrasts sharply with the fun Callimachus makes of the precise measurement of the Zeus statue at Olympia. Likewise, he deliberately interprets Cydippe's illness (fr.75) as a ἱερὴν νοῦσον, ridiculing the religious superstition normally associated with this illness.[928] Callimachus' approach is more epistemological compared with that of the material used by other Hellenistic poets. [929]

Both Posidippus and Callimachus share some characteristics with the didactic poetry written at the time. After Hesiod and Parmenides didactic poetry was on pause for several centuries before the tradition was revived again in Hellenistic times with Aratus' Φαινόμενα and Nicander's Θηριακά (with the exception of Archestratus of Gela's humorous didactic poetry). These texts had a clear didactic purpose, which would later resurface in Vergil's Georgica. It seems likely that this tradition was not simply rediscovered but a by-product of the fact that prose had advanced to be the prime purveyor of knowledge while poetry had been relegated to the realm of aesthetics. By reframing content that was normally written in prose into poetry, the Hellenistic poets reclaimed considerable ground for poetry as a source of knowledge.

This rebranding of poetry was accompanied by the changed status of prose, which at least for Hellenistic poets was the medium of choice to record information which they encountered in scholia and commentaries. Considering the poets' constant tendency to destabilise genres, it was well within their playful mindset to create a prose genre like paradoxography whose contents could not be trusted and undermined the authority prose texts were normally credited with. Looking to the rest of Callimachus' work Griffin rightly

[928] Sistakou 2009, 191.
[929] Hutchinson 2003. Meyer 1993 for Callimachus' poetry and the theme of knowledge.

rejects Zanker's search for realism in Callimachus. Griffin believes that 'Callimachus exploits his erudition both in geography and in mythology in order to create something which shall be utterly preposterous and incredible' as well as 'The more detail, the less realism.'[930] For Griffin, Callimachus consciously runs the risk of not being believed by driving his poetry over the edge of credibility. Callimachus provides his readership with the tools of verifying information, but realistically does not expect it to do so, mainly because of the sheer wealth of information to be checked and since paradoxography operates with a certain suspension of disbelief. One may compare the paradoxographers' citation of sources as proof for the information with the confident didactic voices in Aratus and Nicander who vouch for their information through their own authority.

Our poets, however, are arguably not didactic enough. Posidippus does adopt some features he may have found in contemporary material, but his raison d'être was that of an aesthetician whose primary aim was bringing out the beauty of stones in words rather than using the right terminology.[931] An example of the overlap between paradoxography, science, and poetry is offered by Posidippus in AB 17, the poem on the magnet. Bing has pointed out that here we have the first literary acknowledgement of the magnet's ability to attract and also to repel – before it was merely the attractive quality that was emphasised. The scientific realisation of its repellent properties has to be placed during Posidippus' lifetime.[932] In the poem ὃ καὶ τέρας therefore refers to the fact that the stone integrates two properties according to contemporary science. As seems to have been recognised already by Posidippus' time, a magnet could only have different effects if it was in a bar shape and had two poles, which is the case here.[933] Posidippus' poem must be based on a previous scientific treatment.

[930] Griffin 1989, 63, 64.
[931] Ancient lithic terminology was arguably not very developed at this point, but Posidippus' language overlaps with Theophrastus, cf. Smith 2004.
[932] Bing 2009, 265-66.
[933] Pajón Leyra/Sánchez Muñoz 2015, 31-33. Before, this was only acknowledged for the Western world in the 12th century (but within China for the 3rd century).

Nevertheless, his description does not move beyond the generic and the general impression is one of naïve wonder.

A didactic purpose, of course, was never an aim in Callimachus' paradoxography, a genre which deliberately eschews explanations and relies on the dumfounding effect of wonder.[934] Ultimately, there is no poetic text extant by Callimachus that systematically deals with wonder, but then we are only relying on what has been preserved in later prose fragments. Callimachus will probably not have exceeded Posidippus in his lack of systematic didactic intention. Callimachus' aims were more antiquarian, a parading of knowledge rather than a desire to educate his probably already learned readership. Callimachus did not write any didactic poetry, at least none which van Groningen would have classed as mere versification of textbooks like in the case of Aratus and Nicander. Callimachus refused to limit himself to one genre. He preferred crossovers of genres and adhered to the idea that poetical myth may still contain factual truth as the two were not mutually exclusive.[935]

c) Compartmentalisation for flexible deployment

We have seen that paradoxography emerges in many different forms – in prose lists, as an apparent chance mention in longer poetical texts, and in epigrams. Considering paradoxography could be deployed so flexibly, there is reason to believe that Callimachus' paradoxography was not confined to the prose form in which we usually encounter it today. Instead, these prose lists were 'databases' intended for further use.[936] If we assume Callimachus' original intention to have been the creation of a database, then his collection of marvels was probably not an interconnected prose book. Whereas the *Aetia* are bound

[934] Snell 1946, 222 thinks Callimachus has never had didactic inclinations or wrote anything resembling a didactic poem.
[935] Sistakou 2009, 196.
[936] Jacob 2000.

together through metre and a common narrator, we have no indication that Callimachus' *paradoxa* were linked apart from geographical proximity going by the remaining paradoxographical titles. By contrast, Pseudo-Plutarch's *De Fluviis* where usually at least four marvels cluster around a river, is an anomaly in its cohesiveness and structured approach.

With Posidippus, Archelaus, and Philostephanus we have at least three Hellenistic authors, who wrote epigrams with paradoxographical content. Krevans differentiates sharply between Posidippus and Callimachus who occasionally use paradoxographical material in their poetry and proper verse paradoxographers like Archelaus.[937] As far as we know there are no parallels for Archelaus' peculiar animal *paradoxa* among early paradoxographical texts, but Philetas was the first to describe the bougonia theme in a compact epigram.

There are no paradoxographical epigrams extant by Callimachus and it is uncertain whether he ever wrote any, but it is worth noting that the compact character of an epigram resembled that of a paradoxographical item. If we take Philostephanus' epigram as an example, then we have in it everything we would also find in a prose paradoxon apart from the source indication. Despite the evidence we have of Philostephanus', Archelaus', and Posidippus' epigrams, the number of epigrams engaging with paradoxography extant from Imperial times is significantly higher and is probably a reflection of the popularity which paradoxography enjoyed after Hellenistic times.[938]

Although Antigonus lists several poets, he does not quote even a single line of Callimachus' poetry. This does not sufficiently prove that Callimachus did not write paradoxographical poetry considering that Antigonus' text is itself based on an excerpt from Callimachus'

[937] Krevans 2005, 92-93n.41. For verse paradoxographers, see Fraser 1972, I.778-80 who includes among them Callimachus' nephew.
[938] Rossi 2002, esp. 164ff. Examples include Antiphilus of Byzantium (*AP*.IX.73), Anonymous *AP*.IX.128 and Nestor of Laranda *AP*.IX.129; Guichard 2014.

poetry. Still, it makes it somewhat less likely. The easiest explanation for this could be that Callimachus simply did not produce any substantial paradoxographical poetry, which Antigonus could have quoted from. We have established that Callimachus included paradoxographical material in his poetry, but there is no evidence that Callimachus' engagement with paradoxography extended to his poetry. Considering Callimachus' popularity in antiquity, Antigonus would have certainly known any paradoxographical poetry if it existed. If the paradoxographical material was intermingled with other subjects in his poetry as we should assume it was, it would explain why Antigonus' did not quote Callimachus' poetic paradoxography directly: Callimachus' densely allusive poetry may not have offered itself for excerpting.

A few paradoxographical collections such as those by Antigonus of Carystus and Philon of Heraclea frequently cite poetic extracts in their prose works and are 'creating the impression of a work written in prosimetrum.'[939] As Bartoňková observes there is a genre of prosimetrum in the broader sense where the poetic text is included merely for stylistic reasons, and in the stricter sense where the poetical citation may not be cut out since it is essential to the argument.[940] In Antigonus we mainly encounter the latter case in which the author is also usually immediately named in front of the citation and uses these citations to support his argument. In Antigonus prosimetrum occurs in eleven out of 173 chapters and he cites twenty-nine verses in total from a broad range of authors, which include Homer (including the *Homeric Hymns*), Hesiod, Philetas, Archelaus, Alcman, Philoxenus, Clearchus, and Aeschylus. Philon's work on the 'wonders of Scythia' is somewhat different as the verse inscription he cites for the donkeys' horns carrying water from Styx is more

[939] Schepens/Delcroix 1996, 399.
[940] Bartoňková 1999, 64.

gratuitous, while only adding to the breadth of the argument. The fact that poetry was integrated into paradoxographical collections suggests an affinity between these genres which has been insufficiently explored hitherto.

The prosimetrum as a concept was only introduced for the first time by Menippus in the 3rd century,[941] which makes it less likely that Callimachus anticipated this development with a paradoxography consisting of a mix of prose and verse. Despite Callimachus' undeniable drift towards blending poetry with characteristics from historiography, as we have seen above, the overall impression seems to be that the early Hellenistic writers decided whether they wrote their paradoxography in paradoxography or prose. Philostephanus' paradoxographical fragments are exclusively in verse, as are those by Archelaus. Later paradoxographical compilers normally do not include any verse paradoxography despite the existence of paradoxographical epigrams, which probably indicates that the two concepts increasingly detached themselves from each other.

What is important about any paradoxographical material encountered in Callimachus, is that it rarely occurs in clusters but is scattered across his work. It functions as another pattern on Callimachus' multi-coloured textual quilt. Wonders appear in between items as varied as *aetia*, clarifications of Homeric questions, and philological notes. Krevans in her analysis of Callimachus' prose works concludes that they functioned as source material for his poetry.[942] A wealth of paradoxographical as well as prose notes was necessary in order to employ them as effectively as possible and to achieve the highest density possible. The aim was not always to refer to specific allusions, but to make intergeneric allusions and the reader consider the text at hand with different literary traditions in mind. Asper has demonstrated this with the scientific writing on weather signs in the Hecale, which does not aim to simply aggregate

[941] Bartoňková 1996.
[942] Krevans 2004.

allusions, but to offer an alternative interpretation of the narrative.[943] Most of the allusions which were bound to have had a place on his systematic lists do not lead to a specific science per se. For instance, there was no genre specifically dedicated to mountains, but occasionally scientific genres could provide an additional layer or meaning behind the poetic text.

Finally, it is worth looking ahead to later poets to understand how paradoxographical material might have been used. The ὑπομνήματα, for example, lived on in the Ἐρωτικὰ Παθήματα by Parthenius who famously often looked back to Callimachus. Parthenius in his introduction writes that he sends the manuscript containing these notes as a raw text, a ὑπομνημάτιον, to Gallus for versification.[944]

For most of Parthenius' ὑπομνήματα we can ascertain the ultimate origins of his sources. The majority of them – twenty-two in total- have a prose character compared with fifteen verse sources. For two one cannot say with certainty.[945] Its source distribution therefore resembles that of paradoxography. Nowhere is the poetical process stated more openly than in this introduction and it is not unlikely that considering the continuity between Hellenistic Alexandria and the Roman poetry scene, similar practices had established themselves there.

One of the only lines known by Gallus beyond the Qasr Ibrim papyrus alludes to the Hypanis, a river which was known for its heavy salt content. Cairns argues that Gallus took this reference from Callimachus' collection of *paradoxa* which he surely would not have failed to mention considering that there are numerous references to the river in Herodotus, Athenaeus, Vitruvius, Pausanias and Pomponius Mela. Alternatively, Parthenius could have transmitted this paradoxon directly to Gallus, but in both cases, Callimachus is the ultimate paradoxographical source.[946] Barchiesi explained his assumption of Parthenius as Gallus'

[943] Asper 2009, 2-7.
[944] Jane Lightfoot 1999, 217-20.
[945] Wiseman 1979, 152.
[946] Cairns 2011. Hdt.IV.52.2-3 cf. IV.81.2; Ath.II.43c-d; Vitr.VIII.3.11; Paus.IV.35.11; Mel.II.6-7; Solin.14.

ultimate source with the argument that Parthenius had fully internalized Callimachean poetics.[947] The example has hopefully shown how short prose notes acted as vehicles for stories which could later be turned into poetry based on whether they caught the interest of the poet. I propose a similar initial purpose for Callimachus' paradoxographical collection for the benefit both of himself as well as other scholars in his immediate environment.

Later paradoxography enjoyed the status of popular literature and appeared in a greater variety of contexts: in the 2nd century AD it manifested itself most strongly in the rest of the literature (we may think here especially of the Greek novels like that of Achilles Tatius[948] and Heliodorus[949]) and assumed a life of its own. Still, we have seen signs that paradoxography quickly transitioned from elite to popular literature after its first emergence based on the presence of papyrological evidence. Its first occurrence as distilled paradoxography in Callimachus' environment took place in Hellenistic courtly literature.

d) Paradoxographical material in the *Iambi* and *Hymns*

Now it seems to be the occasion to summarise what impact paradoxography has had on the rest of Callimachus' oeuvre. We have already alluded to this question at several points. Callimachus had clear views of what he wanted his poetry to look like, which is why we can attribute some importance to every passage in which paradoxography is included. Callimachus' individual *aetia* are connected through loose and often unusual themes. The cross references exceed the limits of the *Aetia* and extend to his *Epigrams*, *Hymns*, and fragments. In terms of Callimachus' ubiquitous cross-references in his poetic works it is only

[947] Barchiesi 1981, 165.
[948] He regularly uses terms like ἄπιστα, θαῦμα, παράδοξα, ἴδια.
[949] Wenskus 2000.

understandable why he would need to rely on a substantive collection of facts as '…the collections of mirabilia performed some function as part of the preparatory work—the assembly of raw material…—undertaken by these scholar poets in view of their more ambitious literary projects.'[950] In order to establish the most effective network of associations, Callimachus had to systematise his research and make his information easy to access.[951]

The main challenge will consist in distilling paradoxographical material out of the *Aetia*, especially as the focus of the *Aetia* lies not on wonder, but on explanations for miraculous phenomena. These on occasion fall into the realm of anomalies, but usually more into that of humans rather than nature. Our paradoxographical lists are normally only concerned with natural phenomena, but the basic principle is the same. In the *Aetia* the narrator asks the Muse repeatedly why certain things are the way they are since they do not appear to be 'normal.'[952] Callimachus' *Aetia* noted abnormal things. This extended to all topics discussed by Callimachus including cult statues: the fragments that survive describe statues which differ from the norm i.e., the statue of Athena at Teuthis (fr.667) with the bandage, the Artemis statue with the mortar crown (fr.31b-e), or the statue of Olympian Zeus which excels due to its status and its extraordinary size (*Iamb* 6). Indeed, it is the ordinary which is completely absent from his poetry. The human customs and cults that interest Callimachus are seen as contradicting established rules and it is their exceptional nature, which make them interesting to the narrator in the first place. In contrast to paradoxography, however, these unusual facts are explained and elaborated on. The *Aetia* are remarkable for the way that they bridge with their explanations events removed both in space and time. Its time frame roughly spans from Minoan time into the 3rd century BC (with the Coma Berenices

[950] Schepens/Delcroix 1996, 403-4.
[951] The claim by Gallavotti 1986 that the Ὑπομνήματα and Callimachus' writing on wonder could derive from a commentary on the *Aetia* compiled by a later exegete different to Callimachus, is relatively isolated. This would be the opposite of what we have assumed i.e., that the prose lists were made in preparation for the poetry.
[952] Acosta-Hughes/ Stephens 2012, 17.

as a contemporary story) and often seems to combine incongruous states into one.[953] It describes a state of the past as, for example, several of the names of the Sicilian cities (fr.43) were outdated when the *Aetia* were written.[954] The paradoxography by contrast seems to exist completely free from any time constrictions.

The *Aetia* (and the *Hymns*) mark unusual customs, cults or occurrences, which appear usually in what has been termed 'narrative doublets'.[955] While the statue of Artemis at Leucas (fr.31b-e) has mortar on her head, the statue of Athena at Teuthis (fr.667) carries a bandage on her thigh. Likewise, there are two stories about the statues of Hera at Samos (frr.100-1). If there is at least one other equivalent to the phenomenon, then there is a pattern forming. It is as if the narrator instead of pointing out singular wonders, is looking into deeper connections of the Greek world. Egypt is consistently connected with other parts of the Mediterranean, which means that Callimachus emphasizes not the singularity of a custom, but the very fact that it is echoed somewhere else. Callimachus seems to have applied the same concept to the *paradoxa*. An example are the underground connections of bodies of water such as the Alpheus in Greece and the Arethusa fountain in Syracuse, which we have already discussed in the chapter on geography.[956] These two are the only underground connections occurring as *paradoxa*, but Callimachus creates another in his poetry through the paradoxon connecting the Nile and the Delian Inopus. It does not only tie our paradoxography closer to the *Hymns*, but also conveniently anchors Egypt closer to an important panhellenic sanctuary, which would have been in the interest of the Ptolemies. Callimachus effectively deploys the paradoxographical material in his poetry in order to create new meanings. It is easy to see how the small thematic themes that were aggregated

[953] Harder 2011, 313.
[954] Harder 2011, 314: Zancle was re-founded as Messene which pertained to the Mamertines from the 3rd century BC and cities like Naxus had been destroyed in 403 BC or Gela in 390-80 BC.
[955] Acosta-Hughes/Stephens 2012, 174-75.
[956] Antig.*Mir.*140. Fairly similar is the pond at Zakynthos which seems to have an underground connection, Antig.*Mir.*153, cf. Hdt.IV.195.

in the paradoxographical collections such as underground connections of bodies of water could have supported Callimachus in his editorial decisions of what to include depending on which connection seemed the most effective in each case.

A comparison of the paradoxography with his poetry can enhance our ability to date the poetical texts even if the same cannot be done for the paradoxography. For this we will look at Callimachus' paradoxography from a diachronic or synchronic angle. Can we make any deductions about the time when Callimachus was compiling his paradoxographical material? The collection of the material would have taken a considerable amount of time and surely Callimachus would have contributed to it on a rolling basis. There have been several attempts at dating the different parts of the *Aetia* in relation to each other as well as to the *Iambi* and *Hymns*.

According to Pfeiffer books I and II of the *Aetia* constitute the earlier parts of the work followed by books III and IV including the revised version of the Lock of Berenice, which was later framed by the Prologue, as well as the epilogue.[957] Books I and II exhibit some subtle thematic differences. The focus of these books seems to lie here more on mythology and on Callimachus' relationship with the Muses. Fr. 43 is part of this dialogue with the Muses. Its preoccupation with wonder is undeniable and shows that Callimachus' engagement with Herodotean and Aristotelian conceptions of wonder probably predates his systematic engagement with paradoxographical material. The detailed knowledge about Sicilian cities and its rivers is still astonishing but does not mean that its location in book II should be doubted. Any firmer conclusions on this matter are hindered by the fact that books I and II are even more skeletal than the latter half of the book. The *Iambi* and *Hymns* which seem to align more with material from the *Aetia*'s third and fourth books (cf. the Fountains of Argos, which also play a role in the Bath of Pallas) contain the highest density in material

[957] Pfeiffer 1953, XXXVIf.

that we know from paradoxography which might indicate that our paradoxography falls into the later decades of Callimachus' creative output. Still, the greatest similarity between Callimachus' *Aetia* and his paradoxography exists in the distribution of geographical locations and the heavy reliance on prose sources rather than any direct overlap in material.[958]

There seems to be more paradoxographical material outside of the *Aetia*. The *Iambi* contain several thematic overlaps with the *Seven Wonders of the World* (as we will go on to see in the next chapter) while maintaining a similar geographical framework, next to including paradoxographical allusions as that to Herodotus' gold-digging ants. The *Hymns* on the other hand contain very specific allusions to water wonders and demonstrate a remarkable knowledge of small rivers of the world. Griffin, for example, thinks lines 18-27 in the *Hymn to Zeus* are a versification of Callimachus' Περὶ τῶν ἐν τῇ οἰκουμένῃ ποταμῶν. Zanker had interpreted similar passages to be merely parading the poet's geographical knowledge.[959] Considering that the paradoxographical databases first had to be built up over time, the general chronology assumed for Callimachus' oeuvre is supported by our paradoxography. This puts the *Iambi* and the *Hymns* later than the first two books of the *Aetia*. The later frame constituted by the prologue and epilogue of the *Aetia* also seems to be part of this later phase which stood under heavier influence of paradoxographical material.

e) References to wonder in contemporary Hellenistic poetry

One should be hesitant about postulating too many paradoxographical influences on contemporary Hellenistic poetry considering that simple wonder is part of the human range

[958] Prioux 2008 pointed out the heavy focus on the Western Mediterranean in the *Aetia* as resembling that found in Callimachus' paradoxography.
[959] Zanker 1987, 116.

of reactions. Still, I would like to use this space to point out some passages for which paradoxographical input may be justified even if we would expect less in poets other than Callimachus. Paradoxography qualified very much as 'entertaining reading with a flavour of learning' which would have made for an attractive combination from the view of an Alexandrian scholar.[960]

Apollonius is sufficiently close in his interests to Callimachus through his interest in foundational myth and the focus of the Ἀργοναυτικά on aetiology. He relied on source material as obscure as that of Callimachus. His fragments have led Krevans to suspect a range of source material equalling that of Callimachus.[961] Apollonius' aetion about the flesh-coloured pebbles formed from the sweat of the Argonauts verges on the edge between aetiology and a paradoxon.[962] Slightly more tangible is that of Posidippus. Yet Smith's statement that 'Posidippus writes with an acute sense of the exceptional'[963] shows how hard it is sometimes to see whether this is mere sensitivity towards the abnormal or whether it concretely reflects paradoxography. Only the use of paradoxographical terminology indicates that we are here dealing with the latter.

Another possible receiver of paradoxographical material was Theocritus. We have already discussed how Theocritus in his *Idyll* 1 describes the natural world turned on its head with grief after Daphnis' death. While the Daphnis story is not explicitly set on Sicily even though Daphnis is a Sicilian figure, his later *Idyll* 5 more carefully sets the stage and names the rivers on the island e.g., Sybaris (5.1, 73, 126, 146). Indeed, the rivers are at the heart of another striking adynaton in an agon between Comatas and Lacon:

> ΚΟ: Ἰμέρα ἀνθ᾽ ὕδατος ῥείτω γάλα, καὶ τὺ δέ, Κρᾶθι,
> οἴνῳ πορφύροις, τὰ δέ τοι σία καρπὸν ἐνείκαι.

[960] Hansen 1996, 9.
[961] Krevans 2000, 78 *pace* Erbse 1953, 183 who did not see any overlaps with the learned writings of Callimachus in frr.403-466.
[962] A.R.IV.655-7.
[963] Smith 2004, 105.

ΛΑ: ῥείτω χἀ Συβαρῖτις ἐμὶν μέλι, καὶ τὸ πότορθρον
ἁ παῖς ἀνθ᾽ ὕδατος τᾷ κάλπιδι κηρία βάψαι.[964]

We have already encountered Crathis in Callimachus as a river which bleaches hair and is associated with the colour yellow. Here the association with the colour red still upsets the order of the world, but the passage will be perceived differently by anyone who is aware of the paradoxon commonly associated with the river.

It is worth remembering that several of Theocritus' *Idylls* are set on Sicily which was of interest to Callimachus due to its cluster of rivers. Of course, Theocritus came from Sicily, which is why it is no wonder that there are multiple references to its local rivers. His *Idyll* 7, however, also places great emphasis on the natural surroundings on the island of Cos. What sticks out is the natural fountain Bourina whose mention is enhanced with a mythological story. The story had already been alluded to by Philetas and was probably the model for this inclusion.[965] Considering that material from Philetas reappears in paradoxographical contexts this allusion might not be accidental but could go back to Callimachus' paradoxographical collection.

There are many other examples of amazement in Hellenistic poetry which we know of, which do not contain paradoxographical catchwords or material familiar from the collections but are still part of the rhetoric of wonder. There is the naïve wonder of Gorgo and Praxinoa in Theocritus' *Idyll* 15 at the splendours of the Ptolemaic palace which is mildly ridiculed by Theophrastus like the women at the sanctuary of Epidaurus in Herodas Mime 4. Wonder is evoked especially through masterful artisanship as is the case in Theocritus *Idyll* 1, where the reader is treated to an elaborate ekphrasis of a cup and the same applies to the gemstones in Posidippus' Λιθικά.

[964] '*Let Himera flow with milk instead of water and let, Crathis, be red with wine, its reeds bear fruit.' 'And let Sybaris flow for me with honey and at dawn the girl dip her cup into honey instead of water* (Theoc.*Id.*5.124-27).'
[965] Νάσσατο δ᾽ἐν προχοῇσι μελαμπέτροιο Βυρίνης (fr.24 Powell).

On balance, our analysis supports the assumption that paradoxography was perceived as a preparatory stage for poeticisation next to its partial re-integration into poetic texts. It is highly unlikely that there ever existed anything like a Callimachean paradoxographical poetry collection or extended poem in its own right, but the appeal of the genre derived from the juxtaposition of simple 'scientific' prose with wild claims about nature. There were plenty of possibilities for the consumption of paradoxography which likely even extended to a discussion at symposia and in Archelaus' case of public recitation. The flexibility of paradoxography, which could be deployed in many different contexts, probably also caused its widespread popularity in different contexts such as literary papyri, its reception by Roman poets, and as material for the later Greek novels.

VII. The *Seven Wonders* of the Ancient World

Hellenistic Alexandria did not only see the rise of paradoxography as a systematic literary exercise but also the invention of another wonder-related phenomenon: the *Seven Wonders of the World.*[966] One could have ascribed this to mere coincidence but there are several factors that point to Callimachus as the inventor of both. It would be amiss not to discuss the famous wonders in a treatise about Callimachus' paradoxography. In fact, Herodotus' model in setting out natural and human wonders is elemental to Callimachus' understanding of paradoxography. Considering that our knowledge of what constituted paradoxography in its early Hellenistic stages is still rather vague, one must consider all possible angles of Callimachean paradoxography. Callimachus' natural paradoxography as encountered in Antigonus differs from the paradoxography about these famous buildings, but they still overlap in enough points to warrant a comparison.

The *Seven Wonders* are known even to non-Classicists albeit often merely as a vague notion.[967] Their cultural significance meant that many early excavations in the 19th or 20th century dedicated themselves to the relocation of the wonders, often with disappointing results. The pyramids at Gizeh are the only wonder still left standing although they were built ca. 2000 years before the Colossus of Rhodes when the pyramids where as old as the Colossus is to us today.

Only a small number of researchers have looked at where the notion of this hebdomad comes from.[968] It has often been overlooked that Callimachus is one of the most likely candidates for the creation of the idea of the *Seven Wonders*. Enquiries in this regard have been obscured

[966] Their invention is ascribed to Callimachus' environment by Rohden 1875; Schott 1891; Diels 1904, 9f.
[967] Brodersen 1996 for an introduction to the *Seven Wonders*.
[968] E.g., Schott 1891; Łanowski 1965, 1025.

by the fact that the *Seven Wonders* were part of a long and flexible tradition which continued to evolve up until Mediaeval times. The theme was both adopted and adapted many times, which meant that almost every source listed its own selection rather than the original hebdomad. That a canon existed already in antiquity is not contested and should become clear through the following treatment.

1. The real *Seven Wonders*

Before we proceed to Callimachus' involvement it will be paramount to establish which buildings the ancient canon of the *Seven Wonders* contained, because our current traditional hebdomad is not identical with the one dating to Hellenistic times. Indeed, it is a product of the Renaissance when intellectuals tried to retrieve the original selection of wonders. They reduced the inflated number of wonders and wonder lists that had emerged during Mediaeval times. Our current list which includes the pyramids, the Hanging Gardens, the temple of Artemis at Ephesus, the statue of Zeus at Olympia, the Colossus of Rhodes, the Mausoleum of Halicarnassus, and the Lighthouse of Alexandria is largely identical with the original list but for one item. The Lighthouse has become a fixture in later versions of the hebdomad but only replaced a former wonder, which is less familiar to audiences today but never quite disappeared from the tradition.

a) The Evidence

Today there survive more variations than examples of the traditional list,[969] but there is a case to be made that Antipater's epigram, which comes out of the *Anthologia Palatina,* contains the original list of the *Seven wonders*. It is commonly ascribed to Antipater of Sidon, and thus dated to the late 2nd century BC.[970] The poem in the Doric dialect reads:

Καὶ κραναᾶς Βαβυλῶνος ἐπίδρομον ἅρμασι τεῖχος
καὶ τὸν ἐπ᾽ Ἀλφειῷ Ζᾶνα κατηυγασάμην,
κάπων τ᾽αἰώρημα, καὶ Ἠελίοιο κολοσσόν,
καὶ μέγαν αἰπεινᾶν πυραμίδων κάματον,
μνᾶμά τε Μαυσώλοιο πελώριον· ἀλλ᾽ ὅτ᾽ ἐσεῖδον
Ἀρτέμιδος νεφέων ἄχρι θέοντα δόμον,
κεῖνα μὲν ἠμαύρωτο, καὶ ἦν· Ἴδε, νόσφιν Ὀλύμπου
Ἅλιος οὐδέν πω τοῖον ἐπηυγάσατο.[971]

Antipater of Sidon tells us in his epigram that he compares the Artemis temple with the rest of the wonders in terms of size and the effort made in building them. He lists the statue of Olympian Zeus, the Colossus of Rhodes, the Pyramids, the Mausoleum, the Hanging Gardens. They are all compared to the temple of Artemis which in his view trumps all the others. The Lighthouse of Alexandria is missing, but in its stead, Antipater describes the Walls of Babylon.

This epigram is popularly cited as our first literary mention of the *Seven Wonders* without enquiring further into its ultimate model. Yet Antipater at least cannot have been the originator of the hebdomad. By the 2nd century, the Colossus of Rhodes was lying in ruins, having fallen victim to an earthquake probably in 226 BC. Nor should his claim to have seen

[969] For a complete list of ancient *Seven Wonders* by author, see Łanowski 1965, 1021-4.
[970] For the discussion on Antipater's identity whom some like to identify with the later Antipater of Thessalonica (1st century BC), see Gow/Page 1965, II.32–4; Gow/Page 1968, II.20–1; Argentieri 2003, 124–6.
[971] '*I have cast my eyes on the wall of lofty Babylon on which is a road for chariots, and the statue of Zeus by the Alpheus, and the Hanging Gardens, and the Colossus of the Sun, and the huge labour of the high pyramids, and the vast tomb of Mausolus; but when I saw the house of Artemis that mounted to the clouds, those other marvels lost their brilliancy, and I said, 'Lo, apart from Olympus, the Sun never looked on anything so grand* (*AP*.IX.58).'

all these wonders be seen as proof for autopsy. Instead, it should be interpreted as a literary *topos* going back to a point long before Antipater when all these wonders would have existed at the same time. The epigrammatist Antipater has copied Callimachean language at several other points, which makes it not unlikely that this epigram was actually looking towards Callimachus.[972]

Antipater's selection is identical to the significantly later description περὶ τῶν ἑπτὰ θεαμάτων by Philo of Byzantium. Occasionally wrongly attributed to the Hellenistic engineer of the 3rd century with the same name, the text dates to the 4th or 5th century AD.[973] It transmits longer accounts of the wonders pretending to be eyewitness reports. Missing, however, is the Mausoleum of Halicarnassus, which originally formed part of Philo's list, but fell out of the manuscript tradition. Philo's account is sensationalist in character and quite extraordinary for the fact that most of the wonders were not even extant anymore at this late point in time. Its frequent attribution to the Hellenistic Philo[974] might have indicated that its core is Hellenistic, but its language seems to be late antique and talks about the 'great time of Hellas'.

Philo's account was preceded by that of Gregory of Nazianzus. He was the 4th century Archbishop of Constantinople as well as a prolific author of poetry and theological treatises. The *Seven Wonders* indeed appear twice in his oeuvre. In one of his epigrams pretending to be an epitaph, Gregory lists the *Seven Wonders*:[975]

Ἑπτὰ βίοιο πέλει τάδε θαύματα· τεῖχος, ἄγαλμα,
κῆποι, πυραμίδες, νηός, ἄγαλμα, τάφος·

[972] For Antipater's engagement with Callimachus' poetry, see De Stefani/Magnelli 2001, 539-41.
[973] Von Rohden 1875, 32-43. Translation in Ashley 1980, 252-58.
[974] The false identification with the Hellenistic Philo persists especially in popular works on the *Seven Wonders* e.g., Ashley 1980, 19-22. *De septem mundi miraculis* has to be attributed to this author from the 4th or 5th century AD.
[975] The other is a looser adaptation of the wonders as this oration compares Saint Basil's hospital to Seven-gated Thebes and Egyptian Thebes, the Walls of Babylon, the Mausoleum of Mausolus, the Pyramids and the Colossus (*Or.*43.63).

ὄγδοον ἔσκον ἔγωγε πελώριος ἐνθάδε τύμβος,
ὑψιπαγής, σκοπέλων τῶνδ' ἀποτῆλε θέων,
πρῶτος δ' ἐν φθιμένοισιν ἀοίδιμος, ἔργον ἄπληστον
τῆς σῆς, ἀνδροφόνε, μαινομένης παλάμης.[976]

The description of the wonders here is kept as brief as possible as the wall, statue, gardens, pyramids, temple, status, and tomb are named without their geographic location or identifiers. The enumeration implies that his audience would have been closely familiar with the buildings in question.[977] Despite their brevity, the wonders can be unquestionably identified with Antipater's list as there are normally no other candidates for the two ἀγάλματα than the Olympian Zeus and the Colossus.[978]

Thus, we have three texts giving the same selection of wonders although they were written at least 600 centuries apart. One further detail binds this selection closely to Callimachus: Gregory of Nazianzus was not only a prolific poet in his own right, but also a great admirer of Callimachus.[979] His poetry exhibits a deep engagement with Hellenistic poetry as he imitated his models in his poetry. Indeed, chances are high that Gregory's epigram is looking back to Callimachus.

The fact that both Philo and Gregory list the same selection of wonders at least 500 years after Antipater just shows how strong the familiarity with the wonders still was in late Antiquity. It is unlucky that not more mentions of the original *Seven Wonders* have survived

[976] '*The following are the seven wonders of the world: the wall, the statue, the gardens, the pyramids, the temple, the other statue, the tomb. I was the eighth, a giant tomb here rising far away from the rocks; and among the dead I am the first to be sung of, the greedy work of your raging hand, murderer* (*AP.*VIII.177).' The theme of a violent deed bestowing immortal fame is a popular one in epigram, cf. *AP.*VIII.236; Floridi 2013, 72-78.

[977] One might compare this with a medieval popular verselet from the German university of Jena, the 'Seven Wonders of Jena': *Ara, caput, draco, mons, pons, vulpecula turris, Weigeliana domus, septem miracula Jenae.* The ability to connect each of these cryptic descriptions with the right monument in the town identified a 'proper' student of the University.

[978] Argentieri 2003, 125 remarks that Antipater's order closely resembles Gregory's and entertains the idea that Gregory based his epigram on Antipater. Comparing the two, the similarity is only superficial and Antipater's exaltation of the temple of Artemis essentially different from Gregory's mere list. The closest correspondence exists between Gregory VIII.184.1 Μαυσώλου τάφος ἐστὶ πελώριος and Antipater's μνᾶμά τε Μαυσώλοιο πελώριον (IX.58.4).

[979] Wyss 1949, 192-3 for bibliography.

considering how well familiar they seemed to be as a theme, but at least they were still known after such a long time.

Confirmation for this canon also comes from Strabo who names six of the *Seven Wonders*: the Mausoleum (XIV.2.16), the Colossus (XIV.2.5), the Walls (XVI.1.5) as well as the Pyramids (XVII.1.33). The Zeus statue (VIII.3.30)[980] and the temple of Artemis (XIV.1.22) are mentioned even if not explicitly as *the* wonders. A certain element of doubt always remains as to Callimachus' original list. The Horned Altar on Delos occurs in other non-canonical lists of the *Seven Wonders* and is mentioned prominently in Callimachus.[981] One must consider, however, the breadth of material covered by Callimachus, which was bound to browse through a multitude of topics which incidentally covered one of wonders later included in the list. Overall, there are four texts which provide this selection of wonders. We can therefore be confident that this was the established list in Hellenistic times.[982]

b) Origin of the canon

The fundamental question we must ascertain is how far back the canon can be dated. We will have to ascertain the motivations behind the creation of the *Seven Wonders*. Chronologically, the Hellenistic period is the most likely option for their invention. The erection of the Wonders gives us a relatively narrow time frame in which the canon was likely to have been established. Even though the pyramids were at least 1500 years old before the second-oldest wonder was even built (in the shape of the walls of Babylon), all *Seven Wonders* existed together only for a very brief amount of time and likely have not even done so at all depending on when we place the demise of the Hanging Gardens. After discounting the lighthouse of Alexandria, the colossus of Rhodes was the last wonder to be finished.

[980] Strabo explicitly refers in this passage to Callimachus' *Iamb* 6.
[981] The Horned Altar in Call.*Ap*.58-64 also appears in Mart.*Sp.*1, *Anonymus de incredilibus* 2.
[982] Brodersen's 1996 introduction also leaves out the Lighthouse to discuss Babylon's Walls instead.

Legend has it that the Colossus was built with the proceeds coming from the material left behind by Demetrius Poliorcetes after his yearlong siege of the island. The erection of the statue allegedly took twelve years, which dates it to at least 292 BC if we assume that the Rhodians would have indeed begun work on it immediately afterwards. It is more likely that the naval power needed a few years to recover its funds before commencing the works, which would push the termination of the project behind. The youngest wonder only existed for a brief time window as it was built between ca. 290-80 BC and destroyed at the latest in 226 BC.[983] This provides the very latest date when the *Seven Wonders* could have been created. There is a possibility that the erection of this monument sparked the composition of the whole list. Posidippus' epigram 68 AB about the Colossus of Rhodes shows that Alexandrian poets were aware of its existence and discussed it before 240 BC when the poet from Pella passed away.

c) Terminology

The common name for the *Seven Wonders* of the ancient world was ἑπτὰ θεάματα so 'seven things seen'. As we have seen the majority of paradoxographical items are things that can be heard through report and are associated with acoustic vocabulary. Here we see one of the first elementary differences between the buildings and the natural *paradoxa*. The terminology differed when the phenomenon or object in question is characterised in visual terms.

The name ἑπτὰ θαύματα occurs only for the first time in the 4th century AD epigram by Gregory of Nazianzus.[984] There is a dissonance between the visual presence of the θεάματα and the fact that the narrators who often play the persona of a traveller have never actually

[983] Ekschmitt 1984, 10 considers the possibility that the *Seven Wonders* were established without the Colossus in existence.
[984] For the terminology, see Łanowski 1965, 1021. The Latin tradition also preserves the visual aspect of its wonder words: *miraculum, mirabilium, spectaculum.*

seen the monuments in question. Antipater of Sidon claims to have seen the wonders in his poem. Still, one wonders how Antipater in the mid 2nd century BC could have seen the Colossus of Rhodes, after it was ruinously destroyed at least fifty years before his time.[985] It might just about be possible that the narrator saw the bronze statue in his early youth, but it seems somewhat unlikely that he could have visited all *Seven Wonders* he claims to have set eyes upon. It is much more likely that Antipater is deploying a literary *topos,* probably one borrowed from Callimachus. Callimachus - armchair scholar that he was- surely never meant for these wonders to be visited in a lifetime but created them as a theoretical list of things that could be seen in the world.[986]

From our fragmentary material, it can only be assumed which title if at all Callimachus' would have given his *Seven Wonders*, but there are a few indicators. One of them is the account περὶ τῶν ἑπτὰ θεαμάτων falsely attributed to the Hellenistic Philo of Byzantium. Further, Strabo, who derives his wonders from Callimachus by connecting the wonders with Callimachus' *Iambi*[987] calls them τὰ ἑπτὰ θεάματα. Despite Gregory's liking for Callimachus, it is impossible to be sure that he echoes Callimachus' terminology, rather than reflect that of his own contemporary wonder tradition which was inherently different to that of Hellenistic times than to cling to Callimachus' terminology, which explains why Gregory called them θαύματα. Antipater's epigram does not contain the term but describes himself as having seen them himself and uses several verbs of seeing (κατηυγασάμην … ἀλλ' ὅτ' ἐσεῖδον … ἐπηυγάσατο). The *Laterculi Alexandrini* papyrus teases us by breaking off after τὰ ἑπτὰ θ̣[…. The fact that this is a text deriving from an everyday context, dating to Antigonus' time and thus only a century later than Callimachus, lets us hypothesise that

[985] Gow/Page 1968, II.92. Hoepfner 2003 on the archaeology.
[986] Brodersen 2001, 9-10 indeed believes that Callimachus wrote about the *Seven Wonders* in a 'Geleitgedicht' for potential visitors of the wonders.
[987] Str.VIII.3.30, IX.5.17.

θεάματα might be the term that Callimachus would have deployed himself rather than the Herodotean θώματα. In any case the conception of the wonders was a visual one.

2. The *Seven Wonders* in Callimachus' poetry

After establishing a strong possibility that Callimachus was the author of the *Seven Wonders* one must enquire into how he might have packaged them in his literary oeuvre. Arguably these wonders are paradoxography although not in the form we have encountered it for Callimachus' prose lists. Still, they were one facet of Callimachus' complex engagement with wonders and help to further define Callimachus' natural wonders.

a) Hebdomads

Hebdomads are nothing unusual in Hellenistic poetry. Seven cities vied for the title of Homer's birthplace. The Seven Pleiades in the night sky had been familiar to Greeks already from earliest times.[988] Further, in his 1st *Iambus* Callimachus has Bathycles' cup pass from each of the seven sages to the next, only to return to Thales who ultimately dedicates it to Apollo in Didyma. The hebdomad was paramount of course also in the Platonic theory of the spheres and the strings of the lyre pervaded several branches of Greek culture. It therefore would not have been anything unusual if Callimachus had come up with exactly seven wonders as a Greek audience would have been susceptive to this number.

Theodora Hadjimichael's work on the Lyric canon serves as a useful comparison with our 'canon' of the *Seven Wonders*.[989] There are two epigrams by unknown authors listing the

[988] Schott 1891, 18; Łanowski 1965, 1025.
[989] The term 'canon' was only created in 1768 by David Ruhnken in his *Historia Critica Oratorum Graecorum* and we are therefore running the risk of imposing a modern concept unto antiquity.

nine Lyric poets of which one added Sappho as the tenth Muse.[990] Although it is hard to date these texts, their similarity to other epigrams such as Antipater's about the *Seven Wonders* (9.58), lets us assume that there was perhaps a trend of putting a canon or set catalogue of names into a short verse form.[991] This theory is enforced when we consider that Antipater of Sidon also wrote a poem on the *Seven Sages*, a theme which Callimachus covered in his first *Iambus* (fr.191). It only seems likely that Antipater reused the numeric themes and turned it into poetry just as the Lyric canon was lyricised for poetic appreciation. We will later return to the theme of numbers in conjunction with the *Seven Wonders*.

b) Direct mentions of the wonders

Callimachus' poetry itself only directly mentions two wonders which also formed part of his *Seven Wonders*. One is the statue of Olympian Zeus in *Iambus* 6, which will be discussed later in more detail. The second is the temple of Artemis. The whole episode occupies a rather large chunk in Callimachus' *Hymn to Artemis* (lines 237-58), but especially interesting are the following lines:

> κεῖνο δε τοι μετέπειτα περὶ βρέτας εὐρὺ θέμειλον
> δωμήθη, τοῦ δ᾽οὔτε θεώτερον ὄψεται ἠὼς
> οὐδ᾽ἀφνειότερον· ῥέα κεν Πυθῶνα παρέλθοι.[992]

It is remarkable that here we meet the same exceptional status of the temple of Artemis that we have already seen in Antipater's poem, even if the temple is here not directly compared with other wonders. Noteworthy is also that Antipater seems to have taken the image of the personified Sun beholding the temple from Callimachus who had originally bestowed this on Dawn. Antipater's reliance on Callimachus here is hard to deny.

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[990] *AP*.IX.184; IX.571.
[991] Hadjimichael 2019, 2.
[992] '*Afterwards around that wooden image were built broad foundations. Dawn will never see anything more divine or more abundant than this. Easily it would surpass Pytho* (248-50).'

Another, even if arguably weaker, link leads us back to the Salmacis epigram. This epigram pays tribute to Callimachus among other poets. It does not mention the Mausoleum of Halicarnassus, but the inhabitants would have had an added incentive to pay tribute to Callimachus if he counted the Mausoleum of Halicarnassus as one of the wonders,

On the surface, these wonders seem to be chance mentions in Callimachus' work based on their exceptional status in Greek cult and history independent of their canonicity. Callimachus' engagement, however, with the *Seven Wonders* is even more complex than this.

c) Mythological architects of the wonders

It is a curious coincidence that Callimachus' *Hymns* mention two buildings which were regularly associated with the *Seven Wonders* in antiquity whose architects were mythological. The Temple of Artemis was a regular wonder, whose cult image in the *Hymn to Artemis* is said to have been established by the Amazons before the later temple was built around it (3.237).

The Horned Altar on Delos (2.58-64), which resurfaces several times in later lists of the *Seven Wonders,* seems to have formed part of a later canon. The altar on Delos is prominently built by Apollo with the horns as the produce of Artemis' hunting activities.

τετραέτης τὰ πρῶτα θεμείλια Φοῖβος ἔπηξε
καλῇ ἐν Ὀρτυγίῃ περιηγέος ἐγγύθι λίμνης.
Ἄρτεμις ἀγρώσσουσα καρήατα συνεχὲς αἰγῶν
Κυνθιάδων φορέεσκεν, ὁ δ᾽ἔπλεκε βωμὸν Ἀπόλλων.
δείματο μὲν κεράεσσιν ἐδέθλια, πῆξε δὲ βωμὸν
ἐκ κεράων, κεραοὺς δὲ πέριξ ὑπεβάλλετο τοίχους.
ὣδ᾽ἔμαθεν τὰ πρῶτα θεμείλια Φοῖβος ἐγείρειν.[993]

[993] '*Phoebus as a four-year old fixed his first foundations in fair Ortygia near the round lake. Artemis brought after her hunt continuously the heads of Cynthian goats and Phoebus weaved an altar. He built the foundations with horns, he fixed the altar out of horns, around it he drew walls made of horn. Thus, Phoebus learnt to raise his first foundations.*'

The emphasis on Apollo as the builder of the altar is important since the *Seven Wonders* are exceptional for the fact that the names of architects are normally rarely preserved. In the Greek world craftsmen were usually only credited if working at the highest echelons of their profession. Yet the *Laterculi Alexandrini* which listed the names of architects, show that Hellenistic times entertained an increased appreciation for artists. More crucially, the papyrus combines concerns of technique, art, and wonders by listing famous painters, sculptors, architects, engineers, and the oldest known list of the *Seven Wonders*.[994] For Callimachus, any mention we retain of the wonders or remarkable buildings are associated with mythological creatures. This should perhaps be seen in conjunction with the theme of remarkable cult statues which he shows particular interest in throughout his poetry. By contrast, Herodotus, when faced with particularly astonishing natural wonders, was prepared to find a supernatural explanation for their existence but never does so with buildings which are exclusively human achievements. Potentially, Callimachus reacted to this strong separation between human and divine wonders by occasionally deliberately emphasizing supernatural architects. Since Antipater was most likely drawing on Callimachus, the emphasis on his *Seven Wonders* being the greatest outside Olympus (νόσφιν Ὀλύμπου) seems to take on an additional layer of meaning.[995] Potentially, Callimachus had referenced more supernatural architects for the wonders.

d) The importance of statues

A different route leads back to Hellenistic poetry and specifically to Posidippus. He contributes to our discussion of wonders through his Λιθικά, but also with AB 68 on the

[994] Brodersen 2001, 8.
[995] Priestley 2014, 94.

Colossus of Rhodes. The coincidence at least shows that the Colossus was already at Callimachus' time the subject of poetry. The discovery of the full Milan Papyrus showed that it did not form part of any conjunction with other wonders but instead was paired with other statues. Curiously, the Lighthouse of Alexandria, which mainly appears as a wonder in later lists, forms the subject of another of Posidippus' epigrams. This appears not within the Milan papyrus but separately, making it hard for us to ascertain which role it originally played.[996] Read with Bing's eyes the epigram concerns more the statue on top of the Lighthouse than the building itself. In this case we should see it as part of Posidippus' collection of poems on statues rather than bestow any significance on it as a building. The complete absence of all other wonders lets one suspect that Posidippus most likely never wrote seven separate epigrams on each of the wonders. One epigram listing all seven as in the style of Antipater would be possible considering that he knew the youngest wonder, but we have no positive information in that direction.

Posidippus is not the only Alexandrian to mention the Colossus of Rhodes in his poetry, but Callimachus apparently did so as well. Stark recognised that Strabo's comment on Callimachus' quantitative approach to the Zeus statue resembled another in the same work about the Colossus: ὅν φησιν ὁ ποιήσας τὸ ἰαμβεῖον ὅτι Χάρης ἐποίει πηχέων ὁ Λίνδιος ἑπτάκις δέκα.[997] Strabo mentions Callimachus twice in connection with his *Iambi* which he seems to have read attentively.[998] In lieu of other viable writers credited with *Iambi* in Strabo, Callimachus is the most likely option for the composer of the iambus in question. This is a very crucial piece of information and one of the strongest indications that Callimachus engaged with the *Seven Wonders* throughout his poetry.

[996] Bing 1998.
[997] Str.XIV.2.5. Stark 1864, 384n.5. This note was previously wrongly attributed to Simonides of Ceos by Bergk 1843, 927, although Simonides wrote at least 250 years before the Colossus was even built.
[998] VIII.3.30, IX.5.17.

The combination of the Colossus and the statue of Zeus is also an expression of Callimachus' interest in statues. Cult statues are referenced throughout his oeuvre but particularly in the *Iambi*.[999] *Iambus* 6 indeed forms a pair with the next one as the statue of *Iambus* 7 goes on a journey and becomes an object of admiration for the fishermen of Aenus. The Pheidias statue and the Colossus might have been compared with each other in *Iamb* 6 according to size and architect. What remains of the *Iambi* exhibits an unusual concern with artistry and craftsmanship.[1000] Combined with the emphasis that Antipater laid on the craftsmanship of the buildings, we can hypothesise that the *Iambi* would have represented a suitable location for the *Seven Wonders* or at least parts of them.

Both the Zeus statue and the Colossus of Rhodes stood out through their measurements: Strabo singles out the statue of Zeus for the pedestrian number-obsessed approach which Callimachus has applied to it (VIII.3.30). Perhaps the other wonders were also associated with size. Indeed, we can be encouraged by Antipater's poem which lists the *Seven Wonders* as the biggest representatives of their respective type of building. This would of course mean that Antipater grossly misinterpreted Callimachus' intention whose quantitative approach to works of art was tongue in cheek. Still, size was of paramount concern in Hellenistic poetry: while Callimachus' general preference for small and intricate poetry emerges, Posidippus' Λιθικά ranges from the smallest to the biggest stones. In AB 8 he even combines the mention of τέρας with the question of size. Prioux indeed sees *Iambus* 6 as reacting to Posidippus, while according to Priestley both Callimachus and Posidippus react independently to Herodotus whose wonders also distinguished themselves by size.[1001]

[999] Hera at Samos (fr.100-101); the *Palladium* (*Lav.Pall.*5); the wandering statue (*Iamb.*7); Ithyphallic Hermes (*Iamb.*9).
[1000] E.g., *Iamb.*12.27, 66; *Iamb.*13 Dieg.IX.37-38.
[1001] Prioux 2007, 129; Priestley 2014, 104.

e) The *Iambi*

The hints that Callimachus really was the originator of the *Seven Wonders* and that he first mentioned these in his *Iambi* are slowly increasing. The *Iambi* can be dated roughly after 246 BC since the 1st *Iambus* mentions the Serapeum, a subbranch of the Library of Alexandria, opened under Ptolemy III Euergetes who rose to accession in 246 BC. Hence, we are looking at a compositional time frame of less than a decade from ca. 246 BC to ca. 240 BC, when both Callimachus and Posidippus passed away. The dating of the *Iambi* would therefore align with the assumptions for the invention of the *Seven Wonders* and the fact that traces of Callimachus' engagement with paradoxography appear in the later parts of his oeuvre, which includes some of the *Hymns* and the *Iambi*.[1002] The first *Iambus* of course already contains another famous hebdomad in the form of the *Seven Sages,* which demonstrates how Callimachus could have approached such a catalogue. The few catalogues we find in Callimachus are loose rather than close-knit (e.g., the potamography in the *Hymn to Zeus*) but they are usually assembled in a self-contained unit such as an *aetion,* a *Iambus,* or a *Hymn.*

It raises only the problem of where in the remaining *Iambi* Callimachus placed the hebdomad or indeed where he might have had space to list them. There is of course always the possibility that among Callimachus' large output, there existed another collection of iambi beyond our thirteen, but there might be space among the ones known to us.[1003] *Iambus* 6 about the Statue of Zeus at Olympia offers the most suitable position for a discussion of the wonders. The other *Iambi* are either partially extant next to their brief summaries, which we retain through the *Diegesis*, or they cover a subject matter which simply does not seem to agree with this focus on numbers. The summary provided by the *Diegesis* explains the story

[1002] Fraser 1972, I.652 argued that *Hymn 2* must be dated to around 246 BC. Stephens 2015, 16-22 for the most comprehensive overview for the dating of the *Hymn*s.

[1003] Whether there were thirteen or seventeen *Iambi* is discussed by Kerkhecker 1999, 271-282; Acosta-Hughes 2002, 9-13; Morrison 2007, 200.

of this *Iambus* but is still rather brief. Considering what we know of the length of *Iambus* 1 or 4, the *Diegesis*' summaries are insufficient to convey the force of the original *Iambus* and are often devoid of any detailed information. Accordingly, there might have been more scope to fit the seven wonders into our 6th *Iambus*. Just because the author of the diegesis had left out this detail it does not mean that it was not contained in it. The iambic genre following the example of Hipponax seems to have had a penchant for mentioning buildings. Hipponax referenced several buildings all located in the Eastern half of the Mediterranean, which include the tomb of Attalus, the monument of Gyges, the stelae of Sesostris,[1004] and the memorial of Tos.[1005] This list could have easily served as a precedent for Callimachus to include buildings in the *Iambi*.

It would not be wide of the mark to hypothesise that Callimachus in addition to the occasional mention of a few of the wonders put his *Seven Wonders* into an epigrammatic form that was simply not transmitted.[1006] I make this claim based on the frequency with which hebdomads of wonders appears in later epigrams starting from Antipater of Sidon to Propertius, Martial and finally in Gregory of Nazianzus. In this case the theme would have appeared both in his epigrams as well as his *Iambi*. It was a Hellenistic whim to treat one and the same theme in two different forms. Reducing all or rather some wonders to their mathematical measurements and deconstructing the act of wonder, while in another place extolling them unquestionably for their remarkable size or craftsmanship would be a very Callimachean move. At the same time the wonders could have easily been listed in addition as part of the Ὑπομνήματα.[1007]

[1004] Also mentioned in Hdt.II.102-106, cf. West 1992.
[1005] *IEG* F42.
[1006] Already assumed by Schott 1891, 17.
[1007] As suggested by Christ/Schmid/Stählin 1920, 127n.7.

Hellenistic epigrams traditionally referenced their original function as inscriptions on monuments, but this distinction became also increasingly hard to draw during that time.[1008] Although often purely literary products, they often exhibited a distinctively visual component in order to appear more realistic. These famous sights of the world could have inspired Callimachus to write epigrams as if they were attached to them after the model of Posidippus' epigram on the Lighthouse of Alexandria, which mentions in addition the name of the architect. These pseudo-epigraphic epigrams preserved the architects' names next to their descriptions of the monuments themselves. This might also explain why these buildings were known as θεάματα rather than θαύματα in the first few centuries of their existence. The emphasis was explicitly on the visual aspect and a pseudo-epigraphic epigram might have been an appealing way for Callimachus to package the *Seven Wonders,* although it is unlikely that he wrote seven of them each including a mention of their architects. An epigram resembling Antipater's seems like the likeliest option. After all, pseudo-epigraphic epigrams can be found in his own collection[1009] and the form of elevating one building over the remaining six or later seven seems to have really taken off in popularity in subsequent epigrammatists.

f) Geography: Drifting East

It is also worth looking at the geographical distribution of Callimachus' *Seven Wonders*: they included the classics of Egyptian and Babylonian architectural excellence, the Pyramids, the Hanging Gardens, and the Walls of Babylon. The representation of Egypt and Babylonia could be a nod to Herodotus. For Herodotus, Egypt was of course the place with the highest number of marvels, while Babylonia inhabited a prominent position in the first book of the

[1008] Bing 1998; Gutzwiller 2002.
[1009] E.g., *Epigr*.4; 9; 12.

Histories. At the same time, the Pyramids are the only Egyptian wonder as Greek scholars in Egypt were less interested in the wonders around them. Wonder is greater when unfamiliar, which was also the reason why there are so few Egyptian *paradoxa* in Callimachus' collection. The exoticism one normally expected of wonders as personified by Ctesias obviously manifests itself not in Callimachus' natural paradoxography but in that of buildings. Callimachus' poetry also elsewhere drifts East in some unexpected places. The *Aetia* prologue mentions the Thracians, Massagetae, and Persians even if they are usually not covered by the rest of the poem, or the famous programmatic end of *Hymn* 2 which uses the Euphrates as an example for a polluted river.

It is striking that with the Walls of Babylon and the Hanging Gardens two of the original wonders were situated in Mesopotamia. The temple of Artemis and the Mausoleum as located in Asia Minor represent a further orientation towards the East. The preponderance on the East is unusual with only a few of the wonders spread throughout the Mediterranean and therefore hardly visitable for one person. As we have established, only one Egyptian wonder was on the original list. This can be explained by the fact that the closest wonder is often the least interesting: it loses its intrigue through excessive familiarity. But the curious fact of two Eastern wonders must be explained.

2. Sources for the *Seven Wonders*

The sources for Callimachus' natural paradoxography were eclectic and often based on the likes of Ctesias and fellow historians. The following section will explore whether this also applies to the man-made wonders.

a) Berossus

An origin of the *Seven Wonders* in Eastern literature has been tentatively suggested in the past by Łanowski as the strong presence of Mesopotamian buildings is surprising.[1010] This is a theory I would like to develop further at this point. So far, there is little evidence that Callimachus showed any particular interest in Mesopotamia, but we do know not the least from this study on his sources for paradoxography that Callimachus deployed mostly local history whenever he had to write about a particular area. For Babylonia our state of information about literary texts is relatively limited, but there is indeed one suitable candidate for the source for the *Seven Wonders*: Berossus. As a born Babylonian who worked as a priest of Bel in Babylon, he would have been informed about the complicated Babylonian teachings and traditions. More importantly, he would have been able to write as the scribal profession in Mesopotamia was prestigious, but also trailed after a long education. He is perhaps identical with the Berossus who travelled extensively around the Greek world, but he certainly composed historiography around 280 BC. The reason why he is so readily identified with the Berossus who was teaching astronomy on Cos, is that his historiography was written in Greek. This connection has so far never been made, probably because Berossus was not a literary hit with a broad Greek audience but only a source for historiography specialists.

Berossus would have been especially interesting to a Greek paradoxographer like Callimachus. It transpires that Berossus treated Babylonian flora and fauna at the start of his book, which even contained a Greek gloss on the name for a Babylonian plant.[1011] A Greek gloss on a native plant would be completely redundant information for a Babylonian audience but expected by a Greek readership. It also shows that he like other Greek histories

[1010] Łanowski 1965, 1025; recently Argentieri 2003, 124-5.

[1011] Dillery 2015, XX. D.S.II.12.1-3 contains some Babylonian natural wonders, but his direct source is uncertain. Normally it is assumed to be Ctesias, Cleitarchus, or an Alexander historian, but Berossus might present an intriguing alternative.

from Herodotus onwards liked to include geographical and ethnographic sections in their histories.[1012] Notes about the natural world narrated by a local constitute of course a text of paradoxographical interest. Berossus, however, seems to have been most influential for his buildings.

His Βαβυλωνιακά comprised three books of which the first covered Babylonian mythology, the second ten mythical kings and book III Babylonian history. The Βαβυλωνιακά was dedicated to the Seleucid king Antiochus I and is assumed to have correct some Greek misconceptions Babylonia.[1013] The Seleucid court was apparently interested in reviving some Babylonian traditions to cement their claim to rulership.[1014] From an Assyriologist's point of view, the emphasis on Babylon would seem consistent with the Babylonian self-image as the centre of the world. The long line of kings which conquered Babylon were hailed as the king of the whole world once they controlled the city. What is more the language of 'wonders of the world' is one deriving from the Assyrian background as these kings described their building projects with variations of thaumatographical language. The gardens indeed first received the label of 'Wonder for all peoples' (by Sennacherib), while the walls of Babylon were called 'mountain-high' by Nebuchadnezzar, Esarhaddon and Nabonidus.[1015] If Berossus was writing for the Seleucid court and was pledged to emphasise the importance of Babylon, it would have been a clever move on his side to embed Mesopotamia's monumental buildings in the traditional Assyrian language of wonder. Considering that he tried to rectify the common opinions about the building history in Mesopotamia, it is only likely that he would have engaged further with this documentary evidence.

[1012] Trüdinger 1918, Murray 1970 + 1972.
[1013] Oelsner 1978, 113-14.
[1014] Kuhrt 1987, 55-6.
[1015] Dalley 1994, 54.

Considering the lengths to which the library of Alexandria famously went to collect the knowledge of the then known world, Berossus' Βαβυλωνιακά would surely have found its way into Callimachus' hands especially considering that it was already written around 280 BC and Egypt enjoyed a particularly close even if not always peaceful relationship with the Seleucid empire.[1016] As probably the only Greek text with expert knowledge on the region it would have been of particular interest to Callimachus. Considering the emphasis that Callimachus laid on local historical sources for his poetry and prose lists, I would deem it very likely that Callimachus would have consulted Berossus as soon as he wanted to write about Babylonia.

Berossus was not the only native writing about the history and culture of his own country for the benefit of a Greek audience: the same applies to Manetho, an Egyptian priest residing at Heliopolis who wrote just a few years after Berossus. The Christian author Syncellus claims that Manetho wrote his Αἰγυπτιακά in imitation of Berossus: τὰ…συγγεγραμμένα πλήρη ψεύδους καὶ κατὰ μίμησιν Βηρώσσου.[1017] It is one further indication for the presence of the Βαβυλωνιακά in Egypt shortly after it was written.

Neither was Berossus the first Oriental source to find its way to the Library of Alexandria. *Iambus* 4 has long been suspected of containing Aramaic Wisdom Literature in the *Life of Ahikar*, a 6th or 5th century fable first attested in an Elephantine papyrus in 5th century Imperial Aramaic. Callimachus likely copied the verbal argument between the bramble and a pomegranate and transferred it in *Iambus* 4 into the disagreement between the laurel and the olive which is introduced as a Lydian fable.[1018] The *Iambi* slowly pave the road to Asia Minor away from Alexandria. The final *Iambus* is set in Ephesus and therefore the home of

[1016] *Pace* Stevens 2019, 160-61 who is more hesitant about placing Berossus' works in the library of Alexandria.
[1017] Syncellus.*Chron.*17. De Breucker 2010 *ad* fr.10a believes that Manetho indeed imitated Berossus.
[1018] Diels 1910, cf. West 1969, 118-20. Scodel 2011, 380 argues that the Attic background of the olive fighting with the Lydian laurel represents the contest between *Hymn* and *Elegy.*

Hipponax. A move towards Asia Minor is part of the ambition of the text which also brings him closer to his Oriental sources. This metaphorical move of the setting of his poetry was part of a greater literary agenda: it becomes increasingly clear that we should not be astonished at Callimachus' use of Oriental texts considering he likes to shift the geographical focus of his *Iambi*.

The number 7 appears in Callimachus in the *Seven Sages* and the *Seven Wonders.* The number was of course of great significance to the Greeks just as it was to the Babylonians. They divided the Heavens into seven circles, there were seven gates to the Underworld while the tower of Babylon existed of exactly seven stages for this reason. One of the many famous Babylonian hebdomads were the *Seven Sages* or *apkallu* in Akkadian. These *Seven Sages* were mythical creatures, often half-man, half-fish, which is also the form in which they appear in Berossus. Coincidentally, Ahikar who inspired the 4th *Iambus* was one of these wise men even if the Babylonian model for this story is not extant and is not preserved for Berossus.[1019] Berossus' Βαβυλωνιακά also conceivably contained a Babylonian conception of the *Seven Wonders*. By sheer chance Josephus preserves an important note for us from Berossus' book III:

> μέμφεται τοῖς Ἑλληνικοῖς συγγραφεῦσιν ὡς μάτην οἰομένοις ὑπὸ Σεμιράμεως τῆς Ἀσσυρίας κτισθῆναι τὴν Βαβυλῶνα καὶ τὰ θαυμάσια κατασκευασθῆναι περὶ αὐτὴν ὑπ᾽ ἐκείνης ἔργα ψευδῶς γεγραφόσι.[1020]

For Josephus who often exhibits anti-Babylonian bias, it is extraordinary to bestow the status of wonder on Babylonian buildings. It is more likely that this expression derives from Berossus' pen.

[1019] Reiner 1961, 6-7.
[1020] '*He criticises the Greek writers for their mistaken belief that Babylon was founded by the Assyrian Semiramis and their wrong claims that the marvels in the city were established by her.* (J.*Ap.*1.142)'

b) Berossus' interplay with Greek sources

It becomes even more interesting if we keep in mind Haubold's contribution on Berossus: Haubold introduced the possibility that Berossus already relied on Greek sources such as Ctesias for his account by responding to their accounts and mostly correcting them.

This seems to be supported by the story about the Hanging Gardens. The Gardens are not mentioned in Herodotus who would have surely mentioned them had he seen them. Stephanie Dalley has convincingly argued that the gardens were in the city of Nineveh rather than in Babylon.[1021] This would strengthen the link to the historical Semiramis but might also make us wonder where the misattribution of the gardens to Babylon first came from. The Hanging Gardens seem to have already been discussed by Ctesias as Diodorus quotes Ctesias for his discussion, but it is unclear whether he places the gardens in Babylon or Nineveh.[1022] Berossus also described the erection of the Hanging Gardens but his are in Babylon. Josephus allegedly quoted Berossus verbatim via Alexander Polyhistor. Berossus himself therefore was partly relying on faulty information and the most likely candidate is Ctesias whom he was responding to.[1023] In any case Berossus would have been keen to connect an Assyrian wonder with the city of Babylon even if he had to stretch the truth there and gloss over the fact that these gardens were mostly likely located in Nineveh.

The Alexander historians were the other set of authors to whom Berossus resorted for Mesopotamian matters. While Megasthenes was a source for Indian geography, Cleitarchus was used by Diodorus for Babylon in his second book. In one specific passage, Diodorus

[1021] Dalley 1994, 47-9 faced opposition to her theory, especially by Julian Reade 2000, 199 who argued again for the Babylonian Hanging Gardens, partly based on the authority of Berossus whose motivation was to stress the importance of the Neo-Babylonian kings who were normally merely considered a continuation of the Assyrian empire.
[1022] Suggested by van der Spek 2008, 307-9. D.S.II.7-10.
[1023] *Ap*.1.141; *AJ*.10.226. Dalley 1994, 55-56 holds Josephus and especially Alexander Polyhistor to account for the wrong information rather than Berossus.

cites Cleitarchus as evidence before he launches on a description of Babylon, which derives from a summary of Ctesias.[1024] Cleitarchus would have provided the Greek readership with a close description of the city, especially if one accepts Prandi's dating of his work close to the 4th century BC.[1025] As we have seen, Callimachus relies among others on Ctesias and the Alexander historians for his paradoxography. According to Haubold, the Alexander historians could have already contained an idea of the Hanging Gardens, which Berossus apparently responded to by establishing his own wonders. Curtius Rufus and Diodorus' testimonies at least both imply this subject matter in Cleitarchus.[1026] Reade emphasises that most of these Greek sources could chronologically be seen as being dependant on Ctesias.[1027] Considering the liberties Ctesias took otherwise, it seems easy to blame the misattribution on him. Thus, Callimachus' most frequent source, Ctesias, seems to have -even if perhaps indirectly- influenced the formation of paradoxography around the wonders, even for the wonders brought about by human achievement. Callimachus would have relied on Ctesias and Cleitarchus before he received Berossus' Βαβυλωνιακά, which meant that he likely discovered the same information gap which we have already discussed in the chapter on the paradoxographical sources.

4. Herodotus' influence on Callimachus' conception of paradoxography

As 18th and 19th century scholarship had still looked to Herodotus as their originator, there were some forced attempts at aligning Herodotus' proem as wanting to tell ἔργα μεγάλα τε

[1024] Bosworth 1997, 215; D.S.II.7.3-4.
[1025] Prandi 1996, 71.
[1026] Cf. Boncquet 1987, 95-6; Prandi 1996, 122-4; Bichler/Rollinger 2005, 169-70; Bosworth 1997.
[1027] Reade 2000, 198.

καὶ θωμαστά with a deliberate attempt at setting up a canon of wonders. This idea persisted remarkably long[1028] - indeed so long that the fact that he nowhere references the Hanging Gardens of Babylon was even used as an argument that he had never actually visited the city.[1029] There are several obvious objections that could have been raised: for example, at least three wonders were built after Herodotus' lifetime.[1030] The fact that he mentioned a few ancient wonders such as the pyramids should never have been counted as positive evidence for Herodotus having invented such a list.

Of course, the idea that Herodotus came up with any sort of list of the *Seven Wonders* is misguided. Nevertheless, Callimachus most likely created the *Seven Wonders* with a view to Herodotus.[1031] There is nothing against the idea that Callimachus used Herodotus as inspiration for his *Seven Wonders* which he relied on flexibly even if their ultimate source must be looked for somewhere else. Callimachus surely would have found the creation of the *Seven Wonders* even more appealing if he could mix his ultimate source with inflections from Herodotus.

As we have established in the chapter on the sources for paradoxography, Herodotus was Callimachus' most important model for paradoxography as the Ionian historian amply engaged with wonder in his texts. The influence of Herodotus on the discourse about marvellous buildings should not be underestimated. There are several passages in addition to the proem which could have inspired Callimachus, for example, the tomb of Croesus' father as the greatest apart from the obvious exclusion of Egyptian and Babylonian buildings: ἓν δὲ ἔργον πολλὸν μέγιστον παρέχεται χωρὶς τῶν τε Αἰγυπτίων ἔργων καὶ τῶν Βαβυλωνίων

[1028] Clayton/Price 1988, 5. Łanowski 1965, 1026 for bibliography of scholars who especially interpreted the proem in this way. Harrison 2003 remarks that in Hdt.III.60 Samos' ἔργα are treated like wonders. Similarly, Herodotus considers the tomb of king Alyattes as greater than any other buildings apart from those in Egyptian and Babylon (I.93). In book II buildings seem to rank highest in the hierarchy of wonders.

[1029] Sayce 1883, XXIX and 107: 'It is clear that Herodotus had never visited Babylonia… We need not regret the loss of his Assyrian history.'

[1030] Pajón Leyra 2011, 186-87.

[1031] Herodotus' word ἔργα occurs disproportionally often in Callimachus (eleven times) and seems to have been important to Hellenistic Scholars.

(I.93.2). Herodotus regularly emphasizes the size of buildings (just as the rivers in the *Histories* are remarkable for their breadth). One wonder credited with extraordinary size by Herodotus appears in our wonders, for the Walls of Babylon were already famous before Hellenistic times: In Aristophanes' *Birds* the wall of Nephelococcygia is described as surpassing even the walls of Babylon.[1032] Its description seems to look back to that of Herodotus (I.178-9), so at least Herodotus' description of this Mesopotamian building could have influenced Callimachus in addition to Berossus. Since the walls were already used as a common superlative, it makes sense for Callimachus to include them. Antipater's wonders similarly excel in size. Priestley believes that the chosen types of wonders and their traditional descriptions as, for example, those found in Antipater hark back to Herodotus.[1033] Antipater's phrase ἐπίδρομον ἅρμασι, for example, is mirrored in I.179.3.

a) Herodotean autopsy and the visuality of the *Seven Wonders*

When Herodotus describes buildings as wonders, they are always designated as θώματα. In describing the *Seven Wonders,* the Greeks used instead especially the term θεάματα ('sights'), a word with a strong visual component. Paradoxographical literature, however, as we have established set more store by 'things worth hearing'.

Let us return to *Iambus* 6 which answers Herodotus' concern with autopsy. Callimachus makes autopsy redundant with the idea of a copy of the famous Olympian statue of Zeus. The copy could be visited in Cyrene, which is why Callimachus' literary persona endeavours to defuse the enthusiasm of his interlocutor who plans on travelling to Olympia especially in order to see the statue. For Callimachus, citizen of Cyrene, the copy is basically the same as the 'real deal' and does not see the point, why one should travel to the Peloponnese just

[1032] Arist.*Av.*1125-29, cf. commentary by Dunbar 1995 on lines 552 +1125-44.
[1033] Priestley 2014, 88n.119: Christopher Pelling entertained the idea that the popularity of the *Seven Sages* might derive from Herodotus.

to see this statue. The wonders are ultimately subject to the same trust that the reader must put into the narrator conveying information as those in our paradoxographical prose texts. The emphasis on autopsy in Antipater's epigram similarly sounds Herodotean, since the reader must rely on the author's word that these wonders exist. It is nearly certain that the *Seven Wonders* were especially associated with the visual process. This is fundamentally different from the natural paradoxography, which deals more with acoustics. These buildings are implied to have been seen by someone and therefore qualify as someone's *memorabilia,* whereas Callimachus' natural paradoxography are *mirabilia,* which aim at evoking wonder when they are consumed by an audience without a need of the audience to have an image in mind.

b) The Quantification of Wonders

The *Seven Wonders* demonstrate a further habit, which Callimachus picked up from Herodotus: the quantification of wonders. Whereas Herodotus in his *logoi* had often limited the number of wonders in certain areas to a few, he credited Egypt with an endless number of marvels and the Theban labyrinth even with a thousand.

All through the *Iambi* stretches a curious play with numbers: The 6th *Iambus* provided all conceivable measurements of the statue of Zeus and its copy.[1034] Callimachus here looked back to Herodotus.[1035] He offers the immediate model for this passage, not only as a subject matter, but also because he was the only one of Callimachus' source texts to quantify wonders in numbers.[1036] He often uses numbers in order to capture the size of a building (or that of a city with huge buildings like Babylon, I.178-9) and make his description both less

[1034] Kerkhecker 1999, 153: 'Iambus VI is in constant danger of degenerating into a mere list of facts.' Pfeiffer 1941 compares Callimachus' data with our archaeological evidence.
[1035] Priestley 2011.
[1036] Hartog 1988, 235; Priestley 2014, 100-104.

subjective[1037] and more precise for the reader.[1038] Homer and Hesiod, by contrast, endorsed more abstract conceptions of wonder which was not subject to quantification.[1039] Just as we saw with the superlative, the more extraordinary the claim, the more Herodotus felt compelled to back up his claims with facts which evoke the impression of absolute and unassailable knowledge.[1040] A case in point is the supposed corpse of Orestes, whose identity the blacksmith tries to ascertain by describing it in numbers (1.68).[1041] Rihll has accurately described the appeal of numbers: 'For us, numbers seem to lend an aura of objectivity, solidity and reliability which mere opinion lacks.'[1042] Herodotus' correlation of knowledge and measurement[1043] obviously appealed to Callimachus considering he incorporated the same combination into his discussion of the Zeus statue at Olympia. Yet he integrated these numbers into his poetry in order to criticise overly formalistic approaches in all the arts. Callimachus asked in the *Aetia* proem: αὖθι δὲ τέχνῃ κρίνετε, μὴ σχοίνῳ Περσίδι τὴν σοφίην.[1044] Poetry 'by the Persian mile' is to be rejected. Callimachus himself rarely describes anything in major detail but rather quickly jumps from topic to topic without lingering anywhere for long. In that way his paradoxographical notes are quite similar in this regard. As Kerkhecker rightly interpreted it, it is a critique of the learned and pettifogging poet who is excessively detailed in his ecphrastic descriptions.[1045]

Herodotus' tendency was to either give a very exact low number of numbers or engage in hyperbole to emphasize the extraordinary number of wonders. The establishment of a set

[1037] Hunzinger 1995, 67.
[1038] Hartog 1988, 230-7.
[1039] Priestley 2014, 57.
[1040] Lloyd 1987, 280-1 according to whom the ancients sometimes confused 'precision with accuracy'. Fehling 1971, 155-6 for a critical approach to Herodotus' use of numbers evoking the impression of precision.
[1041] Priestley 2014, 57.
[1042] Rihll 1999, 10
[1043] Hartog 1988, 235.
[1044] Fr.1.17-18.
[1045] Kerkhecker 1999, 171. Cf. Cunningham 2007, 65-66 on the connection between ecphrasis, wonder, and art; Becker 1992 for the relationship between describer, artwork, and audience. Wonder in ecphrasis is usually first combined with seeing and in a second step with verbs of speaking or thinking e.g., Hes.*Sc*.l.218: θαῦμα μέγα φράσσασθ', ἐπεὶ οὐδαμῇ ἐστήρικτο.

number of wonders in the hebdomad could have been a response by Callimachus seeking to find the midpoint between these two positions.

c) Natural vs. man-made wonders

What has emerged from our discussion is that Callimachus' paradoxography engaged both with natural wonders and those built by humans - a division which is clearly Herodotean. Man-made phenomena are just as prominent in Herodotus as natural wonders were.

The separation between natural and man-made phenomena can be observed in Herodotus' Egyptian *logos.* The first part (II.1-98) contains predominantly geographical and ethnographic material, whereas the latter part (II.99-3.1-15) is mainly historical and contains with one exception all the examples of Egyptian buildings.[1046]

The distinction between natural marvels and man-made wonders existed also among other Hellenistic poets: Posidippus mixes both categories in his Λιθικά. Α θαῦμα…μέγα (AB 15.7) is created through Lynceus' craftsmanship and eagle eyes as well as a θαυμάσιον that is simply a work of nature. The gemstones also underline the riches which the Ptolemaic empire brought to Egypt through its trade connections. Human achievement dominates the stones' natural origins, a situation which Elsner has called the 'balance of the *lithika* between nature and culture.'[1047] Posidippus' Λιθικά are ultimately driven by a desire to appreciate beauty which is impossible to achieve in gemstones without some human help. Posidippus' epigrams are dominated by gemstones worked by humans simply because gemstones in practice only receive their shiny appearance through special carving and natural stones appear mostly dull and unprepossessing. There are stones mentioned which are not reduced

[1046] Observation from Lloyd 1995, 273.
[1047] Elsner 2014, 157.

to their appearance but whose properties are celebrated. While the first stones were marvels either of craftsmanship or nature, here the focus lies on a wonder of nature that had been hitherto unperceived, but which has been revealed by science – most likely under Ptolemaic patronage. Posidippus demonstrates elegantly the significance that both categories had for the Ptolemies. Alexandrian literature also served as a way of collecting the totality of the wonders of the world especially in the Ptolemaic realm of influence – which in the Herodotean sense comprised both natural and man-made wonders.

Of course, I am not suggesting that the *Seven Wonders* formed part of what remains of Callimachus' paradoxography in Antigonus or later paradoxographers. These were restricted to natural phenomena rather than man-made wonders. Yet the existence of a paradoxographical 'mode' would have conditioned the creation of a list of built wonders next to the wonders of rivers, animals, and different customs of the world. The fact that Callimachus shows extensive knowledge of cult statues throughout his oeuvre, demonstrates how his varied interests could have easily accommodated a list of marvels of human achievement. While natural paradoxography outweighs man-made wonders in the number of transmitted wonders which were contained within the boundaries of the eclectic paradoxographical genre, the man-made wonders seem to have had a greater literary impact. The most important lesson, however, is that Herodotus' distinction of the categories was foundational for Callimachus' conception of his paradoxography.

VIII. Conclusion

Callimachus' fragment ἀμάρτυρον οὐδὲν ἀείδω (fr.607) has been a constant companion through this analysis. It offers different possible interpretations depending on the context. We have first encountered it in the chapter on Callimachus' sources, which seem to have been largely preserved by Antigonus even though paradoxographers normally considerably manipulate their source texts and follow their own agenda – mostly by aligning a wonder with a broader theme or by trying to make an old wonder seem new. Callimachus stands out for the range of his sources, which is arguably the greatest of any paradoxographer. He incorporates sources from poetry, science, and historiography dating from several centuries, even if expected authors like Homer and Herodotus are thin on the ground. He stands at the start of a scholarly paradoxographical tradition which would later revert to a more limited set of sources. Ctesias seems to have been Callimachus' most valuable source. Some of Ctesias' individual approaches to local historiography shine through in the paradoxography: his discussions of places different to the areas he was mainly reporting on are also those which were especially picked by Callimachus. The geographical proximity of a source to a wonder did not always make it preferable to others (nor did temporal proximity as paradoxography largely ignores temporal gaps). Herodotus and the historians of the 4th centuries seem to have piqued Callimachus' interest to start a collection of wonders, since before wonders occurred in digressions or were scattered across texts. Historiography and paradoxography operate with similar techniques. Yet whereas the historian focuses on the visual, paradoxography relies on acoustic vocabulary. Humans in both texts facilitate wonder, but Herodotus puts heavier emphasis on the ethnographical aspect and distinguishes between human-made wonders like buildings and natural wonders. Both *paradoxa* and myths were objectified and turned into collectibles, which explains why they appear

occasionally together in our paradoxographical collections. The concern with the gods in Greek myths had been challenged in the 4th century through Euhemerus, who had suggested a human predecessor for the Greek gods and influenced the subsequent discourse with ramifications for paradoxography. Yet Palaephatus is a closer model and one which throws open the essential differences between the two genres. Callimachus' paradoxography is all about the unqualified acceptance of a particular story, whereas rationalists first need to explain it in order to make it acceptable. All in all, Callimachus' paradoxography's treatment of fiction and truth remains closer to Herodotus and Ctesias, who were not afraid of indulging in fanciful stories, provided there was some authority to underpin them.

Callimachus' material sounded very Herodotean in his paradoxographical lists, but ultimately his natural paradoxography leans more towards the analytical Peripatetic ordering system of organisation. Our study of paradoxography and related disciplines which were also collected in systematic prose lists has revealed some striking parallels to the Peripatetics. Notable is the strong presence of wonders located in the Western Mediterranean, which was of particular interest to the Peripatetics who collected material on political constitutions of the cities in Italy and Magna Graecia. Thus, the scholastic occupation of the Alexandrians should be repositioned closer to Peripatetic practises than has previously been the case.

Callimachus' paradoxography was undoubtedly bound up in the academic environment of its author, while evidence for paradoxography as a 'popular' genre immediately after Callimachus is rare. Its use as material for further paradoxographical collections in their own right became increasingly detached from its original purpose as preparatory material for poetry and potentially light-hearted entertainment at the Ptolemaic court. An important result of our studies is that thaumatographical material seems to cluster particularly in the *Hymns* and *Iambi* rather than the earlier parts of the *Aetia,* which could support a later dating of

these texts which are partly the result of years of collecting wonders and other interesting facts. Yet some poetic concerns with the nature of sources shine through in the *Aetia* particularly in fr.43 on the Sicilian cities and in fr.178 on the Ician guest. Callimachus' contemporaries showed a similar interest in wonders. Whereas this had been already recognised for Posidippus' Λιθικά, Archelaus, and occasionally Apollonius, an intriguing factor in this discussion is Callimachus' poetic predecessor, Philetas, who seems to have cultivated some paradoxographical interests, especially animals. One can only hope that further discoveries will shine further light on this scholar whose influence on Callimachus should not be underestimated.

The last chapter has served to demonstrate how Callimachus combined different conceptions of wonder. The *Seven Wonders* could have easily occurred in Callimachus' *Iambi* or in a compact epigram. As the most likely option Callimachus' *Iambi* mentioned perhaps one or two more wonders in the parts that were not transmitted to us, while a list of the full seven was more likely found in an epigram spawning the large number of later epigrams about the wonders. The division into man-made and natural *paradoxa* is Herodotean, as is the concern with size and autopsy attached to the *Seven Wonders.* The *Seven Wonders* appear like Herodotus' fanciful brainchild in conjunction with the inspiration from Oriental sources. Callimachus was not an inventor but a collector of stories. He gave his own individual spin to a story by synthesizing different versions of the same story. It would have been an alien concept for him to establish a new canon without previous literary precedent. The Babylonian priest Berossus was part of a Greek discussion of wonders that was fuelled by the discoveries of the Alexander historians as well as the fanciful stories of Ctesias. Following the motto 'ἀμάρτυρον οὐδὲν ἀείδω' Callimachus potentially used this exotic yet local source for his list of wonders. Just as in his paradoxographical collection, anything that

is attested even if only by a literary source, deserves a mention and is as good as seeing it in person – like the copy of the Olympian statue of Zeus in Cyrene.

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