

Finding, Inheriting or Borrowing? The Construction and Transfer of Knowledge in Antiquity and the Middle Ages

Althoff, Jochen (Ed.); Berrens, Dominik (Ed.); Pommerening, Tanja (Ed.)

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JOCHEN ALTHOFF,
DOMINIK BERRENS,
TANJA POMMERENING (EDS.)

Finding, Inheriting or Borrowing?

The Construction and Transfer
of Knowledge in Antiquity
and the Middle Ages

Jochen Althoff, Dominik Berrens, Tanja Pommerening (eds.)
Finding, Inheriting or Borrowing?

Editorial

The **Mainzer Historische Kulturwissenschaften** [Mainz Historical Cultural Sciences] series publishes the results of research that develops methods and theories of cultural sciences in connection with empirical research. The central approach is a historical perspective on cultural sciences, whereby both epochs and regions can differ widely and be treated in an all-embracing manner from time to time. Amongst other, the series brings together research approaches in archaeology, art history, visual studies, literary studies, philosophy, and history, and is open for contributions on the history of knowledge, political culture, the history of perceptions, experiences and life-worlds, as well as other fields of research with a historical cultural scientific orientation.

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JOCHEN ALTHOFF, DOMINIK BERRENS, TANJA POMMERENING (EDS.)

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in Antiquity and the Middle Ages

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PREFACE AND ACKNOWLEDGEMENTS

The present volume is based on the international conference “Finding, Inheriting or Borrowing? Construction and Transfer of Knowledge about Man and Nature in Antiquity and the Middle Ages” held at the University of Mainz from 14 to 16 September 2016. The conference was part of the research programme of the Research Training Group (RTG) “Early Concepts of Humans and Nature. Universal, Specific, Interchanged”, which was started and funded by the German Research Foundation at the University of Mainz in 2013 (DFG-RTG 1876).

The overall aim of the RTG is to study early concepts of humans and nature based on texts, iconography, and material evidence. The time span of the RTG extends from the dawn of history (ca. 100,000 years BCE) to the Middle Ages (up to the 15th century). The group consists of graduate students and their supervisors from the disciplines of Egyptology, ancient Near Eastern studies, Near Eastern archaeology, Classical philology, pre- and proto-historic archaeology (Pleistocene Archaeology), Classical archaeology, medieval German studies, and Byzantine studies. It is interested in establishing where and when similar beliefs and concepts originated, whether this happened independently, whether such concepts were transmitted or exchanged between early cultures, and how they then changed over time.

The aim of the conference was to focus on the third part of the project’s subtitle, “interchanged”, in the sense of transfer, and on the processes of construction, invention, or discovery, and the legitimization of knowledge in a broader sense.

In order to systematically investigate the chosen topic, four sections were formed, with contributions from various fields, including anthropology, Egyptology, Jewish studies, Classical philology, Old Norse studies, and Byzantine studies. The first section aimed at working out the theoretical and

methodological foundations of the formation, transfer, and legitimation of knowledge. The three subsequent sections were case studies in which individual doctoral research projects associated with the Research Training Group were placed in a broader, interdisciplinary context. On the basis of these case studies, it was intended to show concretely how certain elements of knowledge were formed, adopted, and legitimized in different cultures and times. The first of these sections (organized by Victoria Altmann-Wendling and Tim Brandes) dealt with the knowledge and cultural meaning of the moon, the second (organized by Dominic Bärsch) with the idea of the end of the world in fire, and the third (organized by Tristan Schmidt) with the pejorative description and distinction based on human perceptions of animals.

In order to ensure coherence, the proceedings of the conference are being published in two volumes. The present volume contains the first three sections: the theoretical and methodological foundations, followed by a series of case studies on the moon and another series treating the end of the world in fire. The fourth section, with a slightly enlarged scope, will be edited in a separate volume by Johannes Pahlitzsch and Tristan Schmidt that is going to be published in 2019 with DeGruyter.

Many people contributed to the success of the conference and this volume containing its proceedings. First of all, we would like to express our gratitude to all of the scholars who presented a paper at the conference and later revised it for publication. Moreover, we would like to thank all the participants of the conference for their dedicated and fruitful discussions.

Furthermore, we want to thank the staff of the Research Training Group. The doctoral students contributed to this workshop in many ways, by proposing and organizing the thematic sections, presenting papers, moderating the discussions, etc. Silke Bechler did an excellent job as coordinator, organizing and supporting the conference before, during, and after the actual event. We are especially grateful to the whole team.

A heartfelt thank is extended to the German Research Foundation for their continued support of the Research Training Group with its conferences. We would also like to thank the coordinating committee of the Mainz-based research unit Historical Cultural Science for giving us the opportunity to publish within the *Mainzer Historische Kulturwissenschaften* series and for their generous funding of the publication costs.

Many thanks also to Gero Wierichs for his patient support at the transcript Verlag. We are also indebted to our peer reviewers. Russell Ó Ríagáin is thanked

for the formatting of the contributions and especially for his copy-editing work. Ulrike Althoff helped us with many problems regarding the English language. Clara Brügger and Dr. Bastian Reitze compiled the indices. We are very grateful for their support.

Mainz, November 2018

Jochen Althoff, Dominik Berrens, and Tanja Pommerening

THE CONSTRUCTION AND TRANSFER OF KNOWLEDGE IN THE PRE-MODERN ERA

JOCHEN ALTHOFF (MAINZ), DOMINIK BERRENS
(INNSBRUCK), TANJA POMMERENING (MAINZ)

Since the dawn of humanity, people have developed concepts about themselves and the natural world in which they live. Concepts that have been developed or employed in ancient and medieval cultures can still be traced and studied in textual, iconographical and material remains.

This volume aims at investigating the construction and transfer of concepts and knowledge between and within various ancient and medieval cultures. We have subsumed these often complicated and entangled processes under the three keywords “finding”, “inheriting”, and “borrowing”. In order to take a great variety of different processes into account, we define these keywords in a broad sense. “Finding” should be understood as any form of construction, invention, or discovery of knowledge. The two other terms describe different transfer processes. “Inheriting” refers to a transmission of knowledge in time from an older to a more recent culture, i.e. a transfer in vertical direction, while “borrowing” denotes a horizontal transfer when a culture receives, adopts, and adapts knowledge from another, roughly contemporary culture.

Methodological Considerations

Talking about construction and transfer of knowledge, we in a first step have to discuss the difficult question what we understand by “knowledge”. Our understanding of this term in this book is very manifold and depends on the

context in which knowledge is developed, stored or transmitted. We, therefore, take concepts¹ expressed in words (contributions of Beck, Cooley), symbols (contribution Ellen), phrases, metaphors (Lehmhaus) and rituals (Ellen, Brandes) into account. Besides, certain practices of arts or crafts, ways of systematization (Bardi, Brandes), categorization, classification, etc. in our view fall under the term “knowledge” as well as overarching complex ideas or concepts about certain features of reality (e.g. the moon) or only imagined realities (e.g. the end of the world in fire).² In all these fields of knowledges, the human mind is actively combining and interpreting perceived facts and constructing interrelations and more abstract concepts. Never are the pure facts just objectively stated or documented but the human way of understanding and explaining these facts (or imagined facts) plays a central role. The concept of knowledge(s) used in this volume, therefore, combines a social-constructivist perspective³ with the methods of the history of science and covers all possible forms of knowing.⁴

The common assumption of this volume is that knowledge is handed down in traditions and is transferred between cultures. This presupposes that knowledge is stored in some form (mostly spoken or written words, but also monuments, pictures, rituals, etc.), because otherwise a transfer would not be possible. Moreover, storing knowledge in a certain form will here (as in many other publications) be assumed as a conscious and intentional act on the part of human beings. Two main intentions seem to be relevant: first, to store knowledge for individual purposes (especially in Egypt), and, second, to offer knowledge for transfer – from one person to another, for the future, or for other groups and cultures.

In the field of research on cultural transfer, however, the attitude has changed since the 1990s. Up to that time, the basic assumption was that some primary culture, group, or person had a specific interest in diffusing knowledge to some secondary culture, group or person that was considered inferior (teacher–student, parent–child, sophisticated culture–“primitive” culture, etc.).

1 Concept is understood here as a culturally and cognitively formed and organized conglomerate of properties or knowledge components, cf. e.g. MURPHY, 2002; POMMERENING, 2017, p. 168.

2 See BURKE, 2015. A similarly broad definition is used for the equivalent term “Episteme” in CANCIK-KIRCHBAUM/TRANINGER, 2015, pp. 1f.

3 In the attributions of DETEL, 2007, pp. 670-678. Fundamental are BERGER/LUCKMANN, 1966. See also PÖRKSEN, 2015.

4 LANDWEHR, 2007, pp. 801-813; BURKE, 2015.

More recently, the focus has shifted towards the borrowing- or target-culture, to which a conscious process of choosing and embedding the associated pieces of knowledge is ascribed. This shift in focus is also expressed in the title of this volume: “Finding, Inheriting or Borrowing”. We want to examine how target-cultures⁵ adopt and adapt these knowledges from other cultures and how they reflect on these adoptions. These mechanisms will be investigated in their historical dimensions as well as through a synchronic perspective by microanalysis of particular texts in the following chapters of this book.

In the past, an oft-used criterion of defining “knowledge” was its legitimation, i.e. that knowledge only counted as “real or true” when it was secured by facts, reasonable and “objective”. In this respect, we follow Detel and Landwehr: we do not regard legitimation as the only possible criterion.⁶ For, it may happen that mere opinions or beliefs, when taught by some powerful institutions (school, university, church, state, etc.), may in certain cultures become secure knowledge. Moreover, at this point the difficult question arises (and cannot be answered here): what makes knowledge scientifically valid?⁷

One of the many possible answers to this question is that knowledge is valid when it is adequately authorized by generally acclaimed and renowned researchers or legitimized by being part of a long tradition. This strategy can, for example, be observed in ancient texts. It must, nevertheless, be asked whether such a strategy of legitimation must be assumed in all the cases where details about the sources of knowledge are documented. From an intra-cultural (emic) perspective, it may be more adequate to expect many different reasons lying behind the naming of sources. Also, the circumstances of inventing or transmitting knowledge can be manifold and determined by different intentions. Oversimplification and hurried conclusions should be avoided.

These things being said, the real transmission processes often cannot be divided easily purely into vertical or horizontal categories, as the ways by which transmission took place are often entangled. It is at times difficult to determine which is the borrowing and which is the lending culture (see especially Ellen’s contribution on this topic). Moreover, one has to bear in

5 The term “culture” is used here in a broad sense, like in the context of research on “knowledge cultures” (Wissenskulturen) and “transfer”. It will be understood according to LÜSEBRINK, 2012, *passim*.

6 See DETEL, 2007 or LANDWEHR, 2007.

7 See CHALMERS, 2013.

mind that conceptual similarities between two cultures could be the result of knowledge transfer, but similar concepts could also have developed independently in the different cultures. In the latter case, we would like to speak of “universal” concepts.⁸ Since concepts of humans and nature are often very complex, it is crucial to carefully study and analyse the constituent elements of concepts, ideally with an emic perspective, rather than resort to simplistic and rash generalizations.

It is obvious that some of the extant documents concretely refer to their sources, for example, by naming a real or assumed author or place of origin. Egyptian texts often place the origin of certain practices or concepts in the sphere of the gods and assume that the first application of a process or concept happened in a distant past: For example, a passage (Incantation 60 [14.8-15.4]) of the medical papyrus London 10059, written about 1350 BCE, explains the origin of an incantation for the expulsion of male or female *nsy.t*-demons as follows:

It was at night time that this incantation had been found, it came down (from heaven) into the halls of the temple of Koptos, as a secret of this goddess (i.e. Isis), through the hand of the lector priest of this temple. While this country (Egypt) lay in darkness, it was the moon that shone upon this book-roll on all her ways. It was brought to the majesty of the king of Upper and Lower Egypt, the blessed Kheops.⁹

The end of the reign of Kheops was about 1250 years before the production of this copy. While very long traditions can be traced in ancient Egyptian medical texts,¹⁰ such ascriptions may also have served the purpose to improve the efficiency of the remedy.

Besides such narratives of inventing or first applications of remedies, which deserve a more detailed investigation in an emic perspective, some texts offer an opportunity to understand who (allegedly) compiled already existing knowledge for teaching purposes. In such contexts, masterly scribes are

8 The term “universal” is used neither in the sense of strict nor quasi-universals, but of relative universals. By this, we mean similar phenomena that lead to identical or comparable mechanisms, independent of time and place, i.e. regardless of cultural contacts.

9 Translation: T. Pommerening; the recent edition of pLondon 10059 is LEITZ, 1999. Cf. the translation of this spell IBID., p. 81.

10 See POMMERENING, 2014. In fact, corresponding documents are attested from that time (names and titles of healers; reports about medical texts, pEdwin Smith, etc.).

mentioned as working in the “house of life”, a kind of scriptorium and school. In the introduction of the so-called Ramesseum Onomasticon, for example, we read:

Beginning of the teaching of understanding and instruction of the ignorant. Knowledge of all that exists, which Ptah has created and Thot generated: sky with its signs, earth with everything in it: what the mountains spew out, what is moistened by Nun, (created and generated) as everything useful which Re illuminates: everything that grows on the back of the earth. Devised by the scribe of the Books of God in the house of life, Amenemope, son of Amenemope, [...].¹¹

Also the Rhind Mathematical Papyrus (approximately 1550 BCE) begins with the following statement:

Reckoning the “descending”, knowing all that exists, [every] darkness, every secret. Indeed, the reckoning is the topic. This book was copied in the regnal year 33, month four of the inundation season, [day ... under the majesty of the king of Upper and] Lower Egypt, Aa-User-Re, given life, in resemblance to writings of the ancient times, made in the time [of the king of Upper and Lower Egypt], [Nima]at[re]. It is the scribe Ahmose who copies this writing.¹²

The text, therefore, presupposes an early date of composition as part of a long-standing tradition, and informs the reader about the process of the transmission of knowledge. Writings were copied and reproduced and by that kept at hand for a longer period of time. Archives, libraries, and temple walls served as storage places for collections of knowledge, accessible only to a small group of initiated people, priests for example.

In contrast to such examples, Egyptian administrative texts offer details about how specific knowledge, knowledgeable persons, objects, and concepts spread in the multi-cultural environment of that time. These details can today more easily be understood. The correspondences in cuneiform script from the archives of Amarna and Bogazköy may serve as examples. Medical knowledge was exchanged between these cultures, as can also be demonstrated by medical papyri from Egypt. In these processes, foreign concepts were integrated in and

11 Edition: GARDINER, 1947; translation: T. Pommerening.

12 British Museum, EA 10058. Editions: PEET, 1923 and ROBINS/SHUTE, 1987. See IMHAUSEN, 2016, pp. 66f. for dating. Translation: T. Pommerening.

assimilated to the borrowing culture (cf. Beck's contribution).¹³ A reference to the original sources is, however, usually missing.¹⁴ Conversely, foreign origin was put into the foreground in many texts in order to stress acquisitions of precious material goods in particular (plants, minerals, animals).

Latin and Greek texts from Classical Antiquity often feature citations and quotations from authorities such as Homer, Hippocrates, Plato, or Aristotle – to name just a few very prominent examples. In this respect, similar to the Jewish Rabbinic texts discussed by Lehmhaus in this volume, the Egyptian practice differs from the Classical texts, in that human authorities are hardly ever mentioned.¹⁵

The citation of eminent experts in Classical texts, however, is frequently used to grant an argument authority and legitimize a thesis. Quotations and citations of authorities can also serve the self-fashioning of the author as learned and cultivated and can furthermore highlight the “scientific” character of a work or a part of it (see, for example, Taub's contribution to this volume). This does not mean, of course, that such citations and quotations are always correct according to modern academic standards.¹⁶ Instead, quotations were at times attributed to the wrong person, or taken out of their original contexts where they would have a very different meaning. They are often adapted, or even distorted, or simply fabricated to fit an author's own argument. Bärsh will demonstrate some of these techniques in his contributions to this volume.

Occasionally, it is assumed in Classical texts that knowledge is of foreign origin. This is the case especially for certain “scientific” disciplines such as astrology and the casting of horoscopes, said to have been imported from Babylon or Chaldea,¹⁷ and for geometry, which is generally believed to have

13 For a description of ways of transfer in Egyptian healing practices see POMMERENING, 2018. The adaption of Egyptian concepts within Greek and Latin tradition is subject in EAD., 2015.

14 References to authors in medical texts are only found in Egypt since the Roman era. Cf. on this topic POMMERENING, 2012, p. 35f.

15 In Pharaonic Egypt, human author names occur only in the case of the so-called wisdom or teaching texts, which offer moral approaches and social skills. This also demonstrates that different categories of knowledge existed contemporary to one another.

16 See e.g. DARBO-PESCHANSKI, 2004; TISCHER/BINTERNAGEL, 2010 for discussions of the complex topic of quotations in ancient literature.

17 Altmann-Wendling argues in her contribution to this volume that the Greeks might have actually adopted the Mesopotamian tradition by way of the Egyptians, as stated in several Greek sources.

been borrowed from the Egyptian practice of land survey.¹⁸ Herodotus, for example, is especially eager to find parallels between the Egyptian and the Greek culture in the second book of his *Histories* (e.g. 2.43-53 [name of gods and other religious practices], 2.109.3 [geometry], 2.167 [low societal status of craftsmen]). But as Lloyd puts it:

This trait (i.e. of finding similarities) can, however, lead to pernicious consequences, since Herodotus has a marked tendency to assume that such similarities are the result of cultural influence, that is, that the older culture¹⁹ has bequeathed the feature to the younger (the *post hoc ergo propter hoc* fallacy).²⁰

At times, therefore, our sources tend to postulate foreign influence where there was none, because similarities could also have developed independently and for that reason could be universal in the sense we understand this term in this volume (see above). Besides, it has been shown that knowledge is altered during processes of transfer between cultures. It is crucial to bear this in mind when dealing with texts. König and Schjødt will consider similar processes in their contributions to the present volume.

Another way of attributing authority to knowledge and denoting it as “foreign” in ancient Greek and Latin texts is by referring to myths and reports of events from a mythical past. Such a reference to the foreign can also be used to separate it from a more “scientific” Greek (or other) understanding and thus to stress some kind of progress achieved. In Plato and Plutarch, however, the use of myth as a strategy of authorization seems to be more important, although this needs to be interpreted meticulously in every single case.²¹ A famous example is the myth of Atlantis as it is told through several layers of narration by an Egyptian priest in Plato’s *Timaeus*. Plutarch’s myth about the nature of the moon told by a Carthaginian stranger and deriving ultimately

18 Cf. NEUGEBAUER, 1969, pp. 122-137; LLOYD, 2007, p. 319; IMHAUSEN, 2016 on Egyptian geometry.

19 The Egyptian culture is in Greek sources often regarded as the oldest culture, in that they have the longest continuous history. This is, for example, expressed in Herodotus, *Histories* 2.142 and in Plato, *Timaeus* 22 B 4-23 E 4 (see also the contributions by Taub and Bärsch in this volume, as well as the latter’s forthcoming doctoral dissertation on the construction of foreignness in this Platonic dialogue).

20 LLOYD, 2007, p. 235.

21 Cf. COLLOBERT, 2012; JANKA, 2014.

from the chamberlains of the god Kronos is probably an imitation of Plato. Both of these myths serve to convey some knowledge – in Plutarch even supported by more “scientific” arguments – and obviously try to demonstrate an honorable and cross-cultural historical tradition of explaining certain natural concepts. Plutarch’s use of this literary technique will be discussed in more detail in the chapter by Taub.

In Egyptian medical texts, the reference to the knowledge of some god of ancient times (as in the incantation quoted above) seems to serve a different purpose. Egyptian gods in medical texts often serve as healers, for example, or as patients in mythical precedents. Doctor and patient are seen in the healing-process as identical to these gods.²² The aforementioned story about an incantation against demons can be understood as Isis the divine healer treating King Kheops (who, in his capacity as Horus, reigns the country) as her patient. According to this precedent everyone else afflicted by a demon will also be healed.

Divine knowledge plays a role in classical Greek and Latin literature as well (as just seen in the case of Kronos). According to the traditional concept of epic poetry, the poet sings being inspired by the muses.²³ Invocations of the muses and of other gods are therefore often found at the beginning of epic and didactic poetry. Moreover, the Platonic *Timaeus* (in the dialogue named after him) invokes the gods before recounting the “probable myth” (εἰκὼς μῦθος) about the *demiurgos* creating the world (*Timaeus* 27 C 1-D 4).

The invocation of the muses, however, soon became a *topos* without implying that people generally believed in it.²⁴ In Greek and Latin “scientific” works proper, especially those of later centuries, divine knowledge does not seem to be as important as it is, for example, in the ancient Egyptian culture, or in Jewish and Christian texts, as Cooley, Lehnhaus, and Bärtsch will

22 There are of course many instances where a god acts as a healer in the Graeco-Roman culture(s) as well. Probably most institutionalized examples are Asclepieia, temples of the god Asclepius, where people came to sleep overnight, with the god thought to appear during sleep in a dream and to treat diseases and ailments of all kinds. Aristophanes has described such a scene in his comedy *Plutus* (verses 653-747).

23 The *locus classicus* is Hesiod, *Theogonia* 22-34. A detailed discussion about this conception is also found in Plato’s dialogue *Ion* 533 C 8-536 E 7.

24 Seneca, for instance, challenges this view on the production of poetry in his 84th *Letter to Lucilius* (see BERRENS, 2015). It has to be noted, though, that we do not know for certain what the early poets Hesiod and Homer believed when employing this strategy.

demonstrate.²⁵ In the context of personal or political advice, however, it was assumed by many people from different cultures that divine knowledge was revealed through oracles, *omina*, horoscopes, etc.²⁶

In Classical Antiquity, such use of quotations referring to foreign or even divine knowledge was, of course, not the only means of gaining (and legitimizing) knowledge. Quite to the contrary, personal observation and logical conclusions such as syllogisms were often regarded as of higher epistemic value than book-knowledge.²⁷ Aristotle, for instance, had a clear “scientific” programme, which he explains, for example, in his *First Analytics* (I 30. 46 a 17-27).²⁸ According to his method, it is important to collect empirical evidence first and derive a theory explaining the single phenomena in a second step.²⁹ But he, nevertheless, systematically reviews the ideas and

25 In the *Corpus Hippocraticum*, for example, we find the famous short treatise *On the Sacred Disease* (περὶ ἱερῆς νόσου), which fiercely opposes all assumptions of a divine causation for this specific condition; it is, instead, emphatically explained by natural factors. Cf. VAN DER EIJK, 1990, pp. 87-119.

26 There is an abundance of literature on this topic; see e.g. TRAMPEDACH, 2015; STRUCK, 2016 for Greece and Rome, QUACK, 2010, NÄTHER, 2010 for Roman Egypt, MAUL, 2018 for Mesopotamia.

27 Even in the literature concerning natural phenomena of the Roman Imperial Era, which is often regarded as more literary and anecdotal than “scientific”, authors like Aelian (see e.g. KINDSTRAND, 1998, p. 2971f.) and Plutarch give the impression of relying on empirical evidence. Although this is probably not true, the fact that they claim to have own observations or reliable eye-witness accounts clearly demonstrates that they acknowledge the priority of empirical evidence over book-learning. A useful example of this is found in Plutarch’s dialogue *On the intelligence of animals* 8. 965 D where the participants of the dialogue state they would prefer to rely on Optatus’ *empeiria* rather than on Aristotle’s authority. Cf. e.g. BERRENS, (forthcoming), but also MOSSMANN, 2005, p. 154 for a slightly different interpretation of this passage.

28 See e.g. KULLMANN, 1974, pp. 204-220; ID., 2007, pp. 156-181; ID., 2014, pp. 157f.; ALTHOFF, 2018 for detailed discussions of Aristotle’s research programme and how it was opposed to Plato’s epistemology. For the latter see e.g. ERLER, 2007, pp. 354-375 and also the contribution by Taub in this volume.

29 If observations had not been made so far – such as in the case of the generation of bees –, Aristotle resorts to theoretical considerations, but highlights that these theories have to be revised according to new observations (*On the Generation of Animals* III 10. 760 b 27-33). Cf. e.g. FÖLLINGER, 1997, p. 385; BERRENS, 2018, p. 153.

explanations of earlier thinkers and takes them as serious starting points for his own enquiry.³⁰

In the Roman Imperial Era, we again find very different ways of constructing and transferring knowledge. Scholars commented on the works of older researchers (especially Aristotle, but also Hippocrates) with different purposes in mind. Their basic attitude was that the older authorities deserve to be read, carefully studied and kept in mind. In the case of Aristotle's biological writings, this philological treatment of older texts is strangely accompanied by a growing neglect of serious biological research. Encyclopaedic works like that of Pliny the Elder's (ca. 23-79 CE) thirty-seven-volume *Natural history* rely heavily on older written sources, which are extensively mentioned. Such texts can at least partly be understood as literary projects of epitomizing and collecting knowledge and wisdom of a globalized world from older authorities in order to praise nature in all its aspects and demonstrate its relevance for humans. They are also examples of the cross-cultural appropriation of the wisdom of earlier cultures on the basis of Greek texts by the politically dominant Romans, and that even holds true for Roman citizens writing in Greek (such as, for example, the commentators on Aristotle, Lucianus, Galen, or Diogenes Laertius). Knowledge about humans and nature became in these examples primarily a part of a general educational programme. The practice of commenting on or extracting from older works is, of course, no invention of Greek or Roman authors. Both ways of dealing with texts can already be found in much older Mesopotamian or Egyptian literature. The intentions behind these strategies, however, may be different.

Nevertheless, knowledge in this era was not only gained by reference to older authorities. In some more practical disciplines like medicine (Galen), architecture (Vitruvius), and warfare (Frontinus), new insights were provided by empirical observation and logical reasoning. This is also the case in certain mathematical sections (Diophantus, Pappus). Although even the authors of such works were conscious of the older tradition and built on it (Galen, for example also commented on the works of Hippocrates), they were also interested in finding substantially new knowledge.

30 Many of his works begin with what modern scholars call a "doxography": a survey of older positions on the topic. This is quite similar to what modern scholars do when they summarize the state of research in the introduction of their books. For Aristotle, see ALTHOFF, 1999, pp. 57-94.

With the rise of Christianity, a new attitude towards gaining and transferring knowledge developed. This new religion evolved from Jewish origins, and similarly depended on a specific series of holy books. The New Testament contains texts that are understood as revelations of the Christian god's plan and will to humans. By this, they are at times thought to represent an insuperable and unchangeable source of knowledge. Such an authorization by tying knowledge back to the word of a god (in this case, the only god) resembles the practice employed in some Egyptian texts and in some of the Platonic myths. In the case of the Bible, however, this strategy was stretched to the utmost: all human knowledge, and especially the knowledge of non-Christian authorities, was massively invalidated by comparison with the true knowledge of the Christian god. Humans can approach the wisdom of God, but they can never reach it.³¹

This attitude fundamentally changed how ancient pagan authorities were handled. At first sight, they have become useless for Christians. But because Christians strove to find a place among educated Romans, they had to take pagan knowledge into account. In the movement of the so-called Apologetics (second century CE),³² Christian writers tried to defend the basic tenets of their belief against pagan polemic and distortion. This could only be done by entering into a pagan philosophical and literary discourse in order to argue on the same level as the opponents. By this "backdoor" the earlier pagan authorities regained some importance and became influential models for the development of literary strategies and a philosophically supported theology. A blending of Christian and pagan concepts was the inevitable consequence. Bärtsch's contribution to this volume offers important insights into these ways of dealing with pagan sources. Lehmann demonstrates a similar process in the rabbinic discourse dealing with the medical knowledge of Late Antiquity.

The Christian faith was officially recognized by the Roman state under the reign of Constantine the Great (ca. 280-337 CE). The Christian religion was by this strongly linked to political power and its influence on all fields of culture steadily increased. This had a strong impact on the construction of knowledge, which also extended until the medieval period in Western and Eastern Europe (roughly from the fifth or sixth century until the fifteenth century). Nature as a whole was in this context regarded as God's creation working according to his plan. Nature was studied in symbolic terms as a means of recognizing God's

31 Cf. PIEPENBRINK, 2010, pp. 45-49; 104-106.

32 Cf. FIEDROWICZ, 2002, pp. 50f.

intention, with conclusions about the morally appropriate and faithful behaviour of humans drawn from natural phenomena. The ways in which nature was interpreted were similar to the allegorical interpretation of texts, especially of the Bible, which were, analogous to nature, regarded as a revelation of God's intentions. That lies behind the origin of the term "book of nature", a conception probably introduced to Christian thinking by Augustine, which became a much-repeated phrase in subsequent centuries.³³ Again the contribution by Bärtsch sheds light on the ways in which medieval scholars used older textual authorities. Quite similar strategies of amalgamating religious and secular fields of knowledge are examined in Lehmann's paper. Understanding secular knowledge in the context of a highly valued holy book is, therefore, not restricted to Christianity, it is – in view to the cultures in this book – also quite common in the Jewish religion. From the twelfth century CE at the latest, however, the observation of nature became more and more important.³⁴

At the beginning of the Renaissance, the reception of ancient scientific and medical knowledge was still important. But it soon became obvious that the traditional natural philosophical models in astronomy/cosmology, or medicine, for instance, could no longer explain more recent discoveries by, for example, Tycho Brahe, Johannes Kepler, and Andreas Vesalius. Personal observation, experiments and "facts" – a neologism of sense coined in this period³⁵ – soon became the key elements of scientific research and epistemology.³⁶ Ancient authorities, however, were still cited and honored, though often in order to fashion oneself as a "new Aristotle, Pliny or Galen" who would surpass even the achievements of these ancient authorities, correct their errors and shortcomings, or even find new knowledge themselves. Moreover, it was sometimes considered important to trace the history of a discipline back to Classical Antiquity or even beyond in order to grant one's own research authority as part of a long continuous tradition. In this case, even biblical figures like Abraham³⁷ or ancient gods and heroes³⁸ could be mentioned as the

33 Cf. SPEER, 1995, p. 30, note 53; NOBIS, 1999, pp. 814f.

34 Cf. e.g. SPEER, 1995; HARRISON, 1998, pp. 34-63.

35 Cf. WOOTTON, 2015, pp. 251-309.

36 Cf. e.g. SERJEANTSON, 2006, pp. 132-175; CHALMERS, 2013; WOOTTON, 2015, pp. 249-428. An interesting chapter on early modern scientific methodology (*Introitus de indagando vero*) can also be found at the beginning of the *Opuscula physica et chemica* (1779-1790) by the Swedish scholar Torbern Bergman.

37 Cf. REMMERT, 2015.

founding fathers of a particular scientific discipline. The Christian god was, however, still very much present in many scientific texts of this period. This was not least due to the fact that many of these texts were written by clergymen, Jesuits in particular. Carolus Linnaeus, for example, printed an invocation of God (Psalm 104.24) at the beginning of every edition of his *Systema naturae*, from the first edition of 1735 to the twelfth published 1766-1768.

Extensive travel during this period led to increased contacts between European and other cultures (e.g. from the newly “discovered” Americas). Travelling is, obviously, a characteristic feature of all the cultures treated in this book from early on. Encountering other cultures always leads to similar experiences of otherness and similar strategies of dealing with different people and their knowledge. Travellers usually adapt their newly acquired knowledge to their needs within pre-existing epistemological and ontological categories. For example, newly encountered species are named and classified according to pre-existing taxonomic or other systems.³⁹ Ellen will describe quite similar approaches and strategies to include newly introduced species by the Nuaulu people in eastern Indonesia.⁴⁰ Such processes of dealing with other cultures and their knowledge are, of course, not new and the mechanics that are at work in such situations have in the last decades been described using different models of cultural transfer.⁴¹ Some of the contributors to this volume (e.g. Beck, Bardi) use terminology developed within these models.

This very brief overview of the manifold strategies employed in dealing with found, inherited, or borrowed knowledge illustrates that some of these

38 Think of Hercules and Atlas as the founding fathers of astronomy (cf. REMMERT, 2007) or Hermes Trismegistos as the founder of alchemy (cf. e.g. ABRAHAM, 1998, pp. 100f.). It was common in alchemy to interpret ancient myths as allegories for chemical reactions. An especially appealing example for this way of dealing with ancient myths is found in MICHAEL MAIER, *Atalanta fugiens* of 1617.

39 Cf. e.g. DE ASÚA/FRENCH, 2005 for Europeans’ encounter with South American fauna.

40 These patterns and processes of lexical acculturation could be universal as e.g. GOLDWASSER, 2017 demonstrates with similar observations about the lexical integration of words for “horse” in the ancient Egyptian, Sumerian, and Nahuatl languages.

41 The following list contains only a few examples for a great variety of theories and methods from this thriving field: ESPANGE/WERNER, 1988; BISANG, 2004; ASH, 2006; WERNER, 2009; TOEPFER/BÖHME, 2010; LÜSEBRINK, 2012; HELMRATH et al., 2017.

strategies are attested throughout history up to the present, while others are specific to certain cultures and eras. It can be summarily stated that most of the cultures highlighted here (of Egypt, Greece, Rome, medieval and early modern Europe) were in contact to each other synchronically or diachronically. This makes it difficult to grasp whether episodes of the invention, borrowing, or adoption of concepts, as they are assumed in the sources, actually occurred. Identifying and understanding the interrelationship between diverse strategies of reception and the changes concepts undergo in this process leads to a more detailed comparative view of the key mechanisms at work. This is the aim of the contributions to this volume. An earlier volume attempted a cross-cultural comparison of the concepts associated with the beginning and end of the world.⁴² One preliminary result was that the introduction of a new concept works most effectively when it is combined with well-known older concepts and familiar ways of presenting it. This result will here be reconfirmed by focusing on other topics.

In our Research Training Group, we in every case ask whether we are dealing with specific or universal phenomena. This question can be applied to the concepts of knowledge as well as to the strategies involved in the transfer of knowledge, which are the focus of this volume. It leads to several more specific questions, to which this volume tries to find answers, namely:

From which **sources** is knowledge derived (personal observation, divine revelation, studying authorities, etc.)? Is there a hierarchy of sources ranked in terms of authority? Are the sources as they are named in the documents historically correct or fictive and fabricated? What **strategies** are applied to invent or construct knowledge of humans and nature? Are there conscious or unconscious strategies involved in the legitimation of transferred knowledge? Does a **concept** or at least some part of it originate in one specific society at a certain period or is it taken over from another culture by an act of borrowing, or from an earlier era by an act of inheriting? How is such external knowledge integrated into the new context?

Naturally, these questions cannot be answered exhaustively in the present volume. It rather aims at giving a few insights into theoretical and methodological discussions by scholars, who tried to trace and study the construction, transfer, and justification of conceptual knowledge in premodern eras. Furthermore, the volume contains case studies that illustrate by way of example how knowledge was construed, legitimized, and transformed.

42 Cf. GINDHART/POMMERENING, 2016, p. 131.

The intention is to stimulate and foster further multidisciplinary investigations in this field, which may in the future not only be focused on ancient and medieval cultures. In the long run, further interesting questions could be examined, as for example: To what degree and why do other cultures and other disciplines refer to certain traditional or historical forerunners or construct such traditions anew? It would also be worth looking at the way such references are made in terms of language, rhetorical, or narratological strategy.

The structure of this volume

The present volume consists of three sections. The first section contains five papers that treat various theoretical and methodological aspects of the construction, justification, and transfer of knowledge. The papers illustrate their findings through case studies in the fields of anthropology, Egyptology, Jewish, and Byzantine studies.

Ellen provides a broad overview of different approaches to the question of cultural transfer and demonstrates that over-simplistic methodological approaches are misleading. He states that the transfer of complex concepts similar to most of those examined in this volume may be too difficult to allow for an adequate level of understanding, due to too many aspects being involved. As the basis for his discussion, he concentrates on the Nuaulu people of the Seram island of Indonesia, who adopted formerly unknown plants into their own classification system. Ellen concludes by identifying several general problems associated with investigating cultural transfer. They all arise from a plurality of mechanisms involved in processes of transfer. Spatial movement (horizontal transmission, in our terms: “borrowing”) and temporal movement (vertical transmission, our “inheriting”) are basically the same and often overlap. The forms of transmission and the methods of analysing it may vary between different cases; the movement of ideas is not a mechanical process of simple “replication”, rather, it is much more complicated and often recursive. These caveats make it difficult to find the right methodological approach.

The contribution by Beck employs a model for researching cultural transfer that was developed by Karsten Heppner in the field of industrial management. The model is structured in terms of three entities: the producer of knowledge, the process of transfer, and the receiver. According to this model, the process of transmission works on different levels of which the highest and most

complex is “acculturation in the form of integration”. It leads to a detectable change in the receiving culture. In her example, Beck demonstrates this outcome for the transfer of the concept of the Mesopotamian demon *Sāmānu* to Egypt.

Cooley takes as his starting point the recent “constructivist turn” in the study of Mesopotamian cultures. Scholars applying this new approach have successfully demonstrated that the various Mesopotamian as well as the Jewish culture can be termed as “epistemic cultures”. The production and copying or adapting of texts was a central activity and the adequate explanation and understanding of texts was the most important aim. Even Jahwe was seen as a skilled scribe in the Jewish tradition, which proves the dominant role of text-related activities. Through two examples of how the name “Israel” was etymologized, Cooley demonstrates that the typical scribal attitude of comparing similarities in sound and writing of words are used to construct knowledge.

The topic of Lehmhaus’s contribution is the construction and transfer of medical knowledge within Jewish religious discourse in Late Antiquity. He specifically focuses on the analogies and metaphors used in describing and understanding the female body in rabbinic texts; the comparison to a house is central in this respect. Similar to the production of Christian literature, rabbinic texts develop within a cultural competition among and between elites. Their religious discourse combines with an interpretive practice trained on understanding the Bible and thus creates medical knowledge of the body.

Sections II and III consist of case studies on certain concepts that can be found in different cultures and historical periods. They stand in a roughly chronological order. In many instances, the evidence suggests a transfer of knowledge from one culture to another. The conclusions at the end of each section not only summarize the single contributions, but also highlight the conceptual commonalities and differences between the cultures or groups in question. They, moreover, aim at outlining the processes of the construction and justification of culturally specific pieces of knowledge and at identifying acts of finding, inheriting, or borrowing.

The first of these sections (i.e. Section II) discusses the knowledge of the moon in ancient Mesopotamian, Egyptian, and Graeco-Roman cultures. Since the earthly satellite is a prominent natural object that can be observed all over the world, it is an excellent case-study for intercultural comparisons. While the physical features of the moon (waxing, waning, eclipses etc.) are described in

more or less the same way in different cultures, their interpretation is normally shaped by the concepts prevailing within a specific culture and period. Such concepts can be transferred from one culture to another. The papers in this section examine varying ways of conceptualizing the moon and its physical features in different cultures, focusing especially on the justification and legitimation of knowledge of the moon.

In contrast to Section II, Section III deals with different ways of conceptualizing the end of the world in fire. Naturally, such apocalyptic visions, may they refer to the world alone or to the cosmos as a whole, cannot rely on direct observation. Insofar as this final destruction is mostly conceived as a natural (and sometimes even periodically recurring) process, it can be addressed as a concept of the working of nature. Similar concepts and visions can be found in many cultures and the question arises, whether these ideas developed independently (and thus are universal according to our terminology) or whether they were taken over from somewhere else. The papers in this section dealing with texts from Graeco-Roman, Iranian, Old Norse and medieval Latin literature try to answer this and other related questions.

Preliminary Results: Finding, Inheriting or Borrowing Concepts

Different strategies regarding finding or constructing of knowledge are applied in the various cultural contexts dealt with in this volume. Empirical evidence and observation are, of course, important and probably universal ways of gaining knowledge. Thereby, often similar concepts could develop independently as, for example, in the case of certain conceptions of the moon in ancient Mesopotamia (Brandes) and ancient Egypt (Altmann-Wendling). In the ancient Near Eastern, Jewish and Christian traditions – as demonstrated in the contributions by Cooley, Lehnhaus, and Bärtsch – another, often not alternative, but rather complementary way of constructing knowledge is found: acquiring knowledge through the exegesis of sacred scriptures. Because biblical texts were regarded as the words of the Judaeo-Christian god through which he expressed his will directly to humans, knowledge gained from these sources was usually given a higher authority than knowledge gained by observing nature. This did not imply, however, that knowledge could not be gained from observation of natural phenomena (as was, e.g. Plato's

conviction⁴³). Quite the contrary, because for Jewish and Christian writers the will of their god was also found in his creation, i.e. the phenomenal world, it was also possible for them to find some parts of the truth through empirical evidence.⁴⁴ Since in their view this kind of knowledge was not revealed directly, however, it was considered to be vague and less reliable. It is important to stress that knowledge constructed or acquired through these strategies is – from an emic perspective – not “new”. On the contrary, as Cooley highlights, this pre-existing knowledge is supposed to be discovered or found.

A similar case of variant approaches to knowledge is discussed in Taub’s contribution on Plutarch’s work *De facie in orbe lunae*. In this dialogue, conceptions of the moon are presented in a more “scientific” way, while also appearing in a myth told by a Carthaginian stranger that ultimately goes back to the chamberlains of the god Kronos. Taub argues that these two different approaches of explaining the outlook of the moon are also not meant to contradict, but rather to complement each other.

As it has already been stated above, tracing knowledge back to a divine origin (demonstrated by many contributions, e.g. Cooley, Lehmhaus, Beck, Bardi, Taub, Bärtsch) can be a means of legitimation in many different cultures. Another important way of legitimizing knowledge is through the reference to eminent human authorities (see, e.g. Bardi, Taub, Bärtsch) or to the (alleged or real) antiquity of knowledge (see, e.g. Bardi, Brandes, Taub).

The adaptation and incorporation of foreign knowledge are also important topics. Several contributions (see especially Ellen and Beck for theoretical considerations) clearly show that ideas and concepts were not just taken over from one culture to another. This is even true in cases of direct quotations or where the transport of clay tablets can be demonstrated (Brandes), i.e. where the physical “vessels” of knowledge were transferred from one region to another. Quite often, only certain elements of the original concepts were incorporated into another culture, where they were usually transformed, re-arranged, re-interpreted, etc. in the transmission process to fit pre-existing concepts and ideas of the culture that borrows or inherits it. Sometimes borrowed elements are only superficially actualized and transformed, for example, by way of translation, in order to serve practical needs, but often the

43 Cf. ERLER, 2007, pp. 354-375.

44 The phenomenal world was therefore also referred to as the “book of nature”, see p. 24 with note 33 above.

borrowed or inherited knowledge has to be adapted further to cultural practice or moral and religious belief. This is, for example, the case with Christian texts that refer to pagan knowledge (Bardi, Bärsch) or the Babylonian astrology borrowed by Egyptians from Mesopotamian cultures (Altmann-Wendling).

There are different strategies for dealing with external knowledge. On the one hand, the fact that knowledge might stem from another culture is not explicitly mentioned in many cases. Indigenous and foreign elements are blended into quite a homogenous narrative in which the single parts can no longer be easily separated. This blending and the tacit appropriation of foreign material is one way of including external knowledge by concealing its origin either deliberately or (probably more often) inadvertently (e.g. Lehmhaus, Beck, Brandes, Altmann-Wendling, Schjødt).

On the other hand, there are examples, especially in ancient and medieval Greek and Latin texts, where the external origin of knowledge is highlighted. This can serve a social distinction by knowledge where an “in-group” tries to distinguish itself from a supposed “out-group” (see especially Bardi and Bärsch’s contribution on Otto von Freising), of which the latter is often regarded as inferior. In order to legitimize the use of foreign knowledge, strategies of appropriation are employed, for example, by arguing that all knowledge ultimately derives from the Christian god and is revealed in different ways. Such an approach, on the contrary, leads to the levelling of social distinctions, because all humans in all cultures basically partake in the common knowledge of god.

A third model is presented in Taub’s contribution. Plutarch seems to accept foreign and domestic modes of explaining the face in the moon as equivalent. Taub argues that the mythical account by the Carthaginian stranger is not meant to be of lower epistemic value than the more “scientific” Greek sources also referred to. The mythical account is rather meant to offer a different, yet complementary explanation. This is clearly not just a distinction between foreign and domestic knowledge but also between a mythical and a more “scientific” way of explaining natural phenomena.

Furthermore, it is sometimes difficult to clearly distinguish “source” from “target” in the process of transmitting knowledge. The reason is that the transmission of knowledge can go in two directions, rather than solely in a one-way horizontal or vertical direction (e.g. Ellen). Moreover, it is often difficult to determine whether similar concepts in different cultures are really

the result of a transfer process or have developed independently and can thus be regarded as universal (e.g. König, Schjødt).

Closely related to this point is the fact that we cannot always trace a “real” source of knowledge. It has been stated above that we sometimes find direct quotations of predecessors and authorities, especially in ancient and medieval Greek and Latin texts (Bardi, Taub, Bärsch). But since such citations of authorities can be a means to legitimize an argument, they are not always “correct” according to modern academic standards. Texts stemming from ancient Egyptian or Jewish cultures, by contrast, do not usually mention their sources explicitly nor cite specific human authorities (Beck, Lehnhaus). This can also be observed in classical Greek or Latin texts, for example, where Aristotle seldom expressly refers to his teacher Plato but quite often chooses a looser form of reference (“some say” or the like).⁴⁵

To conclude, we can clearly see that there are various **sources** from which knowledge is in reality or allegedly derived. These can be, for example, divine revelation, the natural world, older or more recent authorities from one’s own culture or from another culture. These different sources are often not strictly separated from each other as various sources can be adduced together. In some of these cases a hierarchy of sources ranked in terms of authority is established, for example, where knowledge from divine revelation is regarded as being of higher epistemic value than the observation of nature. A clear origin of the knowledge being employed in the argument is not given in every case, however, and even if an origin is stated, this does not imply that this ascription is always traceable and historically accurate.

The question of what **strategies** were used to find or construct knowledge is closely related to that of sources. An important and probably universal strategy is the diligent observation of natural phenomena. The close reading and exegesis of texts, of sacred scriptures in particular, communication with bygone or foreign contemporaneous cultures, often also through written texts, are further means of finding and constructing knowledge. Moreover, there are different strategies associated with the legitimation of knowledge. This could be done, for example, through citing an eminent authority (that could also be

45 This habit is the reason why the collection of Pre-Socratic fragments by Diels/Kranz is divided in the parts A (containing indirect references) and B (containing direct quotations), although there is agreement among scholars today that this division is often problematic.

foreign) or even claiming divine origin, quite often also through highlighting the antiquity of a tradition.

It is often difficult to determine whether similar **concepts**, or at least certain parts of them, in two different cultures are the result of an act of transmission or have developed independently. Therefore, they must be carefully studied in each case. It can be stated, however, that concepts are usually not just transferred unchanged from one culture to another, but rather they are adapted during the transfer process by employing a wide array of different strategies. Different strategies can be applied in order to facilitate the integration of foreign concepts. An especially fruitful, yet often unconscious strategy is to connect or even blend new elements with pre-existing concepts. This serves foreign knowledge in particular because it obfuscates the foreign origin. If the foreign or bygone culture from which knowledge is borrowed or inherited is, however, highly valued, this origin can even be highlighted to authorize, for example, a thesis. Another way of appropriating knowledge is to assume a common, often divine source from which all knowledge ultimately derives.

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**SECTION 1:
METHODOLOGICAL AND
THEORETICAL ASPECTS**

TRANSMITTING SYMBOLIC CONCEPTS FROM THE PERSPECTIVE OF CULTURAL COGNITION – THE ACQUISITION AND TRANSFER OF FOLK-BIOLOGICAL KNOWLEDGE

ROY ELLEN (KENT)

Introduction

I begin with two apparently contradictory observations. The first is that all papers included in this volume (and its companion) concern the transmission of complex sets of ideas (scribal knowledge such as of the Talmud, Byzantine astronomy, early Christian and medieval eschatology, Scandinavian myth, the moon in texts). Indeed, such ideas are so complex and diverse that we must expect that often it will be difficult to draw comparative generalizations about the dynamics of how particular bodies of knowledge are acquired and transferred. The second observation is that issues relating to how knowledge moves around the anthroposphere are much the same, regardless of whether we are dealing with movement across the generations (temporal change) or between different groups separated geographically (spatial change).

To provide a framework that might start to make sense of very different sets of ideas about humans and the natural world using analytical concepts that have the greatest potential comparative purchase, it would be helpful to examine a conceptual domain that permits the *radical simplification* of data, and which might, therefore, clarify the main methodological issues involved. One such domain is how people classify and organize knowledge of biodiversity, including how different peoples understand life processes. It is no

accident that those studying cross-cultural cognition have repeatedly found suitable examples in ethno-biological classification. If we can construct an analytical apparatus to understand the acquisition and transfer of knowledge about plants and animals, where there is some evidence for cross-cultural similarities in linguistic and classificatory organization, we might be able to test their usefulness against more complex semantic domains. The simplifications we find in the organization of biological knowledge are in part a reflection of underlying cognitive and perceptual strategies and modes of bodily interaction, but also of widespread ecological similarities which permit existence of the same life-forms with particular kinds of characteristics.

First, I offer some remarks on how technical knowledge is culturally embedded (since this might be thought to constrain the extent to which data can be simplified). I then discuss how the movement of knowledge has been modelled, focussing on the contrast between vertical (temporal) and horizontal (spatial) transmission, the matter of scale and measurability, on how life-cycles and generations constrain oral knowledge while social storage (as through writing) expands and transforms it, and the sometimes unintended consequences when knowledge moves from one context to another. Finally, I explore an extended example: how Nuaulu people in eastern Indonesia acquire new plant knowledge and the way this is absorbed within existing classifications, is modified, and challenges ruling botanical ontologies.

The Embeddedness of Technical Knowledge

Analyses of knowledge systems have often made a distinction between technical (or exact) and symbolic knowledge, for example in the way animals are classified on the basis of morphology for utilitarian purposes, and how they might be used metaphorically, as when they become terms of abuse. It is features of the first kind that make biological knowledge so amenable to radical simplification, but this should not mislead us into concluding that it is somehow not “symbolic”, or that it lies outside the complex cultural matrices of the kind discussed in other papers in this volume. Indeed, the cognitive uniformities that arise from these patterns are necessarily expressed through very varied cultural contents and are influenced by equally varied cultural contexts. There is no conceivable empirical biological fact that is not also meta-

phoric or symbolic: for example, plants used to treat illness are never “natural herbs” but have become cultural artefacts.¹

All technical knowledge is embedded in an interpretative symbolic framework; every material object is encapsulated within its own knowledge penumbra. When plant and animal species move through social and geographic space, the relationship between the material object and the knowledge concerning it alters. In some cases, most knowledge connected with the object in its original context is lost entirely during transit, while comparable functional knowledge is re-invented by the people who receive it, reflecting their own ecology and in relation to their cultural content. This was the case with the introduction of cassava (*Manihot esculenta*) from western Amazonia to eastern Indonesia,² a process begun by sixteenth-century Portuguese and Spanish traders and completed by Dutch colonial administrators and local farmers. In other cases, an attempt is made to deliberately transfer the knowledge relevant to the source ecology and practices to the new situation. But because both ecology and cultural frameworks are different, this is not always successful. A good example of this is the first attempts to introduce *Hevea brasiliensis* rubber, again from Amazonia, to the Malay Peninsula, via Kew Gardens.³ Amazonian and Kew-based knowledge did not translate well into the biocultural context of Malaya, and it was not until a new local knowledge had developed that the crop was successfully adopted.

It is because classifications of biota are transmitted within envelopes of cultural content and context that it is in a continuous state of flux as it transfers between individuals; and yet, in order to serve the purposes attributed to it as a cultural resource, it must remain “sufficiently” coherent to work. Categories and models that constitute the biological knowledge of any one culture are not transmitted directly from brain-to-brain (or indeed from mind-to-mind), nor are they simply “replicated” or “reproduced” on the analogy of, say, a gene, but are continuously re-constituted – and in some cases re-discovered – in every generation.

The last twenty years have seen the growth of evolutionary approaches to the study of cultural transmission, and the re-emergence of studies of diffusion, especially those drawing on models of contingency derived from natural history, and which have models of cultural selection, co-evolution, biocultural

1 HSU, 2010, p. 38.

2 ELLEN/SOSELISA/WULANDARI, 2012.

3 DOVE, 2000.

diversity, and “the epidemiology of ideas” built into them. Such models are based on Darwinian “descent with modification”, using phylogenetic techniques to explain what happens when the aggregated transmitted cultural knowledge and practice, along with the potential for enculturation, meet ecological barriers, constraining land-masses, and carrying capacities. These approaches have displayed some diversity, but all are inspired by the application of techniques and models developed in the field of theoretical biology using large spatio-temporal data-sets and include much cultural variability.⁴

How Knowledge Moves Through Time and Space

Before illustrating how knowledge of biota is acquired and transmitted between individuals and different cultural populations, I need to expand upon my second initial observation: that spatial and temporal movement of ideas are part of a single continuous dynamic. Historically, investigations of cultural transmission through time and space have been kept artificially separate: the first being described as learning and teaching, the second part of a discourse on diffusion and the spread of innovations; the first the domain of psychologists and educationalists, the second that of archaeologists, geographers, and historians of ideas. This distinction is perpetuated in the model of epidemiology that has come to dominate the literature on cultural transmission theory. We find it in the contrast between the stereotypes of vertical transmission from parent to child, and horizontal or “contagious” transmission between unrelated others. A second distinction is made between one-to-many transmission (e.g., teacher → class) and many-to-one (e.g., choir → listener). These modelling assumptions have been made popular particularly through the work of Luigi Cavalli-Sforza,⁵ but are also problematic.

Let us look, for example, at transmission processes over the short-term in a small field site of the kind common in ethnographic fieldwork. Here we generally find that cultural transmission is not obviously either simply vertical, horizontal – or indeed “oblique”. This is so for several reasons: because of the role of ego-centred learning through re-discovery, because learning is situational, not wholly reciprocally dyadic or ecologically constrained, and

4 CAVALLI-SFORZA/FELDMAN, 1981; BOYD/RICHERSON, 1985; DIAMOND, 1998.

5 E.g., CAVALLI-SFORZA/FELDMAN, 1981; HEWLETT/CAVALLI-SFORZA, 1986; see ELLEN/LYCETT/JOHNS, 2013.

because of the evidence for multiple temporal reinforcement. Core behaviours, concepts, and skills may initially pass vertically, but only be instantiated through horizontal sharing, while stories are told many times in different ways. Similarly, knowledge that passes vertically may do so (counterintuitively) from a child to an adult, as where children acquire competence in modern digital technologies quicker than their parents and become the transmitters of practical skills (e.g., texting). Learning is neither a one-off nor a uni-directional act. Moreover, although there are many cases in “traditional” small-scale human societies of transmission between non-genetic parents and children; as societies become more complex with specialized divisions of labour, so an increasing amount of transmission occurs between non-kin. In such cases, identifying the vertical line of “descent” is difficult. Thus, while such assumptions have been used in knowledge erosion studies, they raise methodological issues.⁶ For example, it is common to overestimate the vertical and oblique at the expense of horizontal peer influences. As our data-sets become increasingly aggregated, both temporally and geographically, we might expect that it would become easier to distinguish between the horizontal and the vertical, and to ignore the oblique altogether.⁷

These are essentially problems of representation, indeed of diagramming. For Cavalli-Sforza, the model derives from his experience as a biologist working on human population variation, but it might equally have been drawn from anthropological studies of kinship. The basic model here is shown in Figure 1, where we can see various alternative uses of the vertical–horizontal distinction.

6 E.g., MCELREATH/STRIMLING, 2008.

7 ELLEN/FISCHER, 2013, 1-54.

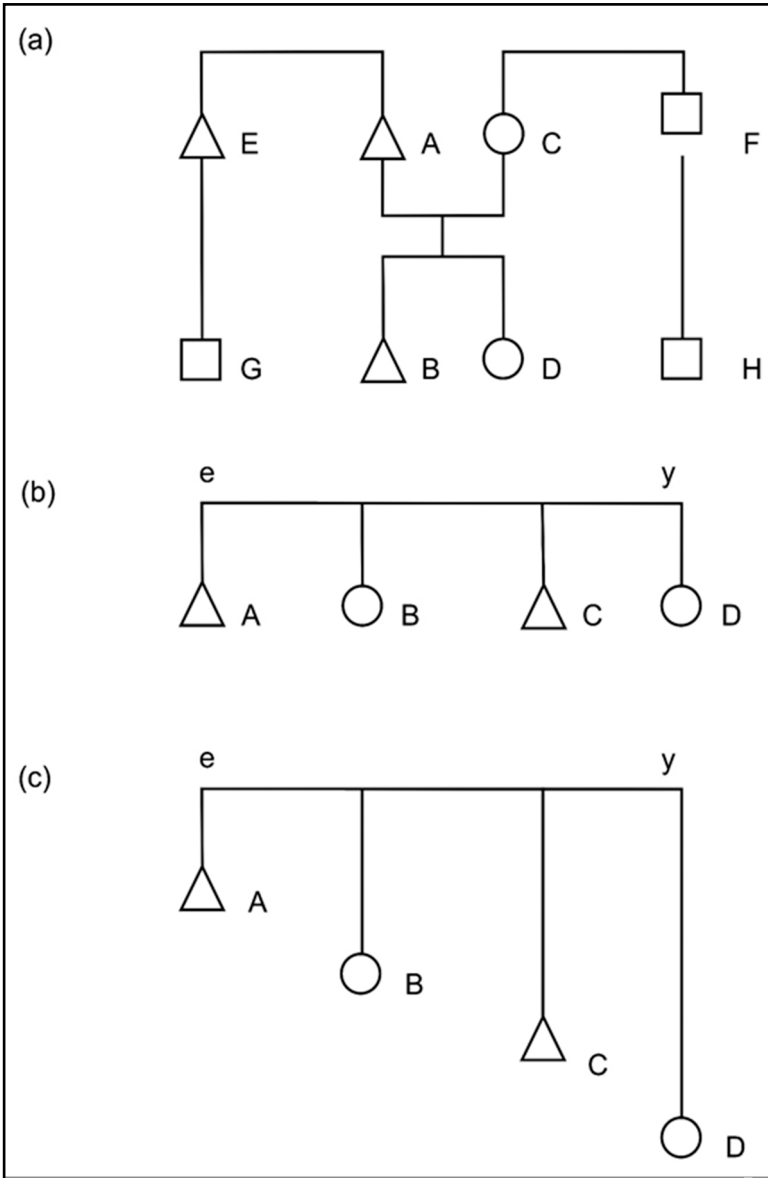


Figure 1: Modelling knowledge transfer using the analogy of kinship (© Roy Ellen, after ELLEN/FISCHER, 2013, p. 30).

In diagrams 1a and 1b we might say that A to C is horizontal transmission, whereas in diagrams 1a and 1c A to B is vertical transmission. But how then do we describe transmission from E to B in diagram 1a? Is this vertical, or oblique? It is even more difficult to describe transmission from G to B in the same diagram. Is this horizontal because it may be acquired from individuals in the same generation and of the same age, or is it vertical because the knowledge may ultimately have descended through a sibling of a parent who has acquired it from common parents? It might be thought safer to distinguish any transmission through kin (all being vertical) from transmission from unrelated individuals; but does it then make any difference whether they are of the same age or cohort, or from an older person or cohort? In part, this is a terminological problem: whether we are referring to horizontal and vertical transmission between individuals (as the terms were originally intended) or between groups (e.g., over time versus space). Figure 1 also illustrates another problem linked to diagramming conventions. Both diagrams 1b and 1c relate to the same genealogical relations and biological individuals. However, those on the left are the older siblings of those on the right. In 1b, learned culture passing from A to B, either directly or indirectly, might be seen as horizontal. In 1c, when we lengthen the vertices to indicate relative age, the transmission might be seen as vertical, or at least oblique.

Let us take an example from my own long-term work amongst the Nuaulu people of the island of Seram in eastern Indonesia. When a girl is learning how to make a basket,⁸ she will do so in the context of having watched other adults and girls making baskets, though the statistical likelihood is that she will have spent more time watching her mother and older sisters in her own household than both adult and immature girls from other households, to whom she is less likely to be related genetically. Her mother will begin to instruct her, and she will ask her mother how to perform certain tasks, and although these interactions are most likely to be the predominant ones involved in the learning process, she will also receive instruction from aunts, grandmothers, and older female siblings. She will also interact with other girls of a similar age making baskets, some of whom are from her own house and some of whom she is only distantly related to. She will also spend a lot of time by herself, when she is learning certain procedures, not by rote instruction, but through independent problem solving based on knowledge of the end product. In other words, she is engaged in “reverse engineering”. We might portray these relations, as I have

8 ELLEN, 2009.

done in Figure 1, by determining which lines are vertical and which horizontal, and whether either are sufficient to characterize the process of transmission. Looked at another way, however, what we have is a network, which can be described in terms of horizontality and verticality, depending on what we wish to emphasize. Topologically, or in terms of graph theory, it does not matter what is “vertical” and what is “horizontal”; all that matters is the direction of aggregate flow between nodes.

Outside the arena of kinship, we would ordinarily see transmission from teacher to child and from artisan to apprentice as vertical, but in relation to descent through kinship they might be seen as horizontal or oblique. Consider also the acquisition of cultural practices by children. Is the transmission of a rhyme between two six-year olds to be counted as horizontal, and that between a seven-year old and a six-year old as diagonal or oblique? Perhaps diagonal transmission between individuals in the same age class but with non-contiguous life cycles is a strong component. Iona and Peter Opie,⁹ in their classic work on the lore and language of British school children, make a distinction between rhymes learned in the nursery and those learned in the playground. While we may speculate how best to describe what is happening in the playground, in the nursery the rhymes invariably pass from parents or alloparents (that is an individual other than a biological parent who performs the parental role) to very young children. These in turn may pass on those rhymes to their children or allo-children twenty years later. I have myself been engaged in a study of transmission of knowledge of plants amongst Kentish allotment-holders, where knowledge passes from more experienced to less-experienced growers.¹⁰ Are we to describe this as horizontal or oblique?

Then there is the question of scale. If we look at transmission at the inter-personal level, we see a network of lines of causation and reinforcement. At a macro-level, this might look like simple vertical transmission. Thus, returning to our kinship diagrams, what looks like horizontal transmission from a father’s brother, looked at in another way can be represented as vertical transmission from a father. What looks like a tangled network of flows of information at one level may look like a straightforward line of transmission at another. But inter-personal relations of learning do not exist in a social vacuum, and their context may affect the content, form, and rate of transmission, while processes and cycles of socio-cultural reproduction in emergent

9 OPIE/OPIE, 1959, pp. 7f.

10 ELLEN/PLATTEN, 2011; PLATTEN, 2013.

systems display properties that are more than the sum of their parts. Individual actions are constrained by the systems in which they are situated, and at the same time provide the context for other individual actions. As societies complexify, so different contexts emerge in which transfer can take place. Thus, in the study of allotment-keepers referred to above, we found that transmission events were set in a context of complex relations of exchange and self-discovery, of plants and knowledge about plants.

The transmission of institutional arrangements, therefore, cannot simply be modelled as the aggregation of more specific cultural components. We can see this in relation to gender. Much core knowledge will always be gender neutral, but some is strongly gender linked, either because the opportunities are constrained by patterns of gender-biased interaction, or because specific cultural rules apply. Turkmen weaving skills pass from mother to daughter, while Nuauulu basket-making from mother and elder female siblings to daughters and younger female siblings.¹¹ Alternatively, there may be gender-specific institutions constituted independently of kinship descent, as in a nunnery, or in a Moroccan wood-carving guild,¹² or among Yemeni minaret-builders.¹³ A similar situation applies to other divisions of labour. Specialists will by definition always be a smaller part of the whole, and therefore opportunities for transmission are reduced in a population as a whole.

Patterns of descent and inheritance may influence transmission of particular kinds of knowledge or practice, irrespective of the gender of individual recipients. So, knowledge may pass through patrilineal to males, or to males and females of the same patrilineage, as is the case with much Nuauulu sacred knowledge. In matrilineal societies, it may be the opposite, with men acquiring knowledge through the female line, as in the case of Sumatran Minangkabau elder brothers playing a crucial role in instructing the younger generation within the matrilineage. In their work on Turkmen textile design, Collard and Tehrani¹⁴ suggest that, where their cladogram data are inconsistent with historical accounts this may be explained by textile design being inherited through the female line in an otherwise patrilineal society. Residence linked to patterns of descent may be important, with endogamy and marriage alliances determining inter-group and intra-group movement. Recipes for medicines and magic,

11 COLLARD/TEHRANI, 2005.

12 KALETA, 2008; see also COY, 1989.

13 MARCHAND, 2001.

14 COLLARD/TEHRANI, 2005, pp. 128f.

combining both symbolic and technical elements, are often owned by particular descent groups, such that their transmission is skewed by descent. Such non-measurable institutional phenomena are always present, influencing the conditions of transmission in significant ways.

The transmission of esoteric symbolic knowledge may be constrained no differently from the acquisition of technical craft knowledge. Just as craft knowledges require specific opportunities for transmitting practical information, such that hunting skills can only be completely acquired when opportunities present themselves, so symbolic knowledge and ritual practice may be even more intermittent in providing opportunities. Certainly, how to perform a ritual can be learned in the abstract, but competence can only be acquired in practice. Many rituals occur with considerable frequency, so that opportunities to ensure fidelity of transmission are numerous, but some rituals, especially in small populations, may occur with remarkable infrequency, and participants may be faced with major problems in replicating correct performance and utterance.¹⁵ No wonder then, that such infrequent rituals give rise to problems, and where there is a cultural insistence on fidelity, sacred sanctions may place pressure on performers to conform. There are many ethnographic examples of prescriptive institutionally-sanctioned “conformist bias” from studies of ritual and art, and in particular of the production of art objects in the context of ritual,¹⁶ and perhaps in its most developed form in Orthodox Christian icon painting.

Conversely, we might imagine that infrequent rituals provide precisely the opportunity in which change will most likely occur, compared with rituals or cultural events occurring more frequently, where experience and memory are more reliable. In some cases, the institutional context is quite prescriptive, requiring tight rote-learning of particular linked cultural components, as in Jewish Torah or Muslim Koranic learning regimes. In other cases, the institutional constraints will be weak, allowing for variation and overlap in what is transmitted. Sometimes, elements may be freely transmitted between individuals, but it may be also the case that bundles of the same elements are transmitted within specific institutional contexts. We acquire the competence to participate in rituals not only by witnessing them and hearing about what happens out-of-context, but also by drawing common elements and analogies from other rituals. Rituals are not transmitted as fully-formed wholes, but in

15 ELLEN, 2012.

16 FORGE, 1967; ELLEN, 1990.

fragments, which only come together through social interaction on particular occasions.

A Matter of Scale and Measurement

In studying the transmission of knowledge, we have therefore to consider data over a series of levels. We can distinguish between: (a) the micro-level, applying to the cognitive processes of learning and to interpersonal interaction; (b) the middle-range level, at which social institutions serve as contexts for perpetuating transmission and ensuring its fidelity; and (c) the macro-level, addressing issues of cultural history, adaptation, phylogeny, diversification, and spatial diffusion. We may be interested in transmission between individuals, between households, between villages, between other sub-sets of societies, and between populations, societies, or cultures.

Moreover, learning is not only a continuous process of accumulation, unlearning, rethinking, and reinforcement, but is phase-dependent. It occurs in different ways at different stages of the life cycle. When we group more-or-less contemporaneous life cycles together we often speak of “generations”. Cultural knowledge and practice are routinely reported as having been transmitted from one generation to the next. Here, the word “generation” is usually understood as referring to individuals of an approximately equal relative age, ideally encapsulated in the idea of siblinghood. Members of the same generation are assumed to associate, and through association reinforce existing practices, or confirm innovatory ones; to receive cultural information from, and be subject to, the social control of ascendant generations, and to transmit cultural information and exercise social control with respect to descendent generations. The generation has become the unit by which we measure and configure processes of cultural transmission in terms of diachronic movement, over and above the individual dyad. However, as an empirical construct it can be as elusive.

When looked at over time, it is often assumed that knowledge moves collectively, from one generation to another, rather than from one individual to another. While the process does indeed take place in a socio-ecological context that comprises, amongst other things, multiple individuals, single individuals are always the ultimate vectors of acquisition and transmission. But theories that are appropriate for understanding how knowledge is innovated or trans-

mitted from one individual to another are not necessarily those best suited for understanding the dynamics of what happens once patterns are established and how they might change through spacetime. As our data-sets become geographically and temporally larger, so the untidy, dynamic, interactive, contingent character of cultural learning gives way to a process that can more easily be described through notions of flow and transmission. The irregularities of small data-sets are statistically normalized in larger ones. Interpersonal transmission in the short-term may look very messy; over the longer term, we may legitimately simplify to lines of vertical or horizontal transmission. In other words, the issues of verticality and horizontality look different depending on degree and mode of data aggregation.

It is no accident that studies within a cultural evolutionary framework disproportionately rely on either linguistic or material culture data, where large data-sets are relatively easy to assemble and where problems of measurement are more straightforward. Applications to people, social behaviour, and abstract non-material knowledge rather than to artefacts have so far focused on small-scale societies, classrooms, or laboratory situations,¹⁷ or on secondary data,¹⁸ where the quality of data has permitted more confident quantification.

In the cultural evolution model, understanding transmission requires some identification of “units”, real or virtual. This is either because observers assume that the mind organizes knowledge into “bits” to better effect its use and replication, or because it can only be scientifically measured through recognition of such units. These units may be words, stretches of meaningful language combining words (phrases, sentences, stories) – such as Lévi-Strauss’s “mythemes”¹⁹ – or their instantiated material analogues (graphemes and texts),²⁰ or they may be artefacts that result from manufacturing activity, or descriptions of patterns of activity, social interaction and relationships. The ease of identifying discrete units varies between domains of cultural knowledge and practice, and whether we are dealing with material culture, language, social practices and relationships, or ideas. The approach to cultural transmission exemplified by Cavalli-Sforza relies on the assumptions of digital (presence/absence) recognition of a discrete element or digital measurability

17 E.g., CHEN/CAVALLI-SFORZA/FELDMAN, 1982; EFFERSON et al., 2007; INMAN et al., 2007.

18 E.g., SOLTIS/BOYD/RICHERSON, 1995.

19 LEVI-STRAUSS, 1963, pp. 206-231.

20 E.g., POCKLINGTON/BEST, 1997.

on a continuous scale; it assumes that a trait will always be the same, and not transformed in the process of transmission. However, ideas rarely copy with anything close to absolute fidelity. As Atran²¹ argues, because transformation affects ideas at a much greater rate than fidelity does, a selection bias cannot develop towards replicability. Descendant ideas cross and merge so quickly and thoroughly that there can be no identification of “species” or “lineages”, only variably defined “influences”.

Cultural traits are not basically mental phenomena that happen to have linguistic, social, and material expression.²² They are, in part, constituted by complex modes of expression. Moreover, what is actually transmitted will vary from occasion to occasion and depending on the scale of the analysis. The empirical reality of knowledge transfer is that particular behaviours, ideas, and objects are parts of connected systems. If we take the case of horse-riding skills as an example, whether in the past, the deep past or the present, do we look at individual objects (bits, stirrups, bridles, and so on), or these items in relation to complexes of associated knowledge and practice? If the latter, then where do we draw the boundaries? Should we include the conditions of the manufacture of included material objects or of their use (for blacksmithing and leatherworking knowledge is not identical to horse-management knowledge), or should we look at the functionality of the “system” of material objects in its entirety, or to horsemanship as an overarching set of skills and knowledge? A similar example is the transmission of the interactive connected properties in the different components of the betel quid. The Nuauulu, like many traditional peoples in southeast Asia, chew betel nut (*Areca catechu*) as a mild stimulant, and the exchange of betel between humans, and between humans and spirits is a quintessential mark of social acceptance. But the chewing of betel chemically requires in addition the fruits or leaves of the betel pepper (*Piper betle*) and mineral lime. So, in understanding the transmission of the practice, should we look at the individual elements, or the practice as a whole? Likewise, in looking at text, is it the word that constitutes the unit or some different more inclusive or less inclusive unit, and do words and the behaviour to which they refer involve different entities?²³

While in some cases the units we identify may translate into units that senders and receivers would understand as having some level of discreteness

21 ATRAN, 2001, pp. 356-357.

22 LYMAN/O'BRIEN, 2003, p. 226.

23 POCKLINGTON/BEST, 1997.

(as in, say, the names of useful plants in ethnobotanical studies), beyond this, those studying cultural transmission have devised units that divide-up the information transmitted in ways that enable measurement, especially at more abstract population and societal levels, but which may not make particular sense to those whose culture is being analysed, such as breaking a particular ritual into its components. These units may simply be “convenient fictions”, while it is difficult to think of entire “religions” (rather than individual rituals) or “technological systems” (rather than individual tools) as “transmittable entities” in any easily measurable sense. Yet, we know that people convert from one religion to another and acquire competence in a new technological system over a relatively short period of time.

One concept that has acquired particular analytical purchase as a unit of transmission is the “recipe”,²⁴ as for example in the instructions for preparing herbal treatments in both folk and scholarly systems of medical knowledge. However, what constitutes a recipe? Let us take the example of Mornay sauce, made famous by Dan Sperber and Tim Ingold. For Sperber,²⁵ the recipe includes everything you need to know to prepare the sauce in your own kitchen: all that is necessary to replicate it is to read it. However, for Ingold²⁶ the recipe can only be effectively replicated in the context of the reader’s “prior experience of melting, stirring, of handling substances [...]” and so on. The information in the recipe book is insufficient, and indeed there can be no form of knowledge transmission that is simple replication of what has been previously known or done. Because of this, there are always opportunities for minor correction loops and reflection, and indeed innovation. Despite this critique, objects, plant names, recipes for making, cooking, and healing all lend themselves to simple measurement and “descent with modification” models. Explaining the transmission of non-material social behaviours and abstract ideas in the same way is much more difficult, for as soon as we divide complex ideas and practices into smaller measurable units, we deny the systematicity and connectedness of knowledge. Cultural elements linked into systems of knowledge do not move around in the same way as their component parts, having emergent properties that must be explained differently.

24 LYMAN/O'BRIEN, 2003, p. 244.

25 SPERBER, 1996, pp. 61f.

26 INGOLD, 2001, p. 137.

Social and Material Storage

While core cultural transmission (say, that associated with early child learning) is still strongly correlated with biological relatedness, this markedly decreases as societies become larger and more complex, with divisions of labour, schools, writing, and mass media. But what also undermines simple models of knowledge transmission, even in non-literate small-scale societies, is the degree to which social storage of cultural information is important: the extent to which culture is preserved through distribution in the minds and practices of a large number of individuals. Although preliterate societies can often take advantage of various forms of social storage – knowledge devolved in others (particularly specialists), in objects, and in art – it is writing that has had the most significant influence on the human ability to store knowledge outside individual human minds, and after that, various other forms of mechanical recording of sound and image. Most folk knowledge of the natural world is transmitted through the oral mode, except when it is transformed through scientific and medical practices involving texts. But the introduction of writing can have major (if ambiguous) consequences on how knowledge systems are organized, together with forms of authority and legitimation.²⁷ Technically, writing knowledge down tends to freeze the content, which preserves the initial corpus. But writing down knowledge also entails simplification at the point of instantiation, when it often has to be selective, but – paradoxically – thereafter permits continual expansion that can lead to complexification within the text. Writing in two dimensions permits the making of new connections between elements, the use of devices such as tables, lists, and diagrams, with consequences for understanding causality; but it also denies other connections found in the oral mode due to loss of flexibility. And writing influences the way we use oral knowledge, giving rise to the social supremacy of what Maurice Bloch²⁸ calls the “linear-sentential” mode: dividing knowledge up into sentences and representing it in a textually-determined order. These effects are even found in societies with minimal literacy. Because literacy itself is a skill available to a small fraction of the population in many societies, and competence highly variable, it provides a new source of legitimacy: the authority of the book, which underpins, for instance, the Judaeo-Christian and Islamic traditions. As long as knowledge remains orally-articulated, or even

27 E.g., GOODY, 1977; ONG, 1982.

28 BLOCH, 1991.

devolved in non-linguistically coded tacit experience, it often poses obstacles to effective reproduction through the literate mode, inviting serious oversimplification, straining the limits of ordinary language as a medium of transmission, and giving rise to specialized forms of language (such as mathematical notation or theological reasoning), or devolved in practical interactive demonstrations of which language may be the lesser part. Consider, for example, how you would explain to a child how to tie a shoelace – over the telephone.

How knowledge practices are transmitted therefore depends on their form. While all cultural transmission relies on some kind of bodily interface, what varies is the extent to which, first oral language, and then written language are involved in the process. There are many bodily practices that are learned through self-discovery or copying, reinforced by parental actions or those of other significant persons. Much knowledge is what we might call “substantive”, meaning that it may be quite complex and extensive but not in itself ordinarily committed to language, though it may emerge through performance. This is the case with much folk-biological knowledge, such as that concerning plant maturation and ecology. Think for example of knowledge of weeding, in which gardeners are well aware of the properties of individual weeds and the need to remove them, but do not always know their names. People acquire this knowledge through a combination of long-term experience and interaction with plants, and occasional social interaction; but, while bound by implicit rules or scripts, the knowledge is seldom systematically organized linguistically. By contrast, “lexical” knowledge is that part encoded in language, or where the language provides a key for accessing substantive knowledge that is not itself lexicalized.

One step up from lexical knowledge is textual knowledge, in which words are organized into sequences of utterance. To some extent, we acquire knowledge by mastering scripts that are in part encoded in language, as when Frake²⁹ famously invites us to consider “how to ask for a drink” in Subanun, a language of Mindanao. The oral texts that compress emergent consensus and rules may be in the form of narratives, e.g., myths, though they may also subsequently take on a more permanent written form. Each of these forms can be transmitted through mimicry, copying, or imprinting, but also through language-mediated instruction (telling), and text-mediated learning, through institutionalized teaching and learning (pedagogy, apprenticeship), and through

29 FRAKE, 1980.

a combination of these, such as informal learning in institutional contexts (e.g., in labs or offices), or the formal learning of religious liturgies. But transmission by example, which all of these exemplify, is not just a matter of simply copying, but rather involves the inculcation of a set of principles and practices that can be used to instantiate behaviour that is logically equivalent in a given context, rather than materially equivalent behaviour as copying implies. Formulaic sequences of lexical expressions are a proper subset of these, a sub-category rather than another category. Therefore, mimicry, copying, and imprinting have a role – dealing with the material manifestations or data that individuals require to induce knowledge – but do not copy the knowledge itself, simply producing exemplars of what the knowledge, once acquired, should be capable of producing. Moreover, if a text is written, the knowledge it contains may bypass the oral mode and move between individuals and social groups as an object, emerging in quite different contexts with different assumptions of interpretation.

But irrespective of the possible means of knowledge transmission, we must ask whether we get different patterns in different cultural domains. Are there differences between domains constituted largely through physical objects compared with those that are more abstract and ideational, such as religion? As Whitehouse³⁰ has shown, there may be several modes of transmission operating simultaneously in the domain of religion, with different cognitive architectures and emotional glue, whether liturgical or experiential. Humans absorb certain kinds of knowledge more readily than other kinds, even within the same cultural domain. Thus, explaining the transmission of cognitively costly aspects of religion may be very different from explaining transmission of language or minimally counterintuitive concepts. What we find is that the composition of different cultural domains, as they are conventionally and emically defined, depends on mixed strategies of transmission, although in urban-centred, literate, and globalized society, words and texts (whether written, spoken or electronic) increasingly come to dominate.

30 WHITEHOUSE, 2004, p. 58.

Speed and Velocity of transmission

Rates of cultural transmission also vary. To take another example from childhood culture. The Opies³¹ note the remarkable stability of playground rhymes over a period of several hundred years, but equally the “miraculous” speed of innovation. “Hark the Herald Angels sing, Mrs. Simpson’s pinched our king” appeared within weeks of the first public announcement of the constitutional crises in 1936, between November and December of that year.³² Moreover, since nursery lore is transferred via adults to children, there may be a twenty-to seventy-year gap between learning and teaching, while playground lore may be retransmitted within the hour. Thus, over a period of 130 years a rhyme may have passed through 20 successive generations.³³ The interpersonal relationships involved in transmission, therefore, influence its speed. One-to-many transmission (as in book reading, classroom teaching, or internet communication) can result in rapid change or reinforcement, whereas many-to-one transmission generally favours cultural conservatism.³⁴ Looking at it differently, things that change quickly are most likely to result from individual choice, whereas things that change slowly are more likely to reflect collective choices. There is a body of evidence suggesting that substantive knowledge declines faster than lexical knowledge.³⁵ This can account for the number of non-synonymous terms in circulation that cannot confidently be matched by subjects to firm folk identifications of plants and animals, especially in populations with access to books and dictionaries.

The Consequences of Knowledge Transfer

Where individual traits are transferred as small bundles of knowledge, they are generally accommodated within the preexisting classificatory and ontological schemes of the receiving population; for example, a tomato from Mexico will become a “pomme d’amour” in sixteenth century France, or a potato from the Andes becomes an “ardappel” in Holland. In other cases, a small material

31 OPIE/OPIE, 1959, p. 2.

32 IBID., pp. 5f.

33 IBID., pp. 7f.

34 CAVALLI-SFORZA/FELDMAN, 1981.

35 ATRAN/MEDIN, 2008, p. 47.

change (such as the introduction of a new landrace or species) can have major consequences for the wider frameworks people use for organizing knowledge and practice. Thus, the introduction of high-yielding quick-maturing rice varieties into Java in the 1970s not only had knock-on effects for the irrigation system and agricultural calendar (because now two or even three harvests could be fitted into the same period), but also impinged on the symbolic system. It did this through the necessity to plant homogeneously and remove normally co-planted glutinous varieties, which were important for rituals, including first harvest festivals. Similarly, the voluntary introduction of the fast-growing nitrogen fixing tree *Paraserianthes falcataria* among the culturally conservative Baduy people of upland West Java significantly improved rice production, but because the tree also dramatically reduced the time land took to recover (from twenty to eight years) also significantly influenced their symbolic calendar and cycle of agricultural activities over the longer term.³⁶

Knowledge moves around and between social systems linguistically and non-linguistically: linguistically by telling, hearing, reading and writing, and non-linguistically by watching and engaging in activity (including performance). But watching and experience do not always provide a good guide to linguistically encoded knowledge, and vice versa. Given that we know that knowledge transfer is imperfect, recursive, and involves an element of rediscovery, it is not surprising that we find that new knowledge and concepts arise during the process of borrowing: changes occur inadvertently or deliberately through selection and adaptation. Even where people deliberately borrow knowledge with the intention of engineering certain changes, there is much scope for unforeseen consequences: socio-cultural output is rarely reproduced in a precisely identical form. This reinforces the argument about recipes and contexts, that it is not just “information” that is transmitted, but rather expressions of relations.

If we examine the way in which people acquire knowledge and skills, the process is much more interactive and complex than suggested by the passive ideas of “copying”, or “transmission”, which suggests that this stuff called “culture” is “flowing” between generations and through time.³⁷ Recipients are not simply “vessels to be filled”.³⁸ The mind, like all organic learning systems, is not a fixed generic device. If we consider how individuals actually acquire

36 ISKANDER/ELLEN, 2001.

37 STRAUSS/QUINN, 1997.

38 REYNOLDS, 1981.

knowledge in particular activities, such as minaret-building,³⁹ woodworking,⁴⁰ metalworking,⁴¹ gardening,⁴² or basketmaking,⁴³ the process resembles rather the development of linguistic competence, in which representations and actions are generated, retained and communicated. We become experts not by quietly absorbing knowledge, but by actively selecting it.

Cultural transmission is, therefore, not essentially the copying of abstract models or representations, but is at least in part, as Bourdieu⁴⁴ insists, the “imitation of actions”, or, we might add, emulation or stimulus enhancement. We have seen that Ingold⁴⁵ offers us a forceful critique of Sperber’s⁴⁶ position that knowledge is essentially “mental content” in the brain waiting to be expressed, and transmission the process through which representations are discharged. Ingold⁴⁷ prefers the notion of perceptual engagement through performance by “a whole organism-person in an environment”, rather than of a mind inside a body. All learning involves an element of self-discovery – is “situated”⁴⁸ – the retrieval of knowledge entailing “the partial reenactment” of the very situation(s) that led to its encoding,⁴⁹ and for this reason every “transmission event” is likely to modify the unit that is transmitted.

The Columbian Exchange, Folk Classification and Botanical Ontologies

Most of what Nuauulu know about the biological constituents of their environment has co-evolved over the long-term and is reproduced in each generation through a combination of self-discovery and transfer from those who already have it. New knowledge sometimes arises through new observations and the making of new connections, and lessons learned by some farmers may be

39 MARCHAND, 2001.

40 KALETA, 2008

41 KELLER/KELLER, 1996.

42 PLATTEN, 2013.

43 ELLEN, 2009.

44 BOURDIEU, 1990.

45 INGOLD, 2001, p. 138, note 13.

46 SPERBER, 1996.

47 INGOLD, 2001, pp. 135 and 142.

48 LAVE/WENGER, 1991.

49 BARSALOU et al., 2003, p. 43.

passed on to others. How new biological knowledge circulates within a society depends very much on its division of labour and structure of social relations. Thus, Boster⁵⁰ found that amongst the Amazonian Jivaro, new knowledge about cassava landraces and their properties passes largely between female cultivators. But where we draw the line between the endogenous and exogenous transfer of knowledge is fuzzy. Often biological knowledge passes between in-laws who may be from other villages or language groups. In the case of the Nuaulu, new germplasm has been brought in by migrant incomers, such as the Butonese or introduced through government initiatives, and new skills (e.g., grafting) learned from NGOs.

One way in which we might focus on changes in the Nuaulu system of plant knowledge is to look at a period of time the start of which is defined by an event with major historical consequences for plant movement. For the Nuaulu, such an event was undoubtedly contact between Europe and the Americas from 1492 onwards which resulted in the redistribution to the rest of the world, including eastern Indonesia, of a large number of plant species previously found only in the Americas. The total number of species released in what Alfred Crosby⁵¹ calls “the Columbian exchange” has been estimated at many thousands, of which in the region of 48 species (mainly of the major starch-producing cultigens) have had a subsequent global impact on ecological and social history. For obvious reasons, most of the New World species diffusing through the Old World after 1492 were potentially major food crops, which competed with existing indigenous starch crops and grains.

Of all 1000+ records in my Nuaulu Ethnobotanical Database, 64 refer to plants that were restricted to the Americas before 1492. The status of *Ipomaea batatas* (the sweet potato) is disputed, but it certainly did not arrive in eastern Indonesia much earlier than the sixteenth century. Of course, plants of New World origin did not immediately enter the Nuaulu folk-classificatory orbit, although some did arrive surprisingly early and others surprisingly late. Thus, Rumphius, in his *Herbarium Amboinense*, writing in the last two decades of the seventeenth century on the nearby island of Ambon,⁵² already lists 28 of the species. From Rumphius’s descriptions, it is clear that use of chilli, tomato, cashew, peanut, cucurbits, and tomato was well established in Ambon by the time he had arrived. However, six cultigens now important had either not yet

50 BOSTER, 1986.

51 CROSBY, 1972.

52 RUMPHIUS, 1741-1750.

arrived in Ambon, or where not salient among Ambonese, at the time Rumphius was conducting his investigations. These include *Hevea* rubber, Andean potato, chocolate, and avocado.

We can select some groups of species in order to examine how they have been incorporated as part of the Nuaulu ethnobiological system. First of all, there are lexical clues that suggest how new species are incorporated within existing classificatory frameworks, like those I mentioned above for Europe – tomato and potato. Thus, soursop, *Annona muricata* becomes the binomial ***tunene warata***, where ***tunene*** is an existing unmarked term for durian, and ***warata*** means “Dutch” or “foreigner”. Adjectival qualifiers of apparently specific derivation may become generic ways of indicating alterity, e.g. ***warata*** [Dutch], ***cina*** [China]. Secondly, species may be incorporated using loanwords from an intermediary language, in this case usually Ambonese Malay (AM). This may work in various ways, for example where a uninomial is adopted from another language as a lexically unaltered term, e.g. ***yakoni*** ← AM jagung [maize] or ***kasipii*** ← AM “kasbi” [cassava]. Fifty-seven percent of Nuaulu plants of New World origin have names which indicate that they are not native, though because their introduction spanned a period of nearly 400 years they have not left a clear linguistic and classificatory footprint. Time and cultural route of introduction have varied between individual cases, which has influenced the way each has been incorporated.

We can also appreciate how new species and knowledge are introduced by examining a particular category of plants with a high degree of family resemblance. For example, starchy roots and tubers are important mainly because of their role in food security. Prior to the arrival of New World species, Nuaulu depended on two main genera: yam (four species) and taro. These map onto folk terms in an interesting way (Table 1). There is no single term for yams. Two uninomials (***kawasine*** and ***akae***) are subdivided into two named categories where their partial covert similarities are reflected in the overlapping application of unmarked ***akae*** and marked ***kawasine putie*** [white ***kawasine***] to the same species, while a binomial of ***akae*** is also applied to a kind of *Dioscorea pentaphylla*, otherwise known as ***loloeno***. By comparison, ***siahue*** is divided into eight varietals, and ***hueni*** into ten varietals. Taro is divided into eight varietals. These numbers are less than we find among many New Guinea peoples, who were introduced to American species much later, and we might well assume that there was considerable erosion of Nuaulu varietals following the arrival of New World roots. The introduced New World

	Nuaulu	No. segregates per generic term	Scientific name	Ambonese Malay
Old World				
1	<i>kawasine masikune</i>		<i>Dioscorea hispida</i>	ubi racong
2	<i>kawasine putie</i>		<i>Dioscorea hispida</i>	ubi racong
3	<i>akae</i>		<i>Dioscorea hispida</i>	ubi racong
4	<i>akae hunuhunue</i>		<i>Dioscorea pentaphylla</i>	ubi pasir
5	<i>loloeno</i>		<i>Dioscorea pentaphylla</i>	betah, akar umbi
6	<i>siahue</i>	8	<i>Dioscorea esculenta</i>	kumbili
7	<i>hueni</i>	10	<i>Dioscorea alata</i>	kumbili
8	<i>sikeue</i>	10	<i>Colocasia esculenta</i>	keladi
New World				
9	<i>kasipii</i>	10	<i>Manihot esculenta</i>	kasbi, ubi kayu
10	<i>kasitena</i>	4	<i>Ipomoea batatas</i>	batatas, ubi kastella
11	<i>yohoru</i>	2	<i>Xanthosoma sagittifolium</i>	keladi yohor

Table 1: Local terms for starchy tubers and roots in Nuaulu and Ambonese Malay

starchy tubers were cassava, sweet potato, and *Xanthosoma*, each labelled with terms that unambiguously map on to a single polymorphic species and that clearly indicate something of their external origins: *kasipii* (← kasbi ← casabe or casábi – Hispaniola and Cuba), *kasitena* (← kasitela ← Castiliano), and *yohoru* (← Johore – the Malay Sultanate) respectively. Of these, cassava now represents the tuberous crop with the highest level of productivity in gardens,

and all the introduced species tend to be more productive than indigenous crops.

These examples demonstrate how marking behaviour works with respect to introduced species and some of the lexical evidence shows us something of the pattern of introduction of cultigens of New World origin. We can also see that the evidence of some southeast Asian languages, particularly the various dialects of Malay that served as vehicles for the introduction of most of these new species, provides us with classic examples of the principle of “category extension”. Examples include absorption of *Xanthosoma* into the Ambonese Malay category “keladi”, previously exclusive to taro, and cassava into “ubi”. This, however, is not necessarily reflected in Nuaulu, though not because the Nuaulu regard them as economically unimportant (as some have in fact now eclipsed Old World species in their economic and dietary significance), while most Nuaulu are now bilingual in Ambonese Malay. Such resistance to what we might expect to be the flow of linguistic influence can better be explained by the fact that, since the Nuaulu are still predominantly animist, and conduct planting and harvest rituals that focus exclusively on pre-Columbian yams and taro, classificatory practice may have something to do with the ritually privileged status of these species.

Additionally, the criteria for grouping Nuaulu tuberous crops into more inclusive named categories are limited and exclusively morphological. For the Old World starchy tubers, we only have the curious linkage of *kawasine* and *akae* (and possibly its association with monotypical *loloeno*), which appears to relate to the common characteristics of special toxicity and an ambiguous status as wild and cultivated plants. By contrast, both *siahue* and *hueni* are long-established polymorphic cultigens with large numbers of varieties, and with low levels of toxicity. In New World *Manihot esculenta*, where it is so important to distinguish the toxicity of particular varieties, there is no overarching grouping into sweet and bitter. This, I suggest, is because toxicity is not always a reliable diagnostic feature in the species, and that it is far better to encode this feature in adjectival qualifiers.

In a multilingual environment, the ability of most people in a speech community to have access to classifiers in their non-birth languages means that they can group ethnobiological data in ways that may not be reflected in the patterns of linguistic encoding of their birth language. In other words, this knowledge and the lexical practices through which it is expressed become part of the classificatory system of the Nuaulu, even before those practices are

formally absorbed into the language. Thus, while the Nuauulu have no overarching term for yams, the fact that Ambonese Malay “kumbili” refers to all varieties of the two most widely cultivated types is relevant, similarly the use of “keladi” to group both taro and *Xanthosoma*, and indeed other aroids of both Old World and New World origin.

These plant movements have consequences for symbolic knowledge. The earliest of the surviving historic starch field crops are taro and yams, and these are the foci of planting and harvesting rituals in which ancestral spirits are invoked. However, rituals are not performed involving New World crops such as cassava and *Xanthosoma*. So, as these crops became more important, the rituals as a whole become reduced. Despite all these changes, the overarching classificatory system through which Nuauulu plant knowledge is organized – their biological ontology – remains fundamentally unaltered. This only happens with conversion to Christianity or Islam, which strips out key elements of the cultural narrative (myth, ritual) that makes sense of the relationship between different species and how they are used. The other change is formal school education, the introduction of writing, and an alternative classificatory and ontological framework for understanding the relationship between biological species found in scientific biology and the modern synthesis of biological knowledge. In this new understanding, knowledge derives from the perspective of understanding plants as a global (rather than local) phenomenon, that links plants not through their uses or position in a local ecology and cosmology, but as products of evolution.

Conclusion

Quite how we might best theorize notions of “finding”, “inheriting”, and “borrowing” when investigating the construction and transfer of knowledge of the natural world, and develop appropriate methodologies to do so, clearly poses many unresolved issues. However, we can highlight a number of persistent and emerging themes.

- (1) The first relates to the notion of “radical simplification”. By looking at cultural domains where it is relatively easy to find components that might constitute units of transmission, we can identify processes that underlie transmission in more complexly constituted domains. In complex domains

measurement is more problematic, and their very complexity may lead us to question the universalist claims of the methodology underlying Darwinian-inspired cultural evolution approaches.

- (2) The second relates to levels of analysis. The virtues of ethnographic or context-rich historical approaches are not invalidated by cultural evolutionary approaches, while there is no reason to think that in analysing any data-set or system of ideas we cannot detect some processes that might be described as “descent with modification”, or variation, drift, and selection of the kind advocated in those approaches we call evolutionary. Indeed, one is likely to inform the other. The methods for studying the micro and the macro are not easily interchangeable; experimental, observational, and qualitative studies involving “thick description”, must complement quantitative studies of large data-sets with robust measurability over the longer term.
- (3) The third relates to directionality in the movement of ideas. The rules underlying spatial movement (horizontal transmission) and temporal movement (vertical transmission) are basically the same, and often overlap.
- (4) The fourth is to emphasize that form of transmission and how we can best analyse it may vary between cultural and social domains. In particular, the units we use to measure the transfer of ideas must be appropriate to the scale and substantive differences in the kind of data being examined, and the kinds of questions posed. While there may be no theoretical difficulty in measuring continuous distributions as such, measuring cultural variation and the movement of medicinal herb recipes or basketry designs is likely to be rather different than measuring, say, modes of religiosity.
- (5) Finally, in making sense of knowledge transmission we need to understand that process and structure are recursive, and that the movement of ideas is not a mechanical process of simple “replication”. Reproduction and change arise in systemic contexts, but those same processes give rise to the contexts in which successive processes occur. In the background, therefore, must be some kind of meta-model that combines agency and context. This applies to micro-level processes of innovation and interpersonal interaction, macro-level long-term cultural continuity and

change, as well as to the patterns of spatial and social diffusion that they instigate.⁵³

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THE TRANSFER OF KNOWLEDGE FROM MESOPOTAMIA TO EGYPT

SUSANNE BECK (TÜBINGEN)

Models of Transfer of Knowledge

Several approaches exist in the human and social sciences to dealing with contacts between different cultures.¹ The associated terminology has been the subject of much controversy. There is often no differentiation between the terms “exchange” and “transfer”.² An exchange between two cultures is non-binding but can be either continuable or singular. Exchange can occur over a long or short period.³ In contrast, a transfer of knowledge⁴ between two cultures can be seen in terms of an intentional, deliberate, and reason-based venture. In such instances, goods, be they objects or ideas, are transmitted only when a need arises.⁵ Inspired to analyze these processes, a new method was developed: culture transfer research. This approach usually focuses on the culture, which has received the transmitted (material/immaterial) product and

1 See e.g. TENBRUCK, 1992, pp. 13-35, who discusses the history of cultural comparison and critically analyses the method; Theda SKOCPOL/SOMERS, 1980, pp. 174-197; see also GEROGIORGAKIS/SCHEEL/SCHORKOWITZ, 2011, pp. 385-422; BOSSE, 2013, pp. 65-78; GRASSL, 2014, pp. 313-324. In relation to network theory, see BISANG, 2004, pp. 1-52; REICHE, 2004, pp. 35-69 (with reference to ancient Egypt).

2 GEROGIORGAKIS/SCHEEL/SCHORKOWITZ, 2011, pp. 386f.

3 *IBID.*, p. 395; see also JENSEN, 1998, pp. 51-68; LIVERANI, 2001, pp. 5-8.

4 For other terms used instead of “transfer of knowledge”, see THIEL, 2001, p. 29.

5 GEROGIORGAKIS/SCHEEL/SCHORKOWITZ, 2011, pp. 395f.; BOSSE, 2013, p. 66. For the use of the term “transfer” in different disciplines, see EISENBERG, 2003, p. 414.

investigates how it was adapted.⁶ But for a transfer, it is not only necessary to analyze the receiving culture but also the culture, which produced it and how the product was used there. This is the only way – showing the similarities and the differences – to detect to what extent the transferred product has been changed.⁷ Both material objects and ideas can be transferred.⁸

Several models for describing the transfer of knowledge have been developed in the field of transfer research.⁹ However, in the sphere of industrial management, more detailed theories concerning the procedure of an occurrence of knowledge transfer can be found and therefore one of them is used here. This theory, developed by Karsten Heppner,¹⁰ models the different levels and fields involved in a transfer of knowledge and is briefly discussed below.¹¹

Generally speaking, every transfer consists of three basic units: the producer (*Sender*) – the process of transfer (*Transferprozess*) – the receiver (*Empfänger*).¹² The producer¹³ possesses information or knowledge, which is

6 EISENBERG, 2003, p. 399; BISANG, 2004, pp. 4f.; BOSSE, 2013, p. 66. See also GEROGIORGAKIS/SCHEEL/SCHORKOWITZ, 2011, pp. 392-394; WERNER, 2009, pp. 15-23, gives more general information on the research on cultural transfer.

7 GEROGIORGAKIS/SCHEEL/SCHORKOWITZ, 2011, p. 394; ULF, 2014, p. 509.

8 See WERNER, 2009, p. 15; GEROGIORGAKIS/SCHEEL/SCHORKOWITZ, 2011, pp. 391f., 419.

9 ANTOS, 2001, pp. 3-33, presents a general view of the contents and functions of the transfer research, which he defines (p. 5) as follows: “Die Transferwissenschaft erforscht Bedingungen, Prinzipien, Formen, Strategien sowie Probleme und Erfolgchancen des Metawissens über Wissen zum Zwecke einer nicht eingeschränkten Verfügbarkeit von (Sonder-)Wissen für alle potentiell an Wissen Interessierten.” [*The transfer research investigates conditions, principles, nature, strategies as well as difficulties and chances of success of the metaknowledge for knowledge for the purpose of unlimited availability of (special) knowledge for all potentially interested in knowledge.*] Compare also note 1.

10 HEPPNER, 1997.

11 Heppner’s theory was developed for the transfer of knowledge in globalized companies. The basic pattern “producer–process of transfer–receiver” was introduced and used before but it was never described in much detail, and that is why Heppner’s pattern is used here. See also HEPPNER, 1997, p. 359. For general information on the transfer of knowledge, see ASH, 2006, pp. 181-189. Compare also STEUER, 2006, pp. 295-330.

12 NORTH, 2009, p. 1, referring to SCHMALE, calls these units *Ausgangskultur* (starting point culture), *Vermittlungsinstanz* (mediating authority) and *Zielkultur* (destination culture). STEUER, 2006, generally speaks about participating actors, in particular about the provider of knowledge and addressee. BALLOD, 2005, pp. 13f., calls them *Emittenten* and *Rezipienten*. GRASSL, 2014, p. 314, calls them producer

relevant to a receiver's issue. The knowledge can either deliberately be given to the receiver ("push principle") or the receiver can ask for it ("pull principle"). In any case, the producer and the receiver assume that there is a need for that specific knowledge.¹⁴ The process of transfer covers all actions necessary to transfer the producer's information to the receiver, including the tailoring of the knowledge to the receiver's problem.¹⁵ The order of actions is determined by certain criteria. In the beginning, the available resources (e.g., time, subjects, etc.) and the environment (e.g., established law, social standards, etc.) are of major interest to the producer in order to make a decision how and to which extent the material/immaterial product is transferred. If the goal of the transfer is known, then the subsequent actions required can be identified.¹⁶ Additionally, the willingness and abilities of the particular individuals should not be underestimated.¹⁷

The transfer of knowledge can be structured into three levels, forming a hierarchy in which the lower levels always form the basis of the higher ones.¹⁸ The basal level is called "learning". Here, the transfer of knowledge takes place between two individuals. The receiver learns something during the transfer process that alters their knowledge base. The knowledge base consists of all forms of knowledge and can be divided into an individual knowledge base, which is part of a person, and a collective knowledge base, which group members have recourse to.¹⁹ The new knowledge need not be exclusively imparted by language but may also be learned through watching.²⁰

and receiver, *Transmittor* (transmitter) and *Rezipient* (receiver). ULF, 2014, p. 513, describes the units as producer, transmitter and recipient.

13 Heppner does not differentiate between the producer and/or the holder of knowledge, which is not necessary in the field where his theory was developed. This differentiation can be useful, however it might be difficult to apply in the classical studies considering the usual lack of sources.

14 THIEL, 2001, pp. 34-45.

15 HEPPNER, 1997, pp. 15, 187; THIEL, 2001, pp. 58-60 (fig. 11).

16 HEPPNER, 1997, pp. 16-18, fig. 1; THIEL, 2001, pp. 61-64.

17 HEPPNER, 1997, pp. 7f.; BURKE, 2000, p. 17; THIEL, 2001, pp. 39-42 (fig. 5, tables 5, 6), 116, in relation to the motivation of the participating individuals see especially 117-160. For more general information on the conditions, see BISANG, 2004, p. 6; STEUER, 2006, pp. 298-302, fig. 1; ULF, 2014, p. 514.

18 HEPPNER, 1997, pp. 187f.; THIEL, 2001, pp. 42f.; compare also ESPAGNE/WERNER, 1985, p. 506.

19 HEPPNER, 1997, pp. 187f., 211. See also the following text.

20 HEPPNER, 1997, pp. 187f., 190f., 195f., 199; THIEL, 2001, pp. 23, 44f.

Furthermore, it is necessary to consider the type of knowledge that is being transferred in such cases. Knowledge can be divided into two categories according to how it is articulated: *knowing how* and *knowing that*.²¹ *Knowing how* describes any skill or ability in which it is not necessary to know the theory but simply be capable of performing the action: e.g., finding one's way or being able to swim.²² In contrast, *knowing that* describes articulated knowledge, e.g., mathematical theories.²³ Gilbert Ryle, who proposed the division of the different forms of knowledge into *knowing how* and *knowing that*,²⁴ assumed a strict separation of both. Jan Janzen, among others, has pointed out that, if a person has an ability or skill and is unable to perform it due to an accident or an illness, then this person has still the knowledge of this particular activity.²⁵ Hence, the transfer of knowledge is bound by the producer's ability to articulate the knowledge. If they are unable to do so or limited in their ability, the transfer will be complicated.²⁶

The producer is not alone in playing a crucial role in the transfer of knowledge, the receiver is perhaps equally important, and must also meet certain requirements in order to understand the transferred knowledge and thus bring about a successful transfer.²⁷ Questions arise related to the extent of the overlap between the receiver's and the producer's knowledge bases. In general, the larger the shared knowledge base, the more likely a successful

21 For a general discussion of the topics of *knowing how* and *knowing that*, see RYLE, 1990, pp. 26-60.

22 RYLE, 1990, pp. 41, 46; HEPPNER, 1997, p. 200; THIEL, 2001, pp. 17, 99f.; ABEL, 2004, pp. 319-327; JANISCH, 2005, p. 24; HEMPFER/TRANINGER, 2007, pp. 9-12, 17; compare also THIEL, 2001, pp. 11-13.

23 THIEL, 2001, pp. 16f., 20; ABEL, 2004, pp. 322f.; HEMPFER/TRANINGER, 2007, pp. 9-12, 17; JANZEN, 2007, p. 42; cf. also THIEL, 2001, pp. 10f.

24 See RYLE, 1990, pp. 26-60.

25 JANZEN, 2007, pp. 25, 39f., especially 40. From a neurophysiological view, both kinds of knowledge are "saved" in different parts of the brain, see THIEL, 2001, p. 17.

26 Knowledge need not be articulated but can also be obtained through watching (see above). HEPPNER, 1997, pp. 203f.; BURKE, 2000, p. 17; THIEL, 2001, pp. 22f., 47f. BADURA 1971, pp. 79-81; ESPAGNE/WERNER, 1985, p. 507; and BISANG, 2004, p. 5, all validly point out that language plays a major role in an episode of cultural transfer.

27 HEPPNER, 1997, p. 203; THIEL, 2001, pp. 23, 48f. STEUER, 2006, p. 313, remarks that barriers impeding a transfer of knowledge can also develop when both the producer and the receiver are not willing to reflect on the knowledge being transferred and to be responsive to each other.

transfer of knowledge will take place.²⁸ These knowledge bases are influenced by several different factors, including the cultural, national, and professional backgrounds of the individuals. Furthermore, the depth of experience that individuals already were able to acquire in the particular field of the transfer of knowledge is important.²⁹

The next level of a transfer of knowledge is called “socialization” and relates to the ways in which knowledge is transferred between an individual and a collective in a group setting or the other way around. Here “socialization” refers to the process of learning the thought and behavior patterns of the collective.³⁰ The relationship between the individual and the group goes both ways. The contact between the individual and the group can affect both in a positive and a negative way. This contact also results in changes to the knowledge base of both the individual and the group.³¹ During this level, both the ability of the producer or producers to articulate the knowledge being transferred, and the ability of the receiver or receivers to understand it are key (see above).

As just noted, the transfer can go both ways. While the individual’s personal abilities can affect the process, far more important is the structure of the knowledge base. In a group, which is composed of members with different professions and abilities it is more likely that a member of the collective will have a knowledge base that overlaps with the producer.³² After the transmission, the new knowledge has to be communicated so that it can spread within the group. A homogeneous collective (a group with members of same profession and abilities) in contrast, is often more resistant to outside influences and therefore less likely to add new information to its knowledge base.³³

28 HEPPNER, 1997, pp. 209-211; compare also STEUER, 2006, p. 300.

29 HEPPNER, 1997, pp. 210f.; THIEL, 2001, p. 102, for the professional vernacular in this context see BADURA, 1971, p. 91.

30 HEPPNER, 1997, p. 212; see also SEGLER, 1985, p. 138. In general see, among others, ELIAS, 1994, especially the *summary*; PARSONS, 1958, especially pp. 19-88, 212-274, 386-439.

31 HEPPNER, 1997, pp. 213, 219; THIEL, 2001, p. 49. For general information on interactions between an individual and a group, see MEAD, 2010.

32 HEPPNER, 1997, p. 220; THIEL, 2001, pp. 103f.

33 HEPPNER, 1997, pp. 221f., fig. 27, 223f.; THIEL, 2001, pp. 103f.

The highest level of a transfer of knowledge is called “acculturation”³⁴, in which the transfer of knowledge takes place between fully differentiated groups. “Acculturation” refers in Heppner’s model to the adaptive process that occurs when these two groups have direct contact and one or both experience a measurable change. Difficulties can arise however from the collective character of the involved communities.³⁵ Transfer of knowledge in the form of “acculturation” occurs in three stages: contact, conflict and consolidation. It is necessary for the transfer that both groups come in contact to each other and discuss the problem. When the involved groups could find an agreement for the terms of the transfer of knowledge this part (*contact*) is concluded. Following this a period of conflict may occur, in which the old ways of thinking are dropped and new information has to be processed. This information can often be incomprehensible in the beginning resulting in either denial or resistance. Consequently, cooperation between the producer and the receiver can suffer. The relationship between both parties will improve during the consolidation period.

There are four basic outcomes possible depending on how the conflict stage was solved: *integration*, *assimilation*, *segregation*, and *deculturation*. In *integration* the knowledge bases of both communities are combined so that a new interpretive pattern results. The identity of both collectives survives.

Another is *assimilation*, in which a one-sided adaption process occurs. The receiver adopts the producer’s solution, but does not adapt it to its own needs. Usually the new pattern is perceived by the receiver as poor.

In *segregation* both groups make attempts to persuade the other to adopt their own interpretive pattern, but each side’s advice is ignored. Thus either no transmission takes place and the transfer of knowledge fails or the receiver adopts the producer’s interpretive pattern without reflecting on it.

In case of *deculturation*, the receiver drops their old interpretive pattern because it does not provide a solution but also refuses to adopt the producer’s recommendation. Instead transfer of knowledge only occurs in a person to

34 The controversial term “acculturation” is adopted and used here because it is part of Heppner’s model. For general information on the term “acculturation”, see DOHRENWEND/SMITH, 1962, pp. 30-39; BERRY, 1983, pp. 65-78; compare also ESPAGNE/WERNER, 1985, pp. 504f.; GEROGIORGAKIS/SHEEL/SCHORKOWITZ, 2011, pp. 392, 396. For a definition of the term see HEPPNER, 1997, p. 225.

35 HEPPNER, 1997, pp. 225f.; THIEL, 2001, pp. 50f.

person interaction (basal level “learning”). Typically *deculturation* can occur when the groups tried to avoid the conflict.³⁶

Equally, the ability of the producer to articulate the knowledge and the ability of the receiver to comprehend it is in question (see above). Difficulties can arise when the knowledge that is supposed to be transferred is tied to a particular contentual component or a particular structure of the producers’ and receivers’ knowledge bases.³⁷

Moreover every transfer of knowledge brings about a transformation of the knowledge and not every need of every involved member of the groups is met. Furthermore, several communities display a higher degree of willingness to adapt foreign (material/immaterial) products in comparison to others.³⁸ Whether or not the transfer of knowledge is “successful” can be difficult to evaluate because – as mentioned before – the new information has to be transformed and adapted to the receiver’s own problem. Usually, it takes some time before you can see that a change has occurred. Additionally, it is important to identify the extent the producer as well as the receiver are willing to carry out a transfer and show an interest in the other party. Likewise, it is crucial that adequate resources are utilized for the transfer process.³⁹

36 HEPPNER, 1997, pp. 227-231; THIEL, 2001, pp. 51-54. Compare on this also BERRY, 1983, pp. 66-68, especially 68; BURKE, 2000, pp. 28-33; EISENBERG, 2003, pp. 410f.; GEROGIORGAKIS/SCHEEL/SCHORKOWITZ, 2011, p. 397.

37 HEPPNER, 1997, pp. 232-234, fig. 29.

38 SCHRADER, 1999, p. 103; BURKE, 2000, pp. 13, 26; ANTOS, 2001, p. 26; THIEL, 2001, p. 32; EISENBERG, 2003, pp. 399, 404, 410-412; BALLOD, 2005, p. 13; ASH, 2006, p. 183; BURKE, 2009, p. 70; NORTH, 2009, pp. 1f.; WERNER, 2009, p. 17; GEROGIORGAKIS/SCHEEL/SCHORKOWITZ, 2011, pp. 393f., 413, 420; BROSIUS, 2014, p. 286; ULF, 2014, p. 517; compare also ESPAGNE/WERNER, 1985, p. 508.

39 See on this BADURA, 1971, pp. 92, 154f., 157, 163f., 166, 169; BURKE, 2000, pp. 17, 19; ANTOS, 2001, p. 26; THIEL, 2001, pp. 40-42 (fig. 5, tables 5, 6), 65-74 (table 7), 115f.; BALLOD, 2005, pp. 13f., 17; JANISCH, 2005, pp. 25f., 30f., 33, 37; cf. STEUER, 2006, pp. 309, 318-327, especially 324-327, who compiled a catalogue of the things necessary for a “successful” transfer of knowledge. ULF, 2014, pp. 533-551, describes different ways of dealing with new knowledge. See also BECK, 2015a, pp. 237-241. Compare also ELLEN’S paper in this publication.

Cultural Interactions During the New Kingdom (approx. 1550-1070 BCE)

As early as the Early Dynastic Period (approximately 3032-2707 BCE), contacts between the ancient Near East and Egypt existed and increased even further by the New Kingdom. The New Kingdom is characterized by various relations to the Near East. Egyptian military campaigns captured numerous prisoners of war, and many of these prisoners were settled as workers in temple complexes.⁴⁰ Additionally, diplomatic hostages served a twofold purpose, both as pledge and as a means of ensuring future vassals well educated in Egyptian traditions.⁴¹ Near Eastern princesses were also sent to the Egyptian court, so they could marry the ruling king. These ladies always brought abundant gifts and servants with them, and they maintained contact with their home courts through meeting diplomats and by corresponding with their families abroad. Additionally, the Egyptians had direct contact with various kingdoms like Babylon, Assyria, Mitanni and Hittite in the Near East. They exchanged presents, assisted each other on different occasions and attempted to have a friendly relationship.⁴² Moreover “foreigners” were often not regarded as so “alien” in Egypt – at least at the royal court where they could occupy highest positions, such as the steward of the king. Usually, these foreigners were so well integrated that it is almost impossible to detect who was not actually born in Egypt.⁴³ The same can be said for the military. Entire units were composed of foreigners and they were able to occupy positions of leadership.⁴⁴ Usually, there were specific quarters in bigger cities where people of foreign origin were settled according to their holding of certain skills – e.g., glass working. In all likelihood these people communicated in their mother

40 HELCK, 1971, pp. 345f.; SCHNEIDER, 2006, p. 205; WINNICKI, 2009, pp. 11-34, 62.

41 SCHNEIDER, 2006, p. 206; WINNICKI, 2009, p. 14.

42 For general information on these relations see LIVERANI, 1997, pp. 101-111; LIVERANI, 2006, pp. 90-118, with additional literature; COLLINS, 2008, pp. 14-118; WINNICKI, 2009, pp. 11-34, 64. For the relations to western Asia minor, especially the geography according to Egyptian sources, see HAIDER, 2003, pp. 174-192.

43 SCHNEIDER, 2006, pp. 202-216, especially 206-210; WINNICKI, 2009, pp. 49-61. In contrast, cf. on this HELCK, 1964, pp. 103-114. On “foreigners” in general in Egypt through all time periods, see BRESCIANI, 1997, pp. 221-253; SCHNEIDER, 2010, pp. 143-163, to the New Kingdom especially, 154f.; as well as WINNICKI, 2009, pp. 66-69, 90-92, 95f., 99f.

44 HELCK, 1971, p. 346; SCHNEIDER, 2006, p. 205; WINNICKI, 2009, p. 65.

tongue in these quarters.⁴⁵ The trade too brought merchants from different areas to Egypt,⁴⁶ and their business deals were made using foreign languages to communicate.⁴⁷ That the Egyptians came into contact with other languages is attested by abundant loan words.⁴⁸ The diplomatic relations between the Egyptians and the Near Eastern countries were made in the lingua franca of those days: Akkadian. Besides that, Egyptian scribes were also able to communicate in Hittite, Hurrian and other languages of the Canaanite territory. It can be assumed that bi- and multilingualism were not rare.⁴⁹ Communication in general as well as in different languages was essential for the transfer of knowledge.⁵⁰

From Mesopotamia to Egypt

In the following section, the transfer of knowledge from Mesopotamia to Egypt is presented through a case study on an ancient Near Eastern demonic being called Sāmānu. This disease demon can be found in numerous texts in Mesopotamia and Egypt across a wide range of time. In Mesopotamia, Sāmānu is attested from the Ur III period (approx. 2100-2000 BCE) to the Hellenistic Period (approx. 330-63 BCE) in incantations, medical texts/recipes, lexical lists, omens, and astronomical diaries. Usually, he is written in Sumerian as *sa-ma-na*, *sa-ma-na₂*, *nim-nim* and as a pest *ur-me-me*. In Akkadian, the demon is only attested as *sa-ma-nu-(um)*. As a Mesopotamian demonic being, he is able to afflict gods, mankind, animals (cattle, sheep and donkeys), plants (as rust and pest), and can be an occurrence in rivers (see below).⁵¹ In

45 HELCK, 1971, pp. 500f.; SCHNEIDER, 2006, p. 205; SCHNEIDER, 2011, p. 183; WINNICKI, 2009, p. 62.

46 Of course, Egyptian traders also traveled to the ancient Near East.

47 Compare on this papyrus Turin 2008 + 2016 R:II14, in which is stated that a business deal was made in the Syrian language, see BECK, 2015a, p. 245; JANSSEN, 1961, pp. 59, 71, 73, pl. 3, translates this passage in a more reserved manner; compare also RÖMER, 1992, p. 279.

48 See HELCK, 1971, pp. 505-575; HOCH, 1994.

49 KITCHEN, 1969, pp. 83f.; HELCK, 1971, pp. 435-454; BRESCIANI, 1997, p. 229; SCHNEIDER, 2011, pp. 182f.

50 For the cultural interactions during the New Kingdom see also BECK, 2015a, pp. 244f.

51 For a general overview of the Mesopotamian Sāmānu, see BECK, 2015a, pp. 171-174, for the attestations, BECK, 2015a, pp. 3-91, in each case with further citations.

Egypt, the demon is referred to as *s²-m² (w)-n²*, a loanword written in the typical syllabic writing system of the New Kingdom. But he is also known as Akhu (*ḫ.w*) in Egyptian. That Akhu is identical to Sāmānu comes from papyrus Leiden I 343 + 345, which contains fourteen incantations; of which eight are duplicates. On the recto page of the manuscript, Sāmānu is usually exorcised, while Akhu is usually expelled on the verso page in the duplicated spells. In Egypt, the demonic being only occurs as an ailment of men in magical-medical texts dating almost exclusively to the New Kingdom.⁵²

In order to analyze the entire transfer of knowledge, it is not only important to have a closer look at the receiver's idea of Sāmānu – here the Egyptians – but also to examine what was the original Mesopotamian (the producing culture) knowledge of that demon.⁵³ That is why both “forms” of Sāmānu are discussed below.

In Mesopotamia, the outward appearance of the demon is precisely described:

sa-ma-na ka piriĝ-ĝa zu₂ muš ušum-gal umbin [ḫu-ri₂]-in-na kuĝ₂
a[l]-lu₅

Sāmānu, (with) a lion's mouth, teeth of a dragon's snake, claws of an eagle (and) a crab's tail⁵⁴

In the ancient Near East, Sāmānu represents the idea of a red evil – his name is a nominal derivation from the Akkadian word *sāmu* “red” and literally means “the red one”.⁵⁵ Mesopotamian texts play with this association, for example:

[s]a-ma-na šu ḫuš [ĝ]iri₃ ḫuš ^den-lil₂-la₂

Sāmānu, reddish claw, reddish paw of Enlil⁵⁶

52 See BECK, 2015a, pp. 174-176, for general information, and BECK, 2015a, pp. 93-169, for the sources in Egypt (with further citations). The most recent attestation dates to the Ptolemaic Period.

53 On this, see the first section of the paper.

54 Cuneiform tablet AO 11276 R:1-5, see BECK, 2015a, pp. 10-14 (with further citations).

55 BECK, 2015a, p. 172.

56 Cuneiform tablet HS 1555 + 1587 R:1-2, see BECK, 2015a, pp. 6-10 (with further citations). For the god Enlil, see, for example, BLACK/GREEN, 2011, p. 76; see also

Another significant characterization of the demon is his canine form. In Mesopotamia, Sāmānu is usually described as the evil dog of different deities, especially of the healing goddess Gula:⁵⁷

ur huš d^{en}-lil₂-la₂ gu₂ sur d^{en}-ki-ka ka uš₂ tuḥ-tuḥ dⁿⁱⁿ-siⁱisin₂-na-ka ur ka tuḥ-a diḡir-re-ne

red dog of Enlil, neck-breaker of Enki, the frequently open bloody mouth of Ninisina, dog with opened mouth of the gods⁵⁸

Egyptian texts, as is their habit, do not typically describe the demon's appearance. Neither the redness nor the canine form occurs. The demon can also be called Akhu (*ḫ.w*) in Egyptian. The word *ḫ.w* is derived from the root *ḫj*⁵⁹ and means "the burning/burned one". Nonetheless, it is unclear if the term Akhu is a reference in any way to the Mesopotamian tradition regarding the demon's redness.⁶⁰ The only statement alluding to Sāmānu/Akhu as dog, can be found in papyrus Leiden I 343 + 345, which is the major source for this disease demon in Egypt:

[p?]jwjw wš[{}t] ks.w

o dog who chews bones⁶¹

Additionally, the origin of the entity is named in the Mesopotamian texts. As is customary for such creatures, he is said to come from the mountains:

KREBERNIK, 2012, p. 76, who convincingly speaks against the interpretation of Enlil as a kind of storm god.

57 BECK, 2015a, pp. 176-179.

58 Cuneiform tablet AO 11276 R:6-9, see BECK, 2015a, pp. 10-14 (with further citations). See also cuneiform tablet HS 1555 + 1587 R:3f. (BECK, 2015a, pp. 6-10), VAT 6819 R:1-7 (BECK, 2015a, pp. 18f.), S.U. 51/128 + 129 + 233 (= STT 178) and duplicates (R:2-7; BECK, 2015a, pp. 22-31). For the gods, see the particular keyword BLACK/GREEN, 2011.

59 ERMAN/GRAPOW, 1926, 223.13-20, 224.13.

60 See BECK, 2015a, pp. 174, 246.

61 Papyrus Leiden I 343 + 345 V:IV9 (incantation 12 line 1-2), see BECK, 2015a, pp. 155-158 (with further citations). It could be that this subject is missing due to the partially fragmentary condition of the manuscript.

kur-ta ġen-na kur-ta <e₄>-da sa-ma-na kur-ta ġen-na kur-ta e₄-da
[ḥur-sa]ġ ki sikil-ta du [kur-t]a e₄-da

coming from the mountains, <coming down> from the mountains, Sāmānu, coming from the mountains, coming down from the mountains, coming from the [foothil]ls, the pure place, coming from the [moun]tains⁶²

An analogous statement is made in the Egyptian sources:

mj ḥȝy ḥr pȝ jwtn s:ḥpr tw° ḥr tȝ.j.t jr.t trj [tw=k]

Come, fall upon the ground, which created you, upon the mound, which respected [you]!⁶³

or

jw=k n nȝ n(j) ȝ.w šmȝ(m).w n.ty ḥr ḥȝs.t

You belong to the wandering donkeys, which are in the desert.⁶⁴

The “wandering donkeys”, which can only refer to untamed animals, particularly stress the foreign origin of Sāmānu/Akhu in Egypt. The demon’s actions are a major topic in Mesopotamian sources. He is capable of troubling gods in Mesopotamia, which is extremely unusual.⁶⁵

diġir an-na an-na im-mi-keše₂ diġir ki ki-a im-mi-ib₂-keše₂ ^dutu
an-ur₃-ra i[m-mi]-ib₂-k[eše₂] ^dnanna su₄-an-n[a im]-mi-i[b₂-keš]e₂

62 Cuneiform tablet 6 NT 145 R:II-7 (e₄ = e₁₁.d), see BECK, 2015a, pp. 3-6, compare also S.U. 51/128 + 129 + 233 (=STT 178) and duplicates (R:8-9; BECK, 2015a, pp. 22-31) with a similar statement.

63 Papyrus Leiden I 343 + 345 R:IV6-7/V:VII2f. (incantation 3 line 20-21), see BECK, 2015a, pp. 111-119 (with further citations).

64 Papyrus Leiden I 343 + 345 R:III7-8/V:VI2f. (incantation 3 line 7), see BECK, 2015a, pp. 111-119 (with further citations).

65 According to Sonik’s taxonomy, *daimons* were usually restricted to the human sphere, but she mentions Sāmānu as an exception to this “rule”, SONIK, 2013, p. 115, note 37. For Sāmānu as dangerous to gods, see BECK, 2015a, pp. 181f.

He has bound the god of heaven in heaven, he has bound the god of earth in earth, he has bo[und] Utu in the horizon, he has [bou]nd Nanna in the red evening sky⁶⁶

But the most common victims of Sāmānu are men:

ʿguruš ʿ ḥaš₂-a-na-ʿta ʿ ba-ʿni-i[n ...] // eṭ-lu [ina] šap ʿ-ri-š₂ i[š-bat]
 ki-sikil GIŠ.GABA-na-ʿke₄ ʿ // [...] ʿar₂ ʿ[...] ina ši-ti-iq ʿir ʿ-ti-ša₂ i[š-bat]
 lu₂-tur ga-naḡ-e sa gu₂-bi ba-[...] // šer₂-ru e-niq ši-iz-bi ina la[-ba-nu iš-bat]

the man's thigh is sei[zed] (by him), the woman's breastbone (?) is sei[zed] (by him), the suckling child's neck-tendons are sei[zed] (by him).⁶⁷

Usually, humans are afflicted on the skin of their heads, necks, shoulders, breasts (especially women), and thighs.⁶⁸ Furthermore, this entity can attack different animals – cattle, donkey and sheep:

gud-e a-ub-<ba> ba-ni-ba udu umbin-si-ba ba-ni-ba anše ḡeštu-ba
 ba-ni-ba

The bull caught him by <his> horn's edge. The sheep caught him by his hoof. The donkey caught him by his ear.⁶⁹

Moreover, Sāmānu is attested as an occurrence in rivers as well as an ailment of plants in the ancient Near East. In the case of the latter, Sāmānu can affect plants either as a fungus (rust) or a pest. In an incantation, one of the Mesopotamian rivers is afflicted by Sāmānu:

idigna pu₂¹(LAGAB)-ba ba-ni-ba

66 Cuneiform tablet A 7885 R:5-8, see BECK, 2015a, pp. 15-17 (with further citations). Compare also HS 1555 + 1587 R:5-8 (BECK, 2015a, pp. 6-10).

67 Cuneiform tablet S.U. 51/128 + 129 + 233 and duplicates (BECK, 2015a, pp. 22-31). Similar statements are given in 6 NT 145 R:18-19 (BECK, 2015a, pp. 3-6), HS 1555 + 1587 R:10-12, V:13 (BECK, 2015a, pp. 6-10), AO 11276 R:11-15 (BECK, 2015a, pp. 10-14).

68 For an analysis of Sāmānu as a disease of humankind from a present-day perspective, see BECK, 2015a, pp. 182-193, and BECK, 2015b, pp. 33-46.

69 Cuneiform tablet HS 1555 + 1587 V:14-16 (ba = b-as (AK)), see BECK, 2015a, pp. 6-10 (with further citations). For a discussion of Sāmānu as a disease of sheep, cattle and donkey, see BECK, 2015a, pp. 193-199.

The Tigris caught him by his side (?).⁷⁰

As a rust – mostly attested in omens – Sāmānu usually affects barley:

DIŠ *i-na qu2-tu-un qer-bi* MI.IB.𒄩 *sa 2-mu na-di nu-uh-ḫu-ul-lu i-te-eb-ba-am-ma še-a-am sa-ma-nu* DAB-at

If a red sign lies in the constrictions of the entrails: *Nuḫḫullu* (= a destructive storm) springs up and Sāmānu affects the barley.⁷¹

If the demon is addressed as pest, Sāmānu is able to destroy any field crops:

KA.INIM.MA 𒄩BURU5 *mu 2-na a-ki-la mu 2-bat-ti-ra ṣa-ṣi-ri 2 sa-ma-na kal-mat* A.ŠA3 *ina* ŠA3 A.ŠA3 *ṣu-li-i*

Incantation to remove locust, caterpillar, “devourer”-pest, *mubbattiru*-pest, cricket, Sāmānu (and) the vermin of the field from within the field.⁷²

In the ancient Near East, this demonic being acts as a kind of universal evil from whom nobody and nothing is safe.⁷³ In contrast, the Egyptian Sāmānu/Akhu is limited to humans but there he can occur on and in the entire body, not just the skin:

*m p3 rd 2 n.ty hr šm.t° m t3 mn.t(w) 2 n.ty hr šhsh° m p3 ph.wj n.ty hr kz.t=f° m {n3}<t3>
j3.t p3 z3y(w) <n.j> 2.t° m p3y=f rmn 2 m nḫb.t=f m t3y=f dr.ty 2° n.ty [...] n=f n.ty m-
=f° m jw-d3-m3y-n3° n.ty m mḫt(.w)=f n.ty m3°(w)° [m] gg.t 2° hn° p3 h3.ty m wf3(w)=f°*

70 Cuneiform tablet HS 1555 + 1587 V:17, see BECK, 2015a, pp. 6-10 (with further citations). See also BECK, 2015a, pp. 207f.

71 Cuneiform tablet AO 7539 V:72', see BECK, 2015a, p. 72 (with further citations). Compare BM 22696 V:22'-23' (BECK, 2015a, p. 72), K 2162+ R:19 (BECK, 2015a, pp. 74f.), K 229 R:18' + (BECK, 2015a, pp. 73f.), BM 46229 V:32-33 (BECK, 2015a, p. 76), Farmer's instructions line 71 (BECK, 2015a, pp. 70f.). For a discussion of Sāmānu as a plant disease, see BECK, 2015a, pp. 199-203.

72 Cuneiform tablet S.U. 52/214 V:1-2, see BECK, 2015a, pp. 77f. (with further citations). Compare also BM 45686 R:II29-31 (BECK, 2015a, pp. 81f.), tablet 81-2-4,319 R:6'-7' (Beck, 2015a, p. 80), BM 123370 II6' (BECK, 2015a, pp. 80f.). For an analysis of the demon as pest, see BECK, 2015a, pp. 204-207.

73 BECK, 2015a, pp. 174, 241f.

*hn^c ḏrw.w=f m pȝy=f [...]^o m tȝy=f sp.t 2 n.ty ḥr md(w){w}.t^o m {rš}<šr>.t=f tȝ 'b'b(y)
[m tȝj]=f jr.tj 2.t n.ty ḥr ptr(j)^o m tȝ t(ȝ)z.w<f> 7 n.t ḏȝḏȝ=f^o*

in the two lower legs that walk, in the two thighs that run, in the back that bows, in the spine, the beam <of> the body, in his two shoulders, in his neck, in both h[i]s hands that [...] for him, which is with him in the *Jḏmn* (?), which is in his entrails, which are in good condition, [in] the two kidneys (?) and in the heart, in his lung and his sides, in his [two ears that hear (?)], in his two lips that speak, in his nose, the bubbling one (?), [in his] both eyes that see, in the seven orifices of his head.⁷⁴

Additionally, Sāmānu/Akhu can have an impact on the cosmic order:

*jn-jw jy.n=k r [wȝ³ ...]j[n]-j[w ... wȝ³] n.(j) ḥh^o r nḥm s:kḏ m wȝ^{3o} jn-[j]w [j]y.n=k r ḥr(.t)
jn^o r jšf šw.t*

Did you come to [the barque ... Did you come ... to the barque] of the millions to prevent travel in the barque? [Did] you come to keep away [the sun disk], to enlarge (?) the emptiness?⁷⁵

In the Egyptian conjurations, it is far more important to enumerate the actions, which are undertaken against Sāmānu/Akhu. Therefore, they emphasize the expulsion of both the demon and the gang that accompanies him:

*jr nȝ n.w zmȝ.yt jn.n=k ḥn<=k> r 'ḥȝ dd.tw ḥmt 'šȝ m ḏḏȝ.w=sn jr pȝ stp(.w) n.j r(m)ḏ
jn.n=k ḥn<=k r 'ḥȝ ḥȝ<=sn nȝy=sn nȝkȝw st w'rt(.w)*

As to the band whom you have brought with <you> to fight: In their heads, much copper shall be given. As to the choicest of people whom you have brought with you to fight: They abandoned their trulls (?). They have fled.⁷⁶

The most significant adversary of Sāmānu/Akhu is the weather god Seth/Baal. He usually defeats him in the Egyptian texts:

74 Papyrus Leiden I 343 + 345 R:VIII1-VIII4, ostrakon Strasbourg H 115 R:5-11 (incantation 5, line 22-29), see BECK, 2015a, pp. 126-140 (with further citations).

75 Papyrus Leiden I 343 + 345 V:IX9f. (incantation 13, line 9-11), see BECK, 2015a, pp. 158-160 (with further citations).

76 Papyrus Leiden I 343 + 345 R: II4-6/V:III10-IV2 (incantation 2, line 12-14), see BECK, 2015a, pp. 103-111 (with further citations).

p3 kh(3)b(w) n(.j) Stḥ r p3 [ḫ.]w/p[3 s-m-n]° p3 ḥḏnḏn n(.j) Bʿyr r=k3 p3 kh(3)b n(.j) p3 ḥ3[ḥ3.tj] jw=f hr jb h(w)<.t> r b p.t r=k° k3 ʿḏn=f t3 ph.ty p3y=f ḥpš 2 ḥr=k° k3 dp{.t}=k n3 dp(w) p3 [...].n-mʿ m ḏr.t=f

The rage of Seth is against [Ak]hu/[Sāmānu]. The uproar of Baal is against you. The rage of the sto[rm] while it is thirsting for rain from the sky is against you. It shall exhaust its (bodily) strength [...] (lit. to put an end to), his two arms above you. You shall taste that which the [S]ea has tasted by his hand!⁷⁷

Here an allusion to the Baal Cycle is used, specifically to the episode where Baal fights against Yamm, the sea.⁷⁸ Thus, the Egyptian sources focus on actions against the demon rather than the demon’s own actions.

	Mesopotamia	Egypt
Shape:	lion’s mouth, teeth of a dragon’s snake, “red appearance” etc.	no
“Dog”:	dog of gods, especially the healing goddess Gula	(yes)
Origin:	mountains	earth, mound
	“uninhabited territories”	
Actions:	Sāmānu’s campaigns against everybody or everything → “active”	campaigns against Sāmānu → “passive”
	alone	leader of gang
Address:	third person singular	second person singular masculine

Table 1: Comparison between the Mesopotamian and Egyptian Sāmānu.

77 Papyrus Leiden I 343 + 345 R:IV9-13/V:VII5-7 (incantation 4, line 1-5), see BECK, 2015a, pp. 119-126 (with further citations).

78 DIETRICH/LORETZ/SANMARTÍN, 2013, p. 9; PARKER et al., 1997, pp. 103-105, as already noted by MÜLLER, 2008, 282, note 162.

While Sāmānu obviously originated in the ancient Near East, he experienced major changes on his way to Egypt. It is not just that the style of the incantation is different, but he evolves from a single evil being who attacks indiscriminately into the leader of a demon group that seizes only men. The difference between genuine Egyptian demon groups and Sāmānu’s group is that he is not associated with a certain god. Interestingly it is more important to describe the actions taken against Sāmānu/Akhu in the Egyptian texts than his own doing there. This does not mean that he is less dangerous in Egypt. As for the substantial Mesopotamian topic “Sāmānu as dog”, it does not play a role in Egypt. Perhaps the lack of information on such a role is due to the fragmentary state of the Egyptian sources. The only conformity between the Mesopotamian and Egyptian Sāmānu can be found in the identification of their origin, i.e., uninhabited territories, which is considered a common origin to all (disease) demons in both cultures.

The comparison (see Table 1) between the Mesopotamian and Egyptian Sāmānu clearly shows that the knowledge of this demonic being was not directly transferred from Mesopotamia to Egypt. The question is what was the route of transfer? The Mesopotamian sources do not provide an answer but the Egyptian texts do. As we have seen before, Papyrus Leiden I 343 + 345 contains topics, which are not typically Egyptian, including references to the Baal Cycle (see above). The gods mentioned in the manuscript are also not typically Egyptian, such as Baal, Rešep and his wife Adamma, the god above/the moon god and his wife Nikkal, Astarte or Anat.⁷⁹ There are also allusions to myth and legends of the Canaanite territory. The first example comes from the aforementioned Baal Cycle, too:

‘n . b’l . qdm . ydh k tgd . arz . b ymnh

Baal sees the orient. His hand flips, the cedar in his right hand.⁸⁰

This passage is similarly stated in papyrus Leiden I 343 + 345:

[h](w){t}y B’yr’ r=k m p’ § n.ty m dr.t=f° wħm=f tw m n’(j) hny.wt n.(wt) § n.ty m dr.t=f°

79 BECK, 2015a, p. 242 (with further citations).

80 DIETRICH/LORETZ/SANMARTÍN, 2013, p. 23 (CAT 1.4 VII 40f.); see PARKER et al., 1997, p. 137.

Baal shall strike against you with <spears> of coniferous wood, which are in his hand. He repeatedly strikes against you with spears of coniferous wood, which are in his hand.⁸¹

The following description also comes from Baal's epic cycle:

im . hrbm . its . anšq [b]htm

There, (with) a sword I will destroy! I will burn the houses!⁸²

A similar statement is found in the Egyptian manuscript:

k3 pn^c St^h2 p^y=k dmj.t

The weather god shall destroy your town!⁸³

But there are not only allusions to the Baal Cycle but also to the Legend of Keret. In this section, King Keret answers his son Yassib when the latter asks if he can ascend to the throne:

y^tbr hrn . y bn . y^tbr . hrn risk . 't^rt . šm . b 'l qdqd{r}<k>

May Horon crack, o son, may Horon crack your skull, Astarte name-of-Baal, <your> head!⁸⁴

Papyrus Leiden I 343 +345 contains the passage:

p3 hpš St^h2 r=k p3 s3-m'-n3° p3 k(š)tp(w) n(j) B'yr' m d3d3=k° p[š] s3-m'-n3 p3 hmt n(j) Hr(w) m wp.t=k°

81 Papyrus Leiden I 343 + 345 R:V1-2/V:VII8f. (incantation 4 line 6-8), see BECK, 2015a, pp. 119-126 (with further citations).

82 DIETRICH/LORETZ/SANMARTÍN, 2013, p. 9 (CAT 1.2 IV 4f.); see PARKER et al., 1997, p. 102. CAT suggests the restoration [p]itm "temple".

83 Papyrus Leiden I 343 + 345 R:II9/V:5 (incantation 2 line 5f.), see BECK, 2015a, pp. 103-111 (with further citations).

84 DIETRICH/LORETZ/SANMARTÍN, 2013, p. 48 (CAT 1.16 VI 54-57); PARKER et al., 1997, p. 42; appears in similar fashion in CAT 1.2 II 7f.

Seth's khopesh is against you, o Sāmānu/[o Akhu]. The *ketep* of Baal is in your head, o Sāmānu/[o Akhu]. Horus' copper is in your vertex!⁸⁵

The same Ugaritic legend contains the following lines:

tqln . b gbl šntk . b ḥpnk . w t'ḥn

You shall fall upon the tip of your teeth and you shall be humiliated by your greed/with your fist.⁸⁶

In the Egyptian manuscript a similar statement occurs in the same incantation, but before the aforementioned passage of the Legend of Keret:

[kʔ] ḥȝy=k ḥr ḥr=[kʔ ḥr tbn.t n.t] ḏw [n]ḃ [... jr]=k ḥȝy.t ḥr jbh.w=k ḥr nḏḥ[.t=k ḥrʔ] pʔ ḏw

You shall fall upon your face. [...] You shall [fall (?)] upon your teeth, upon [your] tu[sks ... upon (?)] the top of the mountain!⁸⁷

Ugaritic Incantation RIH 78/20 states:

aphm kšpm . dbbm . ygrš . ḥrn ḥbrm . w ḡlm . d'tm

immediately afterwards, Ḥoron cast out the companions (with) sorcery (and) incantations (?) and the boy the fellows.⁸⁸

In comparison, Papyrus Leiden I 343 + 345 says:

jr nʔ n.w zmʔ.yt jn.n=k ḥn<=<k> r ḥʔ dd.tw ḥmt ʕʔ m ḏḏḏ.w=sn jr pʔ stp(.w) n.j r(m)ḏ jn.n=k ḥn<=<k> r ḥʔ ḥʔ<=<sn nȝy=sn nʔkʔw st wʕrt(.w)

85 Papyrus Leiden I 343 + 345 R:II2-4/V:III9f. (incantation 2 line 10f.), see BECK, 2015a, pp. 103-111 (with further citations).

86 DIETRICH/LORETZ/SANMARTÍN, 2013, p. 48 (CAT 1.16 VI 57f.); see PARKER et al., 1997, p. 42. *Šntk* is usually translated as “your years”, though *šnt* can also be “teeth”, see DEL OLMO LETE/SANMARTÍN, 2003, p. 832.

87 Papyrus Leiden I 343 + 345 R:III1f./V:III7-9 (incantation 2 line 8-10), see BECK, 2015a, pp. 103-111 (with further citations).

88 BORDREUIL/CAQUOT, 1980, p. 346.

As to the band whom you have brought with you to fight: In their heads, much copper shall be given. As to the choicest of people whom you have brought with you to fight: They abandoned their trulls (?). They have fled.⁸⁹

The last example is not taken from Ugaritic sources, but from a Mesopotamian curse formula used on Kudurrū (boundary stones):

kāma serrēmu ina kamât šubtišu lirtappud

may he always roam as an onager in the desert of his dwelling place.⁹⁰

In Papyrus Leiden I 343 + 345 the passage is alluded to as followed:

jw=k n nš n(j) ḡ.w šmš{m}.w n.ty hr ḥš.t

You belong to the wandering donkeys, which are in the desert.⁹¹

These examples clearly show that the “producer” of the knowledge of Sāmānu were not the Mesopotamians. Rather nearly every allusion indicates a Canaanite origin for the transfer of knowledge to Egypt making the Canaanite territory a rather likely producer.

The next role to be considered here is the transmitter. Unfortunately, at present it is not possible to ascertain how the knowledge of the demonic being got to Egypt due to missing sources. As mentioned before, there were abundant connections between the ancient Near East and Egypt, especially during the New Kingdom (see Cultural Interactions during the New Kingdom). One possibility is that the knowledge was brought to Egypt and the transfer took place in Egypt itself. Another opportunity would be that the Egyptians came in contact with this particular disease (demon) in the Levant, made attempts to find a solution or better cure to Sāmānu, and brought this knowledge back with them to Egypt.⁹²

89 Papyrus Leiden I 343 + 345 R:II4-6/V:III10-IV2 (incantation 2 line 12-14), see BECK, 2015a, pp. 103-111 (with further citations).

90 See WATANABE, 1984, pp. 100-104, especially 104 and 106-109. For a more detailed discussion of this example, see FISCHER-ELFERT, 2011, p. 193.

91 Papyrus Leiden I 343 + 345 R:III7f./V:VI2f. (incantation 3 line 7), see BECK, 2015a, pp. 111-119 (with further citations).

92 See BECK, 2015b, p. 245.

The last role in a transfer of knowledge is the receiver. In this context the receiver is certain: the Egyptians. During the New Kingdom, a new ailment known as *Sāmānu* in Mesopotamia apparently appeared in Egypt, probably through influx of foreign population groups.⁹³ The Egyptians had to deal with this new problem and find a solution (treatment). The next step was an intercultural contact of some kind. Who exactly was involved in the transmission process cannot be said. Most probably persons dealing with magic and medicine participated – at least on the Egyptian side since they had to face the problem. It is very likely that language was the medium of the transfer because the knowledge can be articulated that way. Furthermore, it can be presumed that the persons involved were bilingual⁹⁴ because of the use of foreign deities and topics in Papyrus Leiden I 343 + 345. Due to the fact that there are Egyptian sources mentioning *Sāmānu* it is obvious that the Egyptians, i.e., the receiver, were able to comprehend the knowledge presented to them. Equally, the producer (Canaanites) was capable of articulating the knowledge.

Final Remarks

The transfer of knowledge from Mesopotamia to Egypt occurred as “acculturation” (highest level of the transfer of knowledge) because the communication took place between one culture (producer: Canaanite territory) and another one (receiver: Egypt), both societies were differentiated, a direct contact happened and a detectable change took place at least in one of them.⁹⁵ The “acculturation” led to an *integration* during the consolidation, the last step of this transfer of knowledge. Hence, the knowledge, which was necessary to deal with the new issue (= *Sāmānu*), was initially adopted and afterwards adapted. It became part of the Egyptian culture. No *assimilation* occurred because Egyptian norms still formed the basis for the new knowledge, i.e., the spells were written in the

93 As stated before, it could also be that the Egyptians came in contact with this disease in the ancient Near East.

94 GÖPPERICH, 2006, pp. 174, 177. BURKE, 2009, p. 72, and cultural interactions during the New Kingdom in this article. Compare also BROSIUS, 2014, p. 287, on multilingualism of scribes.

95 It is not possible to state whether the producer was changed by the transfer of knowledge since he is not really tangible (see above).

Egyptian language and specific Egyptian formulae were used.⁹⁶ Furthermore, the transformation of knowledge can also be seen by the structure of the incantations. Mesopotamian spells use the third person singular but Egyptian texts directly address the demon in the second person masculine singular. Additionally, Sāmānu employs a gang, which helps him to do harm, but acts alone in Mesopotamia.⁹⁷ Consequently, it can be stated that the knowledge was clearly transformed and adjusted to the needs of the Egyptians. In fact, the adaption of the word Sāmānu as Akhu in Egyptian shows that the receiver gave thought to this phenomenon.⁹⁸ Therefore, a new concept of Sāmānu was developed in Egypt.

In conclusion, a transfer of the “knowledge” of the Mesopotamian concept of Sāmānu to Egypt occurred via the Canaanite territory. Exact statements concerning the producer and the process of transfer cannot be given. In contrast, something can be said about the receiver. The transfer occurred on the highest level: “acculturation” in the form of an *integration*.⁹⁹

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96 For example, the magician identifies himself with a god or the demon is asked rhetorical questions. Compare also BECK, 2015a, pp. 230-236.

97 BECK, 2015c, pp. 94-100.

98 That Sāmānu was “translated” as *ḫ.w* and not as *dšr.w* could be related to the fact that the Egyptians were probably not aware of the original meaning of the Akkadian word *Sāmānu* (“the red one”). This is indicated by the fact that the Egyptian incantations do not have references to the redness of this evil. Furthermore, the extensive changes of the “knowledge” of the Mesopotamian Sāmānu in contrast to the Egyptian version also demonstrates this.

99 For a more detailed analysis of the transfer of knowledge of Sāmānu from Mesopotamia to Egypt, see BECK, 2015a, pp. 241-249.

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EPISTEMOLOGY IN THE BIBLICAL TRADITION – JUDEAN KNOWLEDGE-BUILDING, SCRIBAL CRAFTSMANSHIP, AND SCRIBAL CULTURE¹

JEFFREY L. COOLEY (BOSTON)

In this study I have two basic objectives. First, noting the constructivist turn in the study of the Mesopotamian intellectual tradition in recent years, I argue that the Hebrew Bible's epistemology is also fundamentally scribally oriented. To this end, I briefly note previous approaches to the issue of epistemology in ancient Mesopotamia and Judah and introduce the idea of "epistemic cultures". Second, I show how recognizing this scribal epistemology allows us to fully appreciate and understand certain biblical etymologies by examining two examples from the book of Genesis. It is my hope that this paper contributes to the present volume's questions related to the legitimation and the sociology of knowledge.

1 I would like to thank the organizers of the conference and the editors of this volume for allowing me to contribute. Additionally, I express my gratitude to Alan Lenzi, C. Jay Crisostomo, David Vanderhooft, as well as the members of the Boston College Bible Colloquium for having read previous versions of this study and for having provided their critical insights.

Note: biblical references follow COLLINS/BULLER/KUTSKO, 2014, pp. 124f.

Mesopotamian Epistemology and Epistemic Cultures

In the early and mid-twentieth century, Assyriologists concentrated on so-called *Listenwissenschaft* or, later, the empirical dimensions of Babylonian knowledge-building.² Most recently, however, scholars, such as Gebhard Selz, Francesca Rochberg, and Marc van de Mieroop have located Mesopotamian epistemology *within* the scribal tradition that documented it.³ Key to our understanding of how they knew their world is the relationship between how Babylonian scribes observed their wider environment *vis-à-vis* how they observed their documents.

The application of constructivist methodologies that recognize that knowledge is a produced social construct has been exceptionally productive in trying to understand the intersection of epistemology and writing in ancient Iraq.⁴ Constructivist studies focus not only on what is produced (i.e., knowledge), but also on the producers and process of its production. Briefly stated, a knowledge (or epistemic) subject,⁵ utilizing her tools, applies her practice⁶ to “knowledge objects”.⁷ The outcome of applying practice to these objects is

2 Perhaps this was in response to the mythopoetic characterization of ancient Near Eastern thought typical of the mid-twentieth century academy. See for example, FRANKFORT/FRANKFORT, 1946, pp. 363-388. Though Thorkild Jacobsen was a major contributor to this volume, he demurs from saying anything of substance regarding epistemology, cf. JACOBSEN, 1946, pp. 125-219. See also, TROLLE LARSEN, 1987, pp. 203-225; BOTTÉRO, 1974, pp. 144-168; ROCHBERG, 2010 [1982], pp. 26f.

3 Niek VELDHUIS, 1997; SELZ, 2011, pp. 49-70; ROCHBERG, 1999, pp. 559-569; VAN DE MIEROOP, 2015. See also WINITZER, 2011, p. 94.

4 The obvious attention in this regard has been on those texts that have been most easily identified with what we moderns might consider approximations of our science, such as astronomical (i.e., celestial divination) and taxonomical (i.e., the list tradition) texts. In any case, my definition of knowledge is a social one: it is a communally recognized “set of organized statements of [perceived] fact or ideas” (BELL, 1973, p. 41, cited in KNORR CETINA, 1999, p. 6 [bracketed insertion mine]), that functions as “a tool for defining one’s place in society; its validity and usefulness are inextricably linked to social structure and to the place within that structure where knowledge is produced” (VELDHUIS, 2014, 21).

5 KNORR CETINA, 1999, p. 11.

6 Practices can be defined as “recurrent processes governed by specifiable schemata of preferences and prescriptions”, (KNORR CETINA, 2001, p. 175).

7 Often referred to as “epistemic things”; in Rheinberger’s words, these are “material entities or processes [...] that constitute the objects of inquiry. [...] they present

knowledge. In short, the model is a fundamentally syntactical constellation, that is: subject – verb/process – object – result.

Obviously, the actual manifestation of these subjects, processes, and objects is by no means universal, since various groups of experts have their own subjects, processes, tools, and objects.⁸ Knorr Cetina has dubbed such respective groups of technical experts as “epistemic cultures”. As she defines the term, an “[epistemic or knowledge] culture refers to the aggregate patterns and dynamics that are on display in expert practice and that vary in different settings of expertise”.⁹ Though she developed the concept to address contemporary scientific cultures, both modern scientists and ancient scribes have technical tools and procedures that require specific training to use expertly and meaningfully. These tools and procedures have little use outside those expert circles and are, most importantly, fundamental in the process of constructing knowledge.

Thus, as a result of their education, livelihood, tools, skill, etc., Babylonian scribes situated sight, sound, and tradition into their specific sub-cultural episteme in a manner different than those without these things. Scribes *ex officio* saw documents and made new copies of them. When scribes lifted their squinting eyes up from their tablets and gazed at the world around them, they did not compartmentalize these habits of seeing.¹⁰ The great lexical lists utilized throughout the history of cuneiform scribalism trained the scribe, whether deliberately or otherwise, to order and understand the world around himself as a collection of written words that are exegeted based on their visual properties and bilingual polyvalencies.¹¹

This scribal understanding of the surrounding world is perhaps most clear in the native terminology denoting a number of mantic practices. For first millennium celestial diviners, for example, the sky was covered with a kind of writing, *šitir šamê* (“writing of the sky”), the celestial surface itself being

themselves in a characteristic, irreducible vagueness. This vagueness is inevitable because, paradoxically, epistemic things embody what one does not yet know” (RHEINBERGER, 1997, p. 28); see also, KNORR CETINA, 2001, p. 181.

8 Galison, for example, shows that various sub-disciplines within microphysics each have their own epistemic subjects, processes, objects, and, indeed, even their own dialects that need to be deliberately translated in order for them to exchange and utilize their respective knowledges (GALISON, 1997).

9 KNORR CETINA, 1999.

10 ROCHBERG, 2014, p. 50.

11 VELDHUIS, 1997, p. 139; see also VELDHUIS, 2012, p. 16.

conceived of as a gargantuan lapis writing tablet. Similarly, the gods used the exta of sheep as documentary surfaces to relay their judgments to humanity. The animal’s organs were the “tablets of the gods”, *tuppū ša ilī*, on which messages were composed. In this sense, the sky and the animal’s organs were no more – or less – a “natural” phenomenon than the scribe’s clay tablet.

A striking example of this scribally understood cosmos can be seen in one of the prisms of the Assyrian monarch Esarhaddon, dating to the middle of the seventh century, in which the king describes the restoration of the temple of Marduk (Esagil), the chief Babylonian god. Esarhaddon recounts how the inhabitants of the land had previously angered the gods with their impiety, and as a result, the gods had struck the land with flooding and divine abandonment. Marduk had initially determined that this punishment should last seventy years. However, the god was gracious, and he lessened the sentence, literally by inverting the signs used to write the numeral 70 (a vertical wedge followed by a *Winkelhaken*) into the numeral 11 (a *Winkelhaken* followed by a vertical wedge):

mar-qi-ti 70 MU.AN.NA.MEŠ
mi-nu-ut ni-du-ti-šu
iš-tur-ma re-me-nu-ú
^dAMAR.UTU *sur-riš lib-ba-šu*
i-nu-uḫ-ma e-liš a-na
šap-liš uš-bal-kit-ma
a-na 11 MU.AN.NA.MEŠ
a-šab-šú iq-bi

The merciful god Marduk wrote that the calculated time of its abandonment (should last) 70 years, (but) his heart was quickly soothed, and he reversed the numbers and (thus) ordered its (re)occupation to be (after) 11 years.¹²

Notable here is that the divine act is a scribal act: the written documentation of a legal sentence is physically altered by the god pulling a graphic switcheroo, such that when that sentence was put into effect, the actual reality of the land’s punishment was altered. The written documentation of something, rather than its mere oral verbalization, is what is fundamentally tethered to physical reality.

For scribes, natural phenomena worthy of observation included not only the positions of planets, but also dockets, contracts, word lists, and literature. For the scribes and the scribally-literate god alike, writing was as much reality

12 Esarhaddon 104 ii 2-9a (text and translation: LEICHTY, 2011, p. 196). See also BEAULIEU, 1995, pp. 4f.; ROBSON, 2008, pp. 148f.

as anything else; perhaps more so, since it had the potential to reveal the meaning and order hidden underneath the shallow surface that was observed by the non-literate. Assyriologists now realize just how much the epistemology we see in cuneiform texts is *not* that of ancient Mesopotamian culture as a whole, but primarily that of expert scribes.

Epistemology in Ancient Judah: Previous Approaches

In the mid-twentieth century, scholars, such as William Irwin and G. Ernest Wright, addressed the epistemology of ancient Israel and Judah, and characteristically, their analysis was an argument for a sort of Israelite intellectual exceptionalism.¹³ The Hebrews were often understood as unique in the ancient Near East for their experientialism and evidentialism.¹⁴ In more recent years, some scholars have sought a more honest assessment of Israelite knowledge from a consciously emic perspective, such as Meir Malul, Yair Avrahami, and Michael Carasik.¹⁵

13 IRWIN, 1952, pp. 42-44. See also BOMAN, 1960, pp. 201-204.

14 In the outlooks of Boman, as well as Irwin and Wright, the combination of Hebrew experiential knowledge and Greek analytical thought created the marvel of the Western intellectual tradition (cf., FRANKFORT/FRANKFORT, 1946, p. 373). Of course, the epistemology in the Bible has also been the focus of a considerable amount of theological and philosophical scholarship; see, e.g., HEALY/PARRY, 2007; DOWD, 2009; GERICKE, 2012, pp. 371-404; HAZONY, 2012, pp. 161-192 and JOHNSON, 2013. While these have their value, my approach here is neither theologically nor philosophically oriented, and so I will not engage with this scholarship to any large degree.

15 CARASIK, 2006; MALUL, 2002, pp. 3-7; AVRAHAMI, 2012, pp. 4-64. Malul (pp. 25-54), in particular, is problematic, since he regards the biblical text as the product of an oral culture rather than a literate professional culture: "Needless to say, the methods applied [to the biblical text], being geared to the analysis of *specimens of writing*, must be in general erroneous, or at least grossly inappropriate for the analysis of the type of source-material that is at our disposal and for carrying out the task of the present book" (2002, p. 52). Furthermore, epistemology has long been a focus of those working with the book of Ecclesiastes, for obvious reasons; e.g., FOX, 1987, pp. 137-155; SCHELLENBERG, 2002. The date of Qohelet's composition and its overall intellectual novelty limits its utility in this study, which focuses on the mid-first millennium.

Nonetheless, in stark contrast to the current situation in Assyriology, very little work has been done on the relationship between epistemology and ancient Judean scribalism.¹⁶ This fact is all the more surprising given the explosion of studies on Judean scribes, literacy, and education in recent decades.¹⁷ Indeed, only a couple of scholars have discussed the intersection between education and epistemology.¹⁸ Most notable in this regard is Karel van der Toorn, whose work in *Scribal Culture and the Making of the Hebrew Bible* is close to a constructivist model.¹⁹ While it is not the main thesis of his

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- 16 Explaining this situation is difficult, but it seems to be related to the desire by biblical scholars to find in ancient Israel a kind of democratization of reading/writing that is otherwise not evinced in the broader ancient Near East, and which is only seen in antiquity, perhaps, in certain parts of the Greek world in certain periods. For this particular bent, see SCHNIEDEWIND, 2004 and SANDERS, 2009.
- 17 For education, see LEMAIRE, 1981; PUECH, 1988, pp. 189-203; CRENSHAW, 1998. For scribalism and literacy in particular, see CARR, 2004; VAN DER TOORN, 2007; ROLLSTON, 2010; SCHNIEDEWIND, 2013.
- 18 Worth mentioning, as well, is Crenshaw, who essentially comes to the same conclusion as his teacher, G. Ernest Wright, that the Israelites were exceptionally empirical for a culture embedded in the ancient Near East. Based primarily on an inspection of the texts that tradition and modern scholarship have labeled “wisdom”, his conclusion is that knowledge in ancient Israel was considered to derive from three sources: observation, analogy and tradition. Crenshaw maintains that some of the Bible’s wisdom material, such as Proverbs, is a product of family life and “parental instruction” (CRENSHAW, 1998, p. 230). According to Crenshaw’s reconstruction of the epistemology of the wisdom literature, the thoughtful Israelite, acquires knowledge, first and foremost, by observation of the human and natural world. He/she has a creed, but dynamically reinterprets that creed to fit with observed reality. The Israelite God himself does reveal knowledge, but only as a divine epistemological watchmaker, who places it all in nature to be revealed, it seems, by means of careful human observation. Revelation as a source for knowledge, according to Crenshaw’s understanding of the wisdom tradition, had a place only at the creation – humanity rediscovers this cosmically embedded knowledge through careful observation (CRENSHAW, 1998, p. 130). Overall, his formulation sounds suspiciously like the epistemic process of a mid-twentieth-century liberal biblical theologian who is rather comfortable with the conclusions of the natural sciences. More positively, Crenshaw is undoubtedly correct that tradition, analogical reasoning, and observation were all part of the epistemic process in ancient Israel and Judah – but this is *as they are in any ancient or modern culture*.
- 19 VAN DER TOORN, 2007, pp. 205-232. In his discussion of the nativity of the biblical prophetic corpus in particular, he argues that scribes coopted the idea of divine revelation, originally the purview of non-literate prophets, and embodied it in documentation, thereby imbuing the written text with oracular authority. I am rather sympathetic to his take on the textualization of prophecy. Still, van der

work, van der Toorn recognizes that the biblical text does not reveal a view of Judean epistemology *per se*, but rather, that of the particular sub-group of individuals who created those documents, i.e., priestly scribes.²⁰

Toorn's approach is less about *how* Judean scribes created knowledge, and more about how they added a novel, mantic dimension to texts they manufactured:

“[...] I call revelation a ‘scribal construct.’ It will be clear by now that this expression was not intended to mean that scribes invented the notion of revelation as such; their invention was rather in the nature of a radical transformation. They used the concept of revelation as an epistemological category to qualify a body of literature. By identifying revelation with a circumscribed group of texts, the scribes shifted the focus of the concept. Until then revelation had been understood as an interaction between superhuman beings and human individuals in which the former imparted knowledge to the latter; in the concept developed by the scribes, revelation became an object rather than an interaction: it was coterminous with a set of texts.” (VAN DER TOORN, 2007, p. 232)

This is not to deny the orality of Judean culture as a whole, *à la* Susan Niditch, nor the high value that scribes must have placed on memorization as Carr, in particular, has highlighted (NIDITCH, 1989; cf., MALUL, 2002, pp. 25-54). But the end of the matter is that for a scribe to be a scribe he was expected to be able to manufacture a written document. It is also important here to mark the difference between literacy and scribalism. Schniedewind has made a case for widespread literacy in pre-exilic Judah, and I do not deny that the ability to read was not confined to those who were inculcated in the scribal craft. But, as both Carr and Veldhuis have emphasized, being able to verbalize a simple document is not the same as being able to read and interpret a piece of literature, technical or otherwise (CARR, 2004, p. 13; VELDHUIS, 2011, pp. 68-89). I would add, as well, that the ability to verbalize and understand something as basic as the name on a seal or even the contents and implications of a contract is a rather different skill set than that needed to fabricate a written document. For the elite status of writers and readers in the biblical text, see also YOUNG, 1998, pp. 239-253; and ROLLSTON, 2010, p. 129.

- 20 Carasik is an outlier among the recent contributors; the title of his monograph, *Theologies of the Mind in Biblical Israel*, is a recognition that it is not ancient Israel as a whole that he is examining, but rather the vision presented by the Bible's authors in particular.

Scribal Epistemology among Other Epistemologies

Now, about these people: like their Mesopotamian counterparts, the job of the Judean scribe was first and foremost to physically manufacture and interpret documents.²¹ This materiality, and the control over the manufacture and distribution that goes hand-in-hand with it, is important to underscore: documents are technological products that physically store knowledge.²² As manufacturers of a product that stored knowledge, for scribes epistemic authority lay in documents. Documents were certainly not the sole source of epistemic authority for scribes, but, by definition, they were a privileged one. The numerous documentary references in Joshua, Judges, Samuel (ספר הישר, *spr hyšr*; and ספר מלחמות יהוה, *spr mlḥmh yhwḥ*) and, in particular, Kings (ספר דברי, *spr dbry šlmḥ*; דברי הימים למלכי יהודה/ישראל, *dbry hymym lmlky yhwḥdḥ/yšr'l*) and Chronicles (ספר מלכי ישראל ויהודה, *spr mlky yšr'l wyhwḥdḥ*) attest to the idea that written sources contain knowledge about the past that was obtainable only to scribes.

No doubt, other epistemologies were operative in ancient Judah. Scribes were partakers of the common cultural episteme that broadly featured tradition, analogical reasoning, and observation. Another obvious episteme is the mantic: Yahweh's knowledge revealed through the proper diviners was a potentially valid source. These epistemologies were by no means exclusive of each other; they could and often did overlap.²³

21 VAN DER TOORN, 2007, pp. 1f. Though we know that scribes served in a number of loci (temple, palace, army, etc.), the produce of their specific training was not *texts per se*, here defined as the written content of a physical document. In principle, a *text*, such as the content of a letter, could be dictated to a scribe by a second, non-literate party. So too, a non-literate could memorize and verbalize the *text* of a psalm.

22 As Stavrakopoulou has recently noted, documents' limited physicality allowed elites (priests, kings, scribes, etc.) control over the production of and access to knowledge; see STAVRAKOPOULOU, 2013, p. 233.

23 E.g., mantic and scribal in Ezek 2:8-3:4. Nonetheless, tensions between these epistemologies could exist. In 2 Kgs 22:11-20, for example, we see the concern for the validity of the written *torah* supposedly uncovered in Yahweh's temple in Jerusalem by the high priest Hilkiah during the reign of Josiah. When the document's contents were revealed to the king, he was dismayed, but he nonetheless immediately ordered a small entourage (which, notably include a named scribe שפן הספר, *špn hšpr*, and his son אחיקם, *'hyqm*, verse 12) that the document's contents (דברי הספר, *dbry hšpr*, verse 13) be verified mantically. They approached the prophet Huldah, conveniently living in Jerusalem, and she confirmed the newly

Judean Scribal *Weltanschauung*: Documentary Epistemology

But the scribal way of knowing has distinctiveness. Carr has convincingly argued that the process of scribal education in ancient Judah not only trained these craftsmen how to produce documents, it also enculturated them into a specific mindset.²⁴ While I do not have the space here to go through all of the biblical evidence for this, it will suffice to highlight two points. First and foremost, the biblical texts are *documents*, whose very existence, regardless of their contents, attests to the fact that there was a scribal culture that manufactured material products; and this is the best evidence that the Hebrew

discovered document by divinatory means. Interestingly, Josiah's skepticism regarding the *document* was not punished; rather, in 2 Kgs 22:19-20, Yahweh rewarded the king for his spontaneous mourning when he initially heard its contents. That is to say, the king is praised and rewarded for trusting the purportedly antique knowledge the document records *before* it had been mantically verified. This is a powerful statement: trust the knowledge contained in the documents that scribes offer and you will be rewarded.

Jer 8:8-9, according to van der Toorn, offers a sharply contrasting perspective on the intersection between scribal and mantic epistemologies. He argues that this passage refers to Jeremiah's rejection of the same document whose purported discovery is described in 2 Kings 22 (VAN DER TOORN, 2007, p. 35). This is a difficult passage, and interpretations abound: for Schniedewind, Jer 8:7-9 is referring much more broadly of emerging tension between oral authority (i.e., the מִשְׁפַּט יְהוָה, *mšpṭ yhwḥ*, in vs. 7) and the written authority of the scribes (SCHNIEDEWIND, 2004, pp. 114-117). Richard Elliot Friedman sees the conflict as one of the Deuteronomic versus the Priestly school (FRIEDMAN, 1987, pp. 188-206). Regardless of whether Jer 8:8-9 references Josiah's book of the law, what is evinced in both this and 2 Kings 22 is the tension between mantic (here: prophetic) and strictly scribal epistemology. Certainly by at least as early as the exilic or early Second Temple period, scribes could and did assert that the documents they manufactured and the knowledge contained therein originated with God on some level. This is a trajectory that both van der Toorn and Schniedewind track, each with their own emphases. Nonetheless, at least into the late seventh century, for the scribes/sages, the document was authoritative by its virtue of being a written text; for the prophets it was Yahweh's oracular word.

- 24 CARR, 2004, pp. 126-134. This scribal perspective is evident in a number of places in the biblical text. For example, scholars have noted that the materials in book of Proverbs appear to have played a role in the early stages of Judean scribal training. The idea that Proverbs, a lengthy, sophisticated written document, does not reflect a literate mindset, as both Carasik and Kovacs argue, seems highly problematic at best (KOVACS, 1974, pp. 183f., 186; CARASIK, 2006, p. 63).

Bible has scribal origins and audience, and was tradited by scribes for future generations of scribes. The second bit of evidence for the scribal *Weltanschauung* of the biblical text, which will serve my discussion below, is that the Judean god Yahweh is consistently depicted as skilled scribe; he manufactures, consults, and acts on documents.²⁵ Such depictions occur diachronically across a wide variety of genres, attesting to a consistently accepted characterization of the deity.

Judean Scribes as an Epistemic Culture

What is now taken as a given in the study of Mesopotamian scribes of the first millennium? That the physicality of writing played a crucial, if not central, role in scribes' epistemic culture, needs to be demonstrated for the scribes who composed and tradited the Hebrew Bible. What was the distinctive interaction between epistemic subject, tools, process, and object that constructed knowledge – *scribal* knowledge in Judah?

Employing a constructivist terminology, the knowledge subjects, of course, are the scribes who manufactured documents. Much has been written on their identity; scribes in ancient Israel and Judah were primarily members of an elite, often priestly, class.²⁶ Rollston has convincingly argued that there was some sort of formalized and/or standardized process of scribal training in the Iron II (ca., 1000-586 BCE, and presumably carried into exile), regardless of

25 Yahweh himself writes documents (in Exod 24:12; 31:18; 32:15-16, and Deut 9:10) and, as a good scribe, is capable of creating a new copy of texts from memory (as in Deut 10:1-2, 4). Furthermore, Yahweh has a collection of documents at his disposal for reference and consultation (Exod 32:32-34; Isa 4:3; Ezek 13:9; Ps 69:29; 87:6), and they serve as legal witness as well as future reference for the administratively busy god-on-the-go (see Mal 3:16). The Judean god is also depicted as using documents in the process of planning (Ps 139:16), and he responds to documentation that requires an active response (Isa 65:6; Ps 149:8-9). Moreover, in Jer 25:13, Yahweh is depicted as textually aware, and cites already existing documents. In 2 Chronicles 34 (the Chronicler's account of the Hilkiah's scroll find during Josiah's reign), in Huldah's confirming oracle, Yahweh explicitly cites the copy of his own *torah*, described in verse 14 as ספר תורת־יהוה ביד־משה, *spr twrt-yhwh byd-mšh* ("the book of the *torah* of Yahweh, by the hand of Moses").

26 It seems that there were in ancient Judah scribal families and perhaps even tribes (Judg 5:14) and enclaves (Josh 15:15-16; Judg 1:11-12; 5:15-16) that were known for their skills with the pen.

whether there were formal schools.²⁷ In this process of inculcation and enculturation, scribes learned the tools, processes, and proper objects of knowledge.

The material culture of scribes is fairly well documented, both textually and archaeologically.²⁸ Scribes learned to master this toolkit, of course, which would have included writing instruments, ink, various surfaces, and documents themselves. Additionally, as part of their education and enculturation, scribes learned a number of skills and procedures. Obviously, one of the most basic elements of their praxis would have been mastery of the alphabet, including its proper order, its writing, and its reading. This would involve conventions in marking verbalization (standard orthographies, word dividing, etc.). So, too, one had to learn the laying out of basic kinds of documents (making lines, margins, etc.), not to mention how to copy documents, and follow standard formats. Scribes learned language as well and by this, I mean their *own* language, including technical vocabulary and its uses (legal, diplomatic, economic, etc.), as well as literary vocabulary and stylistics (obscure/rare terms; cf., poetic word pairs). In some cases, language training must have included foreign languages and their corresponding writing systems, useful for international correspondence (Aramaic, Egyptian, and Akkadian). The scribal epistemic culture thus had its own distinctive materiality, its own skill sets, and

27 ROLLSTON, 2010, p. 129.

28 Scribes would create documents (ספרים, *sprym*, *passim*) by writing (כתב, *ktb*, *passim*) using either an awl (צפרין, *sprn*, Jer 17:1) or a pen (עט, 'ט, Jer 8:8; 17:1; Ps 45:2; Job 19:24) with ink (דיו, *dyw*, 36:18), that was stored in a container (קסת, *qst*, Ezek 9:11) expressly made for that purpose (קסת הספר, *qst hspr*, Ezek 9:2-3). Presumably some of the tools were made by the scribes themselves: the pen, for example, had to be manufactured and maintained, and scribes did so by utilizing a scribe's knife (תער הספר, *t'r hspr*, Jer 36:23), a sub-cultural variant of a common tool. The choice of tool that would imprint the writing on the surface would depend on the surface that had been prepared to receive the writing. That surface could be a scroll (מגלה, *mglh*, Ps 40:8; Jer 36:2, 4, 6, 14, 20, 21, 23, 25, 27-29, 32; Ezek 2:9; 3:1-3; Zech 5:1-2) composed of individual panels (דלתות, *dltwt*, Jer 36:23), presumably of papyrus or prepared animal skin, or a tablet (לוח, *lwh*, *passim*) that might be made of stone (e.g., Exod 24:12; but see also the Gezer Calendar), or wax, or possibly even clay (though neither of the last two options are explicitly attested in the biblical text). Alternatively, a scribe might imprint the writing on a non-transportable surface, such as a natural, though prepared, part of the landscape (e.g., the bedrock of the Royal Steward Inscription or Siloam Inscription), a prepared monument (e.g., the Mesha Inscription), or a plastered wall (e.g., the Deir 'Alla text).

its own processes that allowed scribes to craft documents and, in turn, derive useful knowledge from them.

Names and the Construction of Knowledge: ישראל (*yśr'el*) as a Knowledge Object

As Radner has documented, the importance of remembering names in the broader ancient Near East was tremendous.²⁹ And indeed, scribes spent a great deal of time and effort, as well as ink and papyrus, on names. In constructivist terms, names served as epistemic objects to which knowledge subjects (that is, scribes) applied processes, and created knowledge to be further utilized for various purposes. As scribes, the processes applied to names were documentary: names of people were engraved on seals, which were then pressed into clay bullae; names were recorded in tax lists, rosters of personnel, arranged, stacked and rearranged in genealogies. Names of items were documented in inventories, sales contracts, etc. Names of places were listed in territorial tax appropriations, commercial and military itineraries. In short, names were manipulated documentarily to produce all sorts of useful knowledge that was applied for cultic, economic, and governmental purposes.

The expert process of scribes was not merely the manufacture of documents – documents themselves were also subjected to the process of visual inspection and interpretation. In both the manufacture of documents and in their visual inspection, scribes utilized their epistemic cultures – their pens and ink, their mastery of writing and language.³⁰ I recognize this is a lot of verbiage to merely state that scribes write things and read things. But being conscious of their processes, I will show, bears fruit in the study of some of the Hebrew Bible's narratives, particularly its etymologies.³¹ To this end I will

29 RADNER, 2005.

30 HYMAN, 2006, pp. 231-249.

31 Such passages, that explain the origin of the name of a notable person, place or thing, have long been mischaracterized either as naïve folk-etymologies, or, at best, aesthetic devices akin to punning and paronomasia. These approaches take into account neither the learned, scribal origins of the stories, nor the narratively explicit ontological/hermeneutical connections such stories make between the name and its referent. For a full discussion, see COOLEY, forthcoming.

discuss the explanation or, I hope to show, *explanations* of the name “Israel” in Genesis 32 and 35.

Genesis 32: 28-29

Genesis 32:28-29 recounts the result of the patriarch Jacob’s wrestling match with a divine stranger whom he randomly encounters by the river Jabbok:

וַיֹּאמֶר אֵלָיו מַה שְּׁמֶךָ	He said to him, “What is your name?” And he
וַיֹּאמֶר יַעֲקֹב:	said, “Jacob”.
וַיֹּאמֶר לֹא יַעֲקֹב יִקָּרָא עוֹד	And he said, “Your name will no longer be
שְׁמֶךָ כִּי אִם יִשְׂרָאֵל כִּי-שָׂרִיתָ	called ‘Jacob’, but rather ‘Israel’ for you have
עִם-אֱלֹהִים וְעִם-אֲנָשִׁים וַתִּגְבַּל:	striven with a god (and with men), and
	triumphed.”
וַיִּשְׂאֵל יַעֲקֹב וַיֹּאמֶר	Jacob asked and said, “Tell me, please, your
הַגִּידָה נָא שְׁמֶךָ וַיֹּאמֶר לָמָּה זֶה	name?”
תִּשְׂאֵל לְשְׁמִי וַיְבָרֶךְ אֹתוֹ שָׁם:	And he said, “Why this, you ask my name?”
	Then he blessed him there.
וַיִּקְרָא יַעֲקֹב שֵׁם הַמָּקוֹם	Jacob called the name of the place “Peniel”,
פְּנִיֵאל כִּי-רָאִיתִי אֱלֹהִים פָּנָיִם	for “I have seen a god face to face, and my
אֵל-פָּנָיִם וַתִּנְצַל נַפְשִׁי:	life was delivered.”

Here, there is a pile of consciously onomastic discourse. Not only does Jacob receive a new name as a result of the seemingly pointless tussle, but he inquires of the being’s name, though he is rebuffed. And Israel, that is, *Jacob* (the text still calls him “Jacob”, even after what has just happened!) names the place in honor of the weird encounter.

The etymology of “Israel” offered here by the scribe is rather straightforward, even if a bit counterintuitive.³² From the point of modern scientific philology, the name “יִשְׂרָאֵל” means something like “may El rule”, a name that conforms to normative Semitic naming practice.³³ This meaning would have

32 It follows one of the formal patterns (Form I) for etymologies identified in the classical form-critical study by FICHTNER, 1956, pp. 372-396.

33 Classically, see NOTH, 1928, pp. 207-209; more recently, RECHENMACHER, 1997, p. 98. Contra the ancient translations of the Hebrew text, that meaning, “to rule”, seems to be also how the Targums unanimously understand the Genesis etymology. See, e.g., VERMES, 1975, pp. 12f.

been the most obvious to the ancient scribe; but he rejects it and offers an interpretation that is far from literal. Still, comprehending how the scribe interpreted the name, that is *processed it*, is not difficult. He employed methods of *synonymous* interpretation, the kind we see in certain Mesopotamian word lists.³⁴ That is to say, the scribe chose to identify the components of the name from a spectrum of *possible equivalents*, none of which are intrinsically prioritized. First, he equates the theophoric element of the name אל, 'l, with אלהים, 'lhym, two related but different words for a deity. (Actually, he seems to equate אל, 'l, with עם אלהים, 'm 'lhym, but we will get back to that below). This is simple enough; still, he could have equated אל, 'l, with יהוה, yhw, the personal name of the god of Israel (as is done in other places in the Hebrew Bible, e.g., Genesis 16:11). In theory, he could have even identified that אל, 'l, with another deity, like בעל, b'l. What is patently unclear in this passage is precisely *what* the identity of the אלהים, 'lhym, is that the scribe is equating with אל, 'l. Traditionally, of course, it is equated with the god of Israel. But the writer does not say that explicitly, and the fact that the explanation of the theophoric element might include ועם אנשים, w'm 'nšym, (“and with men”) should give warning against such an easy interpretation. Notable too, is that in his exegesis, the scribe also adds a number of syntactical particles (prepositions, conjunctions, etc.), reading the sentence ישר אל, yšr 'l, as if it were a piece of lyric, stripped of the metrically laborious elements almost always found in prose, but so often frustratingly lacking in good Hebrew poetry.

In any case, the verbal component of the name, written ישר, yšr, is interpreted with a rather rare root שרה, śrh, “to strive”,³⁵ rather than the obvious and far more commonly attested root שרר, śrr, meaning “to rule”, which occurs a number of times both as a verb³⁶ and very frequently as a related noun.³⁷ Furthermore – and jarringly – the syntax of the components of

34 See, e.g., HRUŠA, 2010.

35 KOEHLER/BAUMGARTNER, 2001, p. 1354, (hereafter *HALOT*); שרה occurs only here and in Hos 12:4, which references this tradition.

36 Judg 9:22 with the self-same form as in Hos 12:5, offering a wordplay on the name that seems to use the root שור, śwr, or שרר, śrr, indicating “to rule”. See also Isa 32:1; Prov 8:16; Est 1:22; 1 Chr 15:22 (with a ס).

37 *HALOT* (as note 35), p. 1313. Perhaps in the name *Seraiah*, see SARNA, 1989, p. 405. Note, as well, that the scribe has interpreted the prefixing conjugation of the name not as a jussive (as Hebrew’s third person volitive is called), but rather as a preterite (Hebrew’s simple past) and has capitalized on the potential temporal

the name has been twisted by the scribe: the divine element, לֵא, 'l, should be the verb's subject, not its object.

In constructivist terms, the scribe, our knowledge subject, has applied a process to a knowledge object, the name of the patriarch. The process employed the mental tools and resources of the scribal episteme: the application of synonymous words in interpretation (לֵא, 'l, with אֱלֹהִים, 'l^{hym}), the use of rare or obscure words (שָׁרָה, *śrh*), and the use of a hermeneutic otherwise utilized to interpret the rather austere Semitic poetics. The result of this process is *knowledge* that is in turn applied to the problem of Israel's history and identity within a narrative. Perhaps the knowledge actually was the basis of that narrative; perhaps it merely fleshed it out intellectually, giving it a scribally-epistemic legitimacy. For the moment at least, I am leaving that last issue unresolved.

Genesis 35: 9-11

While my discussion of the process of the etymology of "Israel" in Genesis 32 above might have elicited some doubt, there is very little uncertainty among scholars that it is an etymology, a hermeneutical act explaining the origin of a name. When it comes to Genesis 35:9-11, however, the discussion begins by establishing it as an etymology. To be sure, as in Genesis 32, the deity is renaming the patriarch Jacob "Israel". Most commentators remark that the renaming is lacking an explanation, and Westermann goes so far as to consider the absence of an etiology here an "embarrassment".³⁸ Most often, however, scholars simply obviate the issue, by stating that no explanation is required, since one has already been given in chapter 32, and here in 35:9, God is described as appearing to Jacob "again".³⁹ Let us examine the passage (Gen 35:9-11):

overlap of that form with the perfective verbal form to read the verb not as a wish expressed, but as alluding to a past event.

38 WESTERMANN, 1995, p. 553.

39 WENHAM, 2000, p. 325; ARNOLD, 2009, p. 303. More elaborately, Sarna sees Gen 32 and 35 in dialog with each other: in Gen 35, Jacob's new name is being confirmed, not given, by the deity, since it was originally applied to Jacob not by Yahweh, but by the "celestial patron of Esau" east of the Jordan (SARNA, 1989, pp. 241f.).

<p>וַיֵּרָא אֱלֹהִים אֶל-יַעֲקֹב עוֹד בְּבֹאוֹ מִפָּדָן אֲרָם וַיְבָרֶךְ אֹתוֹ: וַיֹּאמֶר-לוֹ אֱלֹהִים שְׁמֹךָ יַעֲקֹב לֹא-יִקְרָא שְׁמֹךָ עוֹד יַעֲקֹב כִּי אִם-יִשְׂרָאֵל תְּהִיָּה שְׁמֹךָ וַיִּקְרָא אֶת-שְׁמוֹ יִשְׂרָאֵל: וַיֹּאמֶר לֹ' אֱלֹהִים אֲנִי אֵל שְׂדֵי פְּרִה וּרְבִיָּה גֹי וַיִּקְהַל גּוֹיִם יִהְיֶה מִמֶּךָ וּמִלְּכֵיֶם מִחֲלָצֶיךָ יֵצְאוּ:</p>	<p>God appeared to Jacob again; when he came from Padan-Aram, he blessed him. God said to him, “Your name is ‘Jacob’. Your name will not be called ‘Jacob’ any more, rather, your name will be ‘Israel’.” And he called his name ‘Israel’. And God said to him, “I am El-Shaddai: be fruitful and multiply; a nation and an assembly of nations will come from you, while kings will proceed from your loins.”</p>
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To summarize: the deity changes Jacob’s name, and then says, seemingly out of the blue, “I am El-Shaddai” (which is commonly rendered in translations as “God Almighty”).

In spite of modern commentators’ modest bewilderment, from a form critical perspective, this passage is very much a full etymology and conforms with a number of other etymologies, in which the name is pronounced (קרא את־השם) *qr’ t-hšm*, “and he called the name”) and is then explained with a simple (ויאמר/ותאמר) *wy’mr/wt’mr* “and he/she said” statement or equivalent. For example, 1 Samuel 7:12 describes the prophet’s naming of a monument called “Ebenezer”:

<p>וַיִּקַּח שְׂמוֹאֵל אֶבֶן אֶחָד וַיִּשֶׂם בֵּין-הַמִּצְפָּה וּבֵין הַשָּׁן וַיִּקְרָא אֶת-שְׁמָהּ אֶבֶן הַעֲזָר וַיֹּאמֶר עַד-הַנְּהַיָּה עֲזָרְנוּ יְהוָה:</p>	<p>And Samuel took a single stone and he placed it between Mizpeh and Shen. And he called its name “Eben-Ezer” [literally, “Stone of Help”], and he said, “Up to here Yahweh has helped us.”⁴⁰</p>
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This form of etymology also occurs in a more telegraphic arrangement in Genesis 21:3, 6. More commonly, the form is inverted, with the *wy’mr/wt’mr*, statement coming first (Genesis 30:7-8, 9-11, 12-13, 16-18, 19-

40 Note, this verse is dismissed as an awkward insertion by Long, alleviating him from having to fit it in to the rigid formalism he inherited from Fichtner (LONG, 1968, p. 36; cf. FICHTNER, 1956).

20; 32:2-3; 38:28; Exodus 15:15, 31; Joshua 5:9; 1 Kings 9:12-13).⁴¹ In short, the form dictates that this is an etymology. Minimally, an ontological relationship between circumstance and name is indicated in such passages.

Let me be explicit: I maintain that the name יִשְׂרָאֵל, *yśr 'l*, is explained by the scribe who composed Genesis 35:9-11 (here clearly the Priestly writer) as being derived from the divine moniker אֱלֹהֵי שְׂדֵי, *'l-šdy*. How does the scribe get there? In constructivist terms, how does he, the knowledge subject, apply his expert process to the epistemic object to create knowledge that is further employed in the narrative?

First, the obvious: the אֵל, *'l*, of יִשְׂרָאֵל, *yśr 'l*, equals the אֵל, *'l*, in אֱלֹהֵי שְׂדֵי, *'l-šdy*.

Somehow, then, יִשְׂר, *yśr*, must equal שְׂדֵי, *šdy*. Making the leap between the two elements is not difficult, *if* we stop privileging our scientific philology and our obsession with verbalism, and actually *look* at the material page. It is not difficult to see, even in our modern Hebrew Bibles, that יִשְׂר, *yśr*, and שְׂדֵי, *šdy*, appear very similar. *y* is *y*; *w*/*š* and *w*/*s* are indistinguishable without the diacritical dot; and *r*/*r* and *d*/*d* are nearly identical in the (Aramaic) script that we utilize. They are quite similar, as well, in the ancient Hebrew script of the Iron II period. Furthermore, scribes actually wrote, that is to say, crafted, the two letters very similarly throughout their ancient history, whether in Hebrew or Aramaic scripts. In the former case, the letters have a large triangular head with either a short descending tail (for a *d*/*d*) or a long descending tail (for a *r*/*r*).⁴² In the Aramaic scripts utilized by Jewish scribes of the Second Temple Period, the *d*/*d* and *r*/*r* are often identically constructed and are frequently indistinguishable in appearance.⁴³ The scribe who penned Genesis 35:9-11 employed his expertise in the technology of writing and the manufacture of documents to equate *d*/*d* and *r*/*r* for scholarly purposes.⁴⁴

41 Cf. Gen 5:29; Judg 6:32; 1 Sam 4:21 (with לְאִמֶּר, *l'mr*); 1 Chr 4:9 (with לְאִמֶּר כִּי, *l'mr ky*); Exod 2:10 (with וְתִאמַר כִּי, *wt'mr ky*); Exod 17:15-16 and Gen 26:22 (with וַיִּאמֶר כִּי, *wy'mr ky*); see also Gen 4:1. Scanning the etymologies offered for the offspring of Jacob (Gen 29-30), shows considerable variation in form. In any case, explanatory conjunctions, such as כִּן, *kn*, עַל, *'l*, or עַל-כֵּן, *'l kn*, are clearly unnecessary.

42 Cf. also the interplay between the two letters on Arad Ostrakon #99 (AHARONI, 1981, p. 112).

43 E.g., YARDENI, 2002, pp. 165 (4QSam^b), 167 (4QJer^a), 169 (4QEx^f), 171 (1QIsa^a).

44 The letter order is mixed, similar to the etymology offered for the name יַעֲבֹץ, *y'bs* in 1 Chr 4:9, using the root עֲבָץ, *'bs*. There the name is explained by means of the

So, when we verbalize Genesis 35:9-11 we actually obscure the proposed origin of the name. But the scribe who composed this understood the word as a scribe: the word can have an oral manifestation, no doubt, but for the scribe the written manifestation of a word could also offer important data. Reading a text is not only about verbalizing it. If similar (but not identical) sounds are enough to justify for the scribe the etymological relationship between a word and a name, then, certainly, similar appearances should be as well. This is particularly the case if the similar appearances are the result of an identical or similar process of manufacture. The knowledge derived from the name *יִשְׂרָאֵל*, *yśr'l*, was constructed by the Judean scribe by employing his scribal tools and scribal processes.

Of course, new knowledge was universally suspect in the ancient Near East, and the scribe did not think he was actually constructing knowledge. Rather, he believed he was revealing the knowledge of another scribe, one expertly skilled with the technical mastery and confidence to derive the patriarch's new name from that of the deity. According to the author of Genesis 35:9-11, that scribe was the god of Israel himself. El-Shaddai renamed Jacob, thereby labeling him with a holy name, a name that was wholly appropriate for a holy people.

Conclusion

The Hebrew Bible is a collection of documents crafted by scribes. Recognizing that these experts had a specific tool set and set of processes is fundamental to reconstructing how they manufactured knowledge of their past as well as the world around them. In short, Judean scribes, like their Babylonian counterparts, had an epistemic culture that privileged documents, their manufacture, and the visual component of the technology of writing in the construction of socially useful and meaningful knowledge. A primary object of their process was names, their hierarchies and arrangements, and forms, both linguistic and graphic. By recognizing these realities we can fully appreciate the etymological speculation of biblical authors.

noun *עֶשֶׂב*, *'ōšeb*, whose root is *עֶשֶׂב*, *'šb*. The mixed letter order did not concern the author of Chronicles.

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BODIES OF TEXTS, BODIES OF TRADITION – MEDICAL EXPERTISE AND KNOWLEDGE OF THE BODY AMONG RABBINIC JEWS IN LATE ANTIQUITY

LENNART LEHMHAUS (BERLIN)

The study of ancient Jewish knowledge culture(s), while still in its incipient stage, has developed into an emerging subfield, which seems to offer multiple opportunities of entering into a dialogue with different neighboring disciplines, as it has happened during the scholarly gathering from which this paper emerges.¹ In the wake of the cultural turn in the humanities and following the

1 I would like to express my gratitude to the organizers for inviting me to a truly inspiring conference that brought me in September 2016 to Mainz. I also would like to thank the editors of this volume for their hard work and their many efforts required for publishing this volume. Furthermore, I am indebted to Markham J. Geller and Philip van der Eijk for their constant support, as well as to my colleagues with whom I work comparatively on late ancient medical episteme (project A03) within the DFG-funded Collaborative Research Center SFB 980 “Episteme in Motion” at the Freie Universität Berlin. Parts of this paper were (re)written in 2017, the year I spent as a Harry Starr Fellow in Judaica at the Center for Jewish Studies at Harvard University and as a Rothfeld Fellow at the Herbert D. Katz Center for Advanced Judaic Studies at the University of Pennsylvania in Philadelphia, within the program on “Nature between Science and Religion: Jewish Culture and the Natural World”. During both fellowships, this paper benefitted equally from the rich holdings of the libraries at both universities, and from inspiring conversations with colleagues from different fields. Several parts of the current chapter were presented and discussed in the Starr-seminar at Harvard, in the Ruth Meltzer-seminar at the Katz Center and at the Katz-symposium “Jews and

impact of Thomas Kuhn's and others' pioneering work, the history of science and knowledge has witnessed some substantial shifts that harbor opportunities to which scholars of ancient Judaism might connect. In general, scholars in the history of science have bid farewell to earlier, teleological narratives of how science (meaning, obviously, modern Western science) emerged, focusing only on progress and inventors often with a strong, evaluative tone. Lorraine Daston has aptly summarized those new approaches after Kuhn as follows:

Historians of science [...] would answer that such scientific practices are both socially constructed and real. That is, they depend on the cultural resources at hand in a given context [...] and they capture some aspects of the world; they work. But they are neither inevitable nor metaphysically true. Rather, they are contingent to a certain time and place yet valid for certain purposes.²

This new theoretical and methodological openness – also reflected in the appropriation of the history of knowledge by the history of science – has provided new avenues for the study of ancient sciences, including other knowledge cultures, and a broader pool of (textual and material) sources.

First, previous scholarship usually focused on an idealized version of Graeco-Roman science (taken as the cradle of modern Western science) and, if at all, only looked for parallels and influences, without paying attention to the plurality of cultural transfers and endemic developments in antiquity. However, over the past four decades, other, non-Western scientific cultures (such as in the ancient Near East, Egypt, China, etc.) have gained more attention and have been the subject of studies in their own right. These cultures exhibit at times astonishing particularities in their scientific concepts and approaches. Scholars have pointed out that such ancient, non-Western traditions feature various coherent systems of thought in several fields of knowledge (mathematics, medicine, astronomy/astrology), which, though differing tremendously from Graeco-Roman sciences, cannot be seen as inferior to those.³

the Natural World: Bodies, Animals, Evolution". I am grateful to the organizers and participant of these events.

2 DASTON, 2009, p. 813.

3 G.E.R. Lloyd's pioneering work (e.g., LLOYD, 1996; 2007) in comparative science has been a turning point in this regard. Cf. also ROCHBERG, 2010 on his importance for the field as such. ROCHBERG, 2014b; 2016 demonstrates how the ancient Mesopotamian sciences as a system of knowledge that did not share the same concept of 'science' or 'nature' as cherished in Greek and Roman cultures, but de-

Second, recent studies have recognized that knowledge and practices of knowledge-making were not confined to a group of experts, ancient “scientists” so to speak, who produced a small (or, in the case of medicine, even a substantial) body of technical literatures in their respective fields.⁴ Moreover, scholars have shown an increasing awareness of the fact that ancient sciences were “profoundly responsive to philosophical and religious ideas and to social and cultural conditions”.⁵ Consequently, the field of ancient science and knowledge is presently explored from a variety of perspectives and sources, including material artefacts, along with various texts or genres (such as law and philosophy, historiography, poetry, autobiography, etc.) that once were not deemed sufficiently “scientific” due to their primary association with other subjects or fields of expertise (law, religion, theology).⁶

These developments in the “heartland” of ancient science studies may serve as a liberating factor that helps to integrate also the study of Talmudic modes of accumulating, appropriating, and producing knowledge within a larger framework. Furthermore, it enables the following paper to focus on the Jewish-Talmudic discourse associated with medicine, the body and its representations,

veloped other frameworks for their intellectual inquiries, are worthy of being studied on their own terms. For the importance of emic conceptions and the difficulties of translating ancient scientific texts, see IMHAUSEN/POMMERENING, 2010 and 2016.

- 4 On the broader “web of knowledge” in (Late) Antiquity, see LEHOUX, 2012; 2014; CHIN/VIDAS, 2015. FORMISANO, 2013, observes a surge of the practical sciences (often associated with “crafts”) such as mechanics, architecture, agriculture, and landscaping, in Late Antiquity that challenged the superiority of the classical theoretical disciplines (*artes liberales*).
- 5 SIRAI, 1995, p. 3. For the entanglement of medicine, science, philosophy, and religion in Graeco-Roman traditions, see VAN DER EIJK, 2005; 2012.
- 6 For a comprehensive introduction on the range of scientific genres, see TAUB, 2017. Sources that were previously linked to religion and ritual, such as divination texts, incantations, early Christian sermons, exegesis, and commentaries, as well as monastic or even ascetic traditions, are now studied as copious sources for (scientific) knowledge-making. Thus, VAN DER EIJK, 2010, has emphasized the interplay between technical texts, for example, medical compilations (*collectiones/synagogai*), with other literary genres and discursive forms, including exegesis, commentaries, isagogic introductions, summaries, doxographical collections, and anthologies. For early Christian and rabbinic knowledge of medicine, see the contributions in the special issue by UPSON-SAIA/MARX-WOLF, 2015 and the introduction in MARX-WOLF, 2015. Moreover, scholars also inquire into archeological artefacts and other material aspects of culture that may shed light on practices of epistemologies in the making. Cf. DRAYCOTT/GRAHAM, 2017.

which are not to be found in a distinct genre of medical expert literature.⁷ Quite to the contrary, pertaining discussions of medicine and information about therapies and recipes are encapsulated in the quasicanonical or mainstream Talmudic literature that is usually seen as preoccupied with religious law (Halakha) and questions of ritual, ethics, and similar topics. Those traditions were transmitted via a complex multi-layered combination of oral recitation and learning, on the one hand, and written texts, on the other, before being compiled and edited into their later “final” form. However, this written versions are more or less known to us today only through much later (medieval) manuscripts.⁸ This body of traditions comprises the Mishnah (m) and Tosefta (t) from third-century Palestine, and the two Talmudic traditions that elaborate upon those earlier texts – the Palestinian Talmud or *Yerushalmi* (pT/y) from the sixth century; and the Babylonian Talmud or *Bavli* (bT/b) compiled between the sixth and the eighth centuries in the East.⁹ Unlike many Graeco-Roman scientific works, but similar to ancient Egyptian or Mesopotamian medical texts, rabbinic literature in general has an anonymous and collective authorship. Within a concert of different opinions, genres and topics, those texts contain a wide range of information about the world, biased, and filtered through their authors’ lenses.¹⁰

Another challenge to any inquiry into scientific knowledge in Talmudic sources is its specific, complex, and at times perplexing embeddedness in these

7 The probably early medieval work, *Sefer ha-refu'ot* (‘The Book of Remedies’), produced between the seventh to the ninth centuries and attributed to a certain Asaph, the physician (also called *Sefer Asaph ha-rofe* / ‘The book of Asaph, the Physician’) is the first Hebrew text to deal exclusively with medicine. On this work and its multiple sources in Greek, Persian, Indian, and ancient Mesopotamian medical traditions, see most currently YOELI-TLALIM, 2018.

8 Cf. LAPIN, 2012, pp. 38-60.

9 For a general survey of rabbinic literature, see STEMBERGER, 2011. On the canonicity of rabbinic traditions and their complex relationship with rabbinic authoritative texts and their biblical “canon”, cf. KRAEMER, 1991; STERN, 2003. For the textual history of the Talmudic traditions, especially of the Babylonian Talmud and its cultural contexts, see HALIVNI, 2013; FRIEDMANN, 2010; VIDAS, 2014.

10 See JAFFEE, 2007 for a thorough discussion of rabbinic collective authorship. On the more diverse scene of ancient Jewry and the co-existence of rabbinic circles with other groups of Jews, see HEZSER, 1997; KALMIN, 2002; MILLER, 2006; SCHWARTZ, 2001; GAFNI, 2011; LAPIN, 2012.

broader contexts of discourses on matters of religious law, ethics, and ritual.¹¹ However, instead of taking the scattered or clustered occurrence of medical information as a sign of inferiority or lack of scientificity, one should aim at studying their discursive purposes and the strategies of rabbinic knowledge-making within those broader Talmudic discussions.

Such an analysis has to recognize the complex interplay between form and content in the representations of human bodies and medicine. How did the use of certain rhetoric strategies, metaphorical language, or the choice of genres in Talmudic traditions – as in other ancient scientific texts – affect the ideas and concepts conveyed? In what ways do specific hermeneutics and conceptualizations not only serve as a “container”, but also as a method for knowledge acquisition? Moreover, a study of Talmudic representations of the body and healing may shed light on how, in this discourse, authorship, authorization, and authority of knowledge intertwined.

Of special interest are strategies of adaptation and appropriation of what has often been called in earlier research “foreign knowledge”. Such an approach simultaneously addresses the participation of Jewish traditions in wider discourses of ancient (scientific) knowledge, and varying attitudes held by practitioners of the Jewish traditions towards different types of knowledge (e.g. empirical, revealed, embodied etc.). Moreover, the detailed study of such rabbinic sources will help to flesh out distinct ways of knowing and sets of epistemic criteria for understanding the body and the natural world. This epistemology was shaped by the rabbis’ socio-historical context and religious concepts and represents a product of continuous exchanges as well as a self-contained intellectual construct.¹²

11 On the embeddedness of medicine in Talmudic texts, cf. FONROBERT, 2000; GELLER, 2000; 2004; LEHMHAUS, 2015; LEHMHAUS/GELLER et al., 2016; LEHMHAUS, 2017.

12 Cf. REED, 2014, p. 198, note 16.

“Talmudic Medicine” and Ancient Knowledge of the Body

Throughout history, scientific knowledge, especially in medicine, tended to be conceptualized and conveyed through analogical thinking. This includes metaphors proper, as well as metonymy, and other analogies – all of which deploy pictorial language and verbal imagery. Parts of the body and physiological processes are, thus, likened to phenomena known from nature (landscapes, rivers, or the celestial sphere), from the field of mechanics and production (tools, machines, or factories), or from the realms of human socio-political or everyday life (the body as an administration, or house).¹³ We can see this tendency in various branches of Graeco-Roman science: a computation technique called “the sieve” (on prime numbers), depictions of digestion as a form of cooking, or a comparison of the functions of the brain with pipes and channels. Such models served not only the representation of scientific insights, but also often functioned as epistemic tools facilitating cognitive processes, in the first place. Furthermore, they were also exploited to “brand” one’s own concepts and, thus, to claim a special expertise, which might help to gain influence in the discursive and practical (i.e. economic) competition with other experts.¹⁴

In the following preliminary inquiry, I will explore sample texts from Talmudic literature to follow different figurations of thought, or better still, knowledge making cherished among rabbinic Jews in Late Antiquity. I will look at the ways in which those texts construct conceptual metaphors or “mental models” of the human body that inform and shape knowledge related to anatomy and physiology. The cultural specifics and limitations involved in the construction of such metaphors, and how they appear in text are of crucial interest to the analysis here. How do knowledge of the body, rabbinic bodies of

13 For a discussion of this phenomenon and a related bibliography, see LEHMHAUS, 2018, especially nos. 10-14. An intriguing attempt to understand ancient Greek and Chinese medical theories, especially anatomy and physiology, as products of the socio-political formations in their societies of origin is undertaken by UNSCHULD, 2009. He relates the focus on the balance of humours (humoral pathology) in Graeco-Roman medicine to the balance of powers in the Greek polis (democracy). The Chinese idea of Qi (the flow of energy) resembles socio-political systems influenced by Daoistic and Confucian thought.

14 See ASPER, 2013.

knowledge, and the bodies, or corpora of tradition intertwine within this discourse?

The increasing awareness and adoption of interests and methods rooted in the “cultural turn” in the humanities has gained a strong foothold in the study of ancient Jewish traditions, especially of rabbinic sources. This has brought about also a surge of “body studies”, employing new approaches and theories in the field of historical and cultural studies (such as feminist and gender theory, historical anthropology, cultural poetics, and everyday history).¹⁵ As in other fields of ancient studies, most of these works pay much attention to the cultural contingency and socio-political construction of the body and the individual (or the self) within the body of society. The shared assumption of most of these scholarly undertakings can be illustrated by the following quote:

[...] the body cannot be thought separately from the social formation, symbolic topography and the constitution of the subject. The body is neither a purely natural given, nor is it merely a textual metaphor, it is a privileged operator for the transcodings of these other areas. Thinking the body is thinking social topography and vice versa.¹⁶

Stallybrass’s and White’s description of the ways in which bodies function as an interface of the material, or *physis*, and socio-cultural discourses, can also be fruitfully adapted for the discussion of ancient cultures. After the path-breaking work by Foucault, Bourdieu, and others, scholars have been aware in their analysis that the social construction of bodies provides, on the one hand, multiple possibilities for participation and self-expression. On the other hand, it entails also many, often subtle ways of exclusion and limitation, by which subjects and their bodies are defined and controlled – especially in the case of paradigmatic “others”, like the foreigner, the female or the dis/abled. Susan Bordo describes the everyday occurrence of these mechanisms in the following way:

The body, what we eat, how we dress, the daily rituals through which we attend to the body – is a medium of culture. The body [...] is a powerful symbolic form, a surface on

15 To only mention a few, cf. GILMAN, 1991; BIALE, 1997; 2002; 2008; EILBERG-SCHWARTZ, 1992; 1994; BOYARIN, 1991; 1993; FONROBERT 2000; SCHOFER, 2005; 2010, NEIS, 2013. A comprehensive discussion of the state of the field is provided by SEIDMAN, 1994; FONROBERT, 2005; and ROSEN-ZVI, 2013.

16 STALLYBRASS/WHITE, 1986, p. 192.

which the central rules, hierarchies, and even metaphysical commitments of a culture are inscribed. [...] It is also, as anthropologist Pierre Bourdieu and philosopher Michel Foucault (among others) have argued, a practical, direct locus of social control. Banally, through table manners and toilet habits, through seemingly trivial routines, rules, and practices, culture is “made body”.¹⁷

Various studies of rabbinic literature have taken on those theoretical developments and applied them to the reading of pre-modern Jewish traditions, especially to biblical and rabbinic texts. With a small number of exceptions, these inquiries, however, have tended to marginalize medical matters, if indeed they are treated at all. In the present study, I will inquire into the socio-cultural and corporeal dimensions of rabbinic discourses on human bodies, illness, and healing. The first part of the chapter discusses a unique tradition in early rabbinic literature that reflects on anatomy and the number of limbs in the human body. The Talmudic elaborations of this concept entail a potentially conflict-laden encounter between two epistemic sets of knowledge production (empiricism and exegesis), as well as with the gendered approaches of the rabbis to human corporeality. In a second part, I will address another strategy used in rabbinic texts to appropriate knowledge of the body. In particular, I will look into the attempts by Talmudic authors to conceptualize female anatomy and physiology through models and taxonomies that increase their authority in this field and, simultaneously, diminish the role of central agents of knowledge (women or other experts). Finally, the third part will deal with Talmudic passages about more practical areas of ancient medicine, namely therapies and recipes. I will highlight some of the discursive strategies through which the rabbinic authors appropriated medical information and underscored their claims to pharmaceutical or healing expertise based on personal knowledge and experience.

17 BORDO, 2003, p. 165.

I: Bodies of Evidence and Exegesis of the Body

The Rabbinic Body Count(s)

The first example from the Talmud relates to the puzzling entanglement of different epistemological approaches – concerned with revealed and empirical knowledge of the body. One of the most detailed anatomical descriptions can be found in *Mishnah Oholot* 1,8. The tractate deals with ritual purity or impurity conveyed by dead matter or a corpse:¹⁸

There are **248 limbs** (*evarim/איבריים*)¹⁹ in the body. Thirty in the foot – six in each toe, ten in the ankle, two in the shin, five in the knee, one in the thigh, three in the hip.

18 I will briefly explain my conventions of citing material from biblical and rabbinic traditions. Throughout all quotations from rabbinic texts, I will work with emphasis to highlight certain keywords and with a twofold system of brackets. Interjections that supplement the at times lapidary and condensed rabbinic discussion are put in square brackets. Explanations, transliterations or literal translations of certain terms as well as references to biblical verses or other rabbinic material cited within the source texts appear in parentheses. Transliterations of Hebrew or Aramaic and biblical texts quoted (together with their reference) are marked by italics.

All biblical quotations in this paper are based on the *Biblia Hebraica Stuttgartensia* (5th amended edition, Stuttgart, 1997) and the translations follows the *The Holy Bible, English Standard Version* (Copyright © 2001 by Crossway, a publishing ministry of Good News Publishers) and *The Holy Bible, New International Version* (Copyright © 1973, 1978, 1984, 2011 by Biblica, Inc.) but are often amended by myself in order to elucidate the specific, exegetical use in the Talmudic context. For my translations of the rabbinic texts (*Mishnah*, *Tosefta*, *Babylonian Talmud*) the manuscript versions and printed editions in the Sol and Evelyn Henkind Talmud Text Databank of the Saul Lieberman Institute of Talmudic Research (<http://www.lieberman-institute.com>) were consulted. The translations of the Palestinian Talmud are based on the edition of the MS Or. 4720 (Scal.3) in the Leiden University Library by the Academy of the Hebrew Language, Jerusalem 2005; also accessible online at: maagarim.hebrew-academy.org.il. Standard editions for all those texts can be also found (in parts with English translations and commentaries) online at www.sefaria.org and the Bar Ilan Online Responsa Project (www.responsa.co.il).

19 My own emphasis. The Hebrew term *evar* (אבר), pl. *evarim* (איבריים), has often been translated inaccurately as “bones”, even though the Hebrew term for bones would normally be *atzamot* (עצמות). The *Tosefta* in *tOholot* 1.7 provides a “definition”: “Everything that features tendons (*gidim/גידים*) and bones (*atzamot*)

[There are] eleven ribs, thirty [limbs] in the palm/hand – six in each finger; two in the forearm; two in the elbow; one in the upper arm; and four in the shoulder. One hundred and one of this ([side of the body], and one hundred and one of that [side; making a total of 202]. And [in the center of the body we find] eighteen vertebrae in the spine; nine [limbs] in the head; eight in the neck; six in the openings of the heart; and five in its reproductive organs (lit. ‘cavities/holes’). Each of these conveys [ritual] impurity through touching, carrying, or sharing quarters. When is this true? When the limbs still have an appropriate amount of flesh on them. If, however, they do not have an appropriate amount of flesh on them, they will render impure through touching and through carrying, but not through sharing quarters.²⁰

This passage lists 248 limbs according to their place in the human body. It gives a rather complicated order, starting from the lower limbs (feet/legs), before moving to the sides and upper limbs (hips, ribs, arms, and hands). It continues with the center of the body (including spine, head and neck) and concludes, tellingly, with the heart and the reproductive organs. This structure clearly differs from the common Mesopotamian and Graeco-Roman medical scheme “from head to toe/foot”.²¹ Its particular division and sequence might reflect some rabbinic assumptions about the more important parts of the body.

This first and singular systematic list of the human body in rabbinic tradition has posed quite a challenge to Jewish medieval commentators and modern scholars alike. Many have attempted to identify the limbs (understood as “bones”) correctly, based on rather modern anatomical knowledge. In both the commentary traditions and earlier scholarship, one might also discern a tendency to harmonize the obvious differences and, to modern scientific standards, shortcomings of the rabbinic model.

However, it is not the anatomical accuracy of the list that is most important, but the discursive purpose of this unique example of rabbinic anatomy within the broader discussion of purity issues in Jewish religious law (*Halakha*). The rabbis’ main goal was to provide a concrete number of limbs, based on some sort of empirical knowledge or anatomical theory. With this “body count”, one would be able to determine the “greater part of the corpse”,

/עצמות) is [regarded as] an *avar*; and everything that does not feature tendons and bones is not an *avar*.” Thus, the term is better translated as “limbs”.

20 Mishnah Ohalot 1:8.

21 On the scheme from head to foot, see LAES et al., 2013; and GELLER, 2010, pp. 52, 89, 118. On this Mishnah and the anatomical knowledge contained within, see PREUSS, 1911, pp. 66-70; 1978, pp. 60-67; KIPERWASSER, 2012.

which defiles or causes impurity in different ways (touching/carrying/presence under the same roof).²²

The number of 248 bones remains a puzzling element of this Mishnah since this total has no equivalent within other ancient medical cultures in the Mediterranean and beyond. However, this specific number re-surfaces in post-Talmudic traditions like the *Sefer Asaph ha-rofe* (“The book of Asaph, the physician”), and among Persian or Arabic medical writers.²³ A model of perfect correspondence between the divine sphere or God’s creation as such (the macro-cosmos) and the world of human experience, especially the body (as the micro-cosmos) is outlined in some Talmudic and para-Talmudic traditions that also feature the count of 248 limbs. According to an annotated Palestinian translation, or better paraphrase, of the Bible (*Targum Pseudo-Jonathan*), humans were created in the image of God with 248 limbs and 365 tendons.²⁴ The Babylonian Talmud adds to this a third layer elaborating upon the question why Moses received 613 commandments from God. According to this Talmudic teaching, 365 negative commandments match with the cosmic order of the solar year, while the 248 positive commandments correspond to the microcosmic human body.²⁵ Thus, the Law of Torah incorporates and

22 On rabbinic purity laws and corpse impurity, see BALBERG, 2014, especially pp. 96-121.

23 Ronit Yoeli-Tlalim, in her paper “Counting body parts: views from the Hebrew Book of Asaf” (presented at the conference “Defining Jewish Medicine”, at University College London, on July 28, 2014) has pointed out, that *Sefer Asaph*, indeed, seems to be the first tradition (probably to be dated to the seventh or eighth centuries CE) in which the 248 limbs (*evarim*) figure prominently, while this number is surprisingly lacking in Graeco-Roman and ancient Near Eastern medical traditions. Some of those findings are now published in YOELI-TLALIM, 2018.

24 Targum Pseudo-Jonathan to Genesis 1:27 reads: “And God created Adam in his own likeness. In the image of God he created him, with 248 limbs, and with 365 (665) tendons/nerves, and he formed a skin over him, and filled it with flesh and blood, male and female in their appearances/bodies he created them.” This amended translation is based on *The Targum of Jonathan ben Uzziel*, translated by J. W. Etheridge, London 1862; https://www.sefaria.org/Targum_Jonathan_on_Genesis.1?vhe=Targum_Jonathan_on_Genesis&lang=bi, last retrieved 01/03/2018.

25 Babylonian Talmud, Makkot 23b: “R. Simlai when preaching said: ‘613 precepts were communicated to Moses, 365 negative precepts, corresponding to the number of solar days [of the solar-year], and 248 positive precepts, corresponding to the number of the limbs of the human [body].’”

In later, esoteric or mystic traditions of Kabbalah, one finds various permutations of this very idea. Especially in the Zohar, this concept seems to be prevalent, merging Targumic and Talmudic teachings, while adding another layer, namely an

maintains all. And vice versa – the human body behaving in accordance with Torah becomes the manifestation of divine will. One can conclude that the anatomy in the Mishnah comprises the realm of secular, bodily episteme in addition to “hidden” cosmic or divine knowledge.

The Mishnah’s unique anatomical text has an interesting afterlife in the Babylonian Talmud’s tractate *Bekhorot* (‘Firstlings’). In a discussion focusing on definitions of ritual fitness for serving as priest in the Temple, the “regular” number of limbs becomes of crucial importance. For, according to religious law, the ideal standards of priestly bodily perfection do not allow anyone who has too few or too many limbs to serve in this function.²⁶ However, the Babylonian Talmud in *Bekhorot* (‘Firstlings’) 45a, also develops the discussion of the Mishnah in surprising ways:

R. Judah related in the name of Samuel a case story about the disciples of R. Yishmael who once dissected/washed with boiling water [the remaining corpse of] a prostitute who had been condemned to be burnt by the king. They examined and found **252** joints and limbs. {They came and inquired of R. Yishmael: “How many joints has the human body?” He replied to them: “**248**.” Thereupon they said to him: “But we have examined and found **252**?”}²⁷ He replied to them: “Perhaps you made the examination on a woman, in whose case Scripture adds **two hinges** [in her sexual organ] and **two doors**

analogy to the number of angels of different classes. Other traditions, like *Sefer Yetzira* (“Book of Formation”) deploy strategies of *gematria* (based on the numerical value of Hebrew letters) to establish connections between biblical verses or figures, e.g., Abraham (numerical value of his Hebrew name = 248), and the human body or God’s creation. On these previously mentioned works, see WOLFSON, 2000. In early Jewish Merkavah-mysticism, one finds elaborated speculations about the dimensions and the limbs of the body of God, as well as their incomprehensible names (the so-called *Shi’ur Qoma*), still untouched by any philosophical discomfort with anthropomorphism as such. Josef Dan (DAN, 1998, pp. 205-216) has argued that this tradition presents a complex strategy within ancient Jewish culture to reject simple anthropomorphism by creating a sophisticated, meticulous, and esoteric theory about the divine body. For shared concepts about the corporeality of god(s) in ancient times, see MARKSCHIES, 2016.

26 On the bodily perfection of the priest and aspects of disability theory, see BELSER/LEHMHAUS, 2016, pp. 438-441.

27 This short question and answer passage with R. Yishmael, in which 248 as the ‘correct’ number of limbs is compared with the students’ findings, occurs only in MS Munich 95, and MS Vatican 120, MS Oxford Bodl. Heb. c. 17 (2661), while it is lacking from MS Florence II-I-7, MS Vatican 119, Venice print (1522), Vilna print.

of the womb". It was taught: R. Eleazar said: "As a house has hinges (*širim*/ציריִים), so a woman's body has hinges [in her sexual organ], as it is written in the Scriptures: *She bowed herself and gave birth, for her "hinges" (šireiha/צירייה; lit. "birth pangs") turned suddenly upon/in her (1. Samuel 4:19)*²⁸. R. Joshua says: As a house has doors, so a woman's womb has doors (*daltot*/דלתות), as it is said in Scripture: *Because it shut not up the doors of my [mother's] womb (dalte bitni/דלתי בטני) (Ijob 3:10)*. R. Akiba says: As a house has a key (*mafteah*/מפתח), so a woman has a key, [for the womb], as it is written: *And [God] opened (wa-yiftaḥ/ויפתח) her womb (Genesis 30:22)*."

In light of the opinion of R. Akiba [whose exegesis adds a fifth limb, i.e. the "key"], is there not a difficulty in connection with what R. Yishmael's disciples discovered? [i.e., 253 vs. 252 limbs] — [No!] It may be that since it [the "key"] is small, it was dissolved in the course of boiling/cleaning [the remains of the corpse]. (Bab. Talmud, Bekhorot 45a)

This anecdote relates to students in Palestine examining the dead body of a woman, labelled as a prostitute, in order to determine the number of limbs. Due to confinements in relation to space and the focus of our discussion, many interesting aspects must be left aside here. Earlier scholars, in particular, focused on the historical reliability of the students' examination, often (mis-)translated as "autopsy". Their main goal was to clarify the puzzling Jewish engagement in what they saw as "dissections", a technique rather uncommon and fraught with taboos in Antiquity and the Middle Ages.²⁹ More recently, aspects of gender bias and some interesting intra-Jewish and transcultural parallels have come into focus.³⁰ However, of crucial importance for our discussion are the hermeneutics and epistemological issues raised in this narrative.

28 The usual translation of the second part of the biblical verse reads, "because her [birth] pangs came suddenly upon her". My translation ("her hinges had turned suddenly on/in her") reflects the exegetical take-on in the text.

29 For earlier scholarship, see PREUSS, 1911, pp. 46-48; 1978, pp. 43f.; KATZENNELSON, 1928, pp. 235-250; RABBINOWICZ, 1883, p. 250, COHEN, ca. 1900?, pp. 10-11. Experimental medical dissections were not performed on human bodies in ancient Mesopotamia (cf. GELLER, 2010, pp. 3-4) or in Graeco-Roman medicine, except for a very brief period in Alexandria. Most medical writers relied on empirical observations made through the dissection and vivisection of animals (apes, pigs etc.). Cf. VON STADEN, 1989, pp. 139-153; and NUTTON, 2013, pp. 130-141, for thorough surveys.

30 Cf. FONROBERT, 2000, pp. 56-59; 2007, pp. 279f.; KIPERWASSER, 2012.

Although the story itself is almost certainly fictitious, it might give us a glimpse into how late ancient Jewish traditions on anatomical knowledge reflect some of the exploratory attitudes towards the human body that they shared with Graeco-Roman medicinal culture. Obviously, the narrative portrays the students' curiosity and their readiness to apply empirical techniques like the observation or examination of a corpse as critical tools. However, in this case, the "body of evidence" does not improve their anatomical knowledge at all. Quite the contrary, the whole examination rather confuses them, since their findings clearly contradict the ideal number of limbs in the human body as listed in an earlier "canonized" tradition (Mishnah *Ohalot* 1:8).³¹

By contrast, Rabbi Yishmael, their teacher, deploys his erudition in biblical traditions and rabbinic exegesis, which allows him to solve the puzzle. Based on earlier rabbinic teachings, he demonstrates that the additional limbs only to be found in women are already encapsulated in the biblical text, if one applies the correct exegesis. For this purpose, he presents three expositions by ancient sages (R. Eleazar, R. Yohua, R. Akiba). In a common exegetical move, R. Eleazar proposes a creative reading of a verse about an ancient Israelite woman who reacts to bad news by going into labor, but ultimately dies from her "birth pangs". The exegesis plays on the similar characters and phonetics of the Hebrew term for "birth pangs" and the word for "hinges", which allows for an analogy, with this architectural feature as located in the womb and turning during birth. In the two other verses, the exegesis of analogy is based on similar conceptual and linguistic features of those verses about the anatomy of the female womb, which is more directly triggered by the words "doors" and "to open [with a key]".

31 Although accounts of such comprehensive anatomical experiments are limited, one may highlight a general interest in the observation and examination of the body, which is discussed by BALBERG, 2011; 2014 (pertaining to impurities). Furthermore, certain rabbis, like Simeon ben-Halaftha, are known for their experimental and empirical approaches to the natural world. I am indebted to Professor Richard Kalmin of Jewish Theological Seminary of America in New York, who was so generous as to share with me his then unpublished paper on rabbinic empiricism, "Observation in Rabbinic Literature in Late Antiquity" (presented at the SBL Annual Meeting 2015 in Atlanta, GA). For its later published version, see KALMIN, 2017. In light of these passages, I can hardly follow the conclusion in VÁRTEJANU-JOUBERT, 2007-2008, p. 178: "[...] rabbis refuse or grant a totally insignificant place to the direct experimentation and observation of the human body."

This short episode might support Hannah Hashkes's claims regarding the epistemology of rabbinic Torah discourse. Based on the observation that every epistemology starts from doubt and aims at settling these doubts, she holds that scientific and religious epistemologies structurally follow the same lines. Science, as she argues, is based mainly on the assumption that natural laws can be analyzed in, and deducted from, the world of human experience by certain theoretical or empirical operations. In a similar way, rabbinic religious thought considers reality as an expression of divine will or, as in case of the rabbis, as part of revealed Scripture that might be discerned via exegesis. Thus, both discourses apply different but structurally similar modes of reasoning in order to conceptualize their experience of the world.³² Furthermore, R. Yishmael's solution can be explained as a sophisticated blending of frames or mental models. Jürgen Renn describes mental models as a "form of knowledge representation", through which "conclusions are drawn from incomplete information" and "missing information is supplied by prior experience". Also, in our case, are the "premises of an inference [...] not negated but supplemented", while taking recourse to the "knowledge economy" of Jewish and Talmudic tradition.³³

While his students are unable to make sense of the two contradicting epistemological systems, R. Yishmael, via his recourse to his exegetical core competences, interprets these two possibly conflicting sets of epistemology and evidence as two sides of the same coin. By doing so, he reinforces the all-encompassing understanding of Torah in rabbinic-Jewish culture as entailing and maintaining the entire creation or the cosmos.³⁴ The discursive strategy towards epistemology is one of "Judaization" or "rabbinitization". The key to the knowledge of the body is not to be found in the body itself but in the body

32 See HASHKES, 2015, especially pp. 124-181.

33 RENN, 2015, p. 40.

34 According to rabbinic thought, the Torah is not only regarded as a Holy Scripture or revelation. In fact, many traditions conceive the Torah as the very building plan according to which God created the world. Since the textual body of the Torah constitutes *de facto* the creation, words are of paramount importance and may have some sort of divine or theurgic power. A teaching in the ethical tradition of Avot summarizes best the epistemological value ascribed to the Torah that goes hand in hand with a meticulous, critical, and creative inquiry into the text: "Turn it and turn it again. Since everything is in it" (Avot 5:22). My own translation. For the Hebrew text, see https://www.sefaria.org/Pirkei_Avot.5.22?ven=Sefaria_Community_Translation&vhe=Torat_Emet_357&lang=bi&with=Versions&lang2=he.

of the text. In fact, the key episteme of rabbinic culture is emphasized – namely, the interpretive skills of the sages.³⁵

The students' experiment starts as a simple proof for the validity of a canonized teaching about 248 limbs to be found in the earliest authoritative rabbinic tradition – the Mishnah. However, the results of this endeavor question either the authority of this tradition or the reliability of empirical (scientific) knowledge and human perception – or both. R. Yishmael's lesson is twofold: the material and empirical evidence of the body is important, as it reflects the order of divine creation. However, only the profound acquaintance with one's own body of knowledge or corpus of tradition (i.e., rabbinic teachings) facilitates multi-dimensional insights. The episode constructs a complementary hierarchy between different epistemologies – one from within Jewish exegetical tradition and one from empirical knowledge.³⁶

Concepts and Taxonomy: the Female Body as/and the House

In the previously discussed passage, we already saw highly metaphorical conceptualizations of the human body. Tellingly, the additional limbs, explained exegetically as “hinges”, “doors”, and “key”, all refer to the female body, or rather, explicitly to the female genitals. The “body of evidence” is marked as deviating from the standard, “canonical”, and supposedly male anatomy, as defined in Mishnah *Ohalot* 1:8. This passage, thus, takes part in a broader rabbinic discourse that conceptualizes the female body, especially the genitalia,

35 It is interesting to note that, in ancient Mesopotamia, the experts for the celestial sciences (i.e., astronomy/astrology) figure often as “scribes of a certain body of texts”, whose expertise is mainly grounded in their exegetical competencies. In this respect, ROCHBERG, 2014a, p. 29 points out: “Viewed in this way, what one knows is not nature but texts.”

36 The recourse to exegesis, which is directly connected to revelation and the divine, might be understood in light of the interesting penchant for ordeals instead of empirical, physical examinations of virgins before Late Antiquity, as emphasized by LILLIS, 2017, p. 61: “[...] these methods (where people consult or expect intervention from deities and the natural world) are the accepted ones for ascertaining truths of all kinds, but probably also because female virginity is generally thought to be verifiable only by such means; the virgin's body does not offer alternative signs.”

by analogy with a house. Cynthia Baker and Charlotte Fonrobert have demonstrated how, throughout biblical and rabbinic traditions, the reference to “the house” is not confined to a static entity or place. Texts rather deploy this analogy metonymically in order to create a symbolic-spatial context for a complex set of embodied cultural practices and social (power-)relations between men and women.³⁷

R. Yossi, for example, frankly admits (Babylonian Talmud, Shabbat 118b/Gittin 52a) his socio-economic dependency on his “house” (i.e., his wife) and his “field” (i.e., his oxen).³⁸ The tractate *Yoma* explicates the strong bodily and sexual connotations of this analogy. Before the Day of Atonement, the High priest is separated from “his house”, lest the contact with his (possibly menstruating) wife would render him unfit/impure. Similarly, the metaphoric language in Mishnah *Mikwaot* and *Niddah* charges the female reproductive organs with symbolic and socio-cultural meaning.

- a) If a woman “has served her house” [by having intercourse with her husband] (*she-shimsha beyta*/ביתה ששמשה), and she descended and immersed but did not clean “the house” (i.e. her genitals; *we-lo kavda et ha-bayit*/את הבית ולא כבדה), it is as though she did not immerse [and thus, she remains ritual impure] (Mishnah *Mikwaot* 8:4).
- b) (1:7) Even though they said that her hour suffices, she should be examining [herself], except for a *niddah* (menstruating woman) [...] And she should examine twice [daily], in the morning and at twilight, and when she is going over “to serve her house” [by having intercourse with her husband] (*overet le-shamesh beyta*/את ביתה לשמש עוברת שהיא עוברת לשמש את ביתה). [...] (2:1) Every hand that examines frequently, regarding women, this is praiseworthy; and regarding men, it should be cut off. [...]. It is the way of the daughters of Israel to have intercourse using two checking-cloths

37 BAKER, 2002, especially pp. 56-59 explains (p. 58): “that the female body is rendered ‘house’ in the same moment in which a woman is rendered ‘wife’. [...] There is a peculiar symmetry to the act by which a woman is housed and edified: she ‘enters his house’ as wife while he ‘enters her house’ as husband.” Cf. the discussion in FONROBERT, 2000, pp. 40-60. For metaphorical objectification of women in ancient Greek culture, see DUBOIS, 1991.

38 Cf. bT Shabbat 118b: Rabbi Yossi said: “In all my days, I did not call my wife, my wife, nor my ox, my ox. Rather, [I called] my wife, my home, and my ox, my field”.

(literally: witnesses), one for him, and one for her. The modest ones prepare a third, “to prepare the house” [before intercourse] (*le-taqen et ha-bait*/לתקן את הבית). (Mishnah *Niddah* 1:7 & 2:1)

First, a woman’s “service to her house”, i.e., intercourse, is bound to the obligation to clean (*le-khabed*) and prepare (*le-taqen/le-hatqin*) her house – her genitals are also referred to as “house of secrets” (*bet setarim*).³⁹ Second, this cleaning service of and by the wife (of both “houses”) serves directly her spouse (*ba'al*), who is, thus, defined as the householder/*ba'al ha-bayit* in a twofold sense – one connected to the spatial and social entity of the house proper, and the other one referring to the socio-religious institution of marriage and the body of his wife. Third, via the service to her bodily house for procreation through marital intercourse, the woman also takes care of the continuity of the social entity of these two institutions – the family and the household. This complex blending of social, spatial, and physical realms defines the woman as being responsible for the order of her household as well as for the fitness of her inner, bodily “house”.

From Outer to Inner House

The central imagery of a woman’s “inner house” for rabbinic body-discourse figures prominently in passages describing the female sexual organs in analogy to the layout of a building:

The Sages analogized women through a parable: a chamber (זדר), a corridor (פרוזדור), and an upper chamber (על"יה). The blood of the chamber is impure. If [blood is] found in the corridor, its uncertainty is impure (i.e., there is an uncertainty regarding its origin, and it is thereby impure), because it is presumed to have come from the source (*ha-maqor*/המקור; cf. Lev. 20:18); (Mishnah *Niddah* 2:5).

The choice of this particular analogy attests to the rabbinic penchant for female corporeal domesticity as well as for the idea of women as being containers, an

39 For the various rabbinic expressions for the female genitals that use “house”, see ILAN, 2017, pp. 79-86.

idea shared with the ancient Mesopotamian and Greek (medical) traditions.⁴⁰ These concepts praise the divine “smart design” of the female body for its very purpose: the conception and gestation of the unborn child.⁴¹ In accordance with those assumptions, the two Talmudic traditions augmented the earlier model of a genital floorplan with some details:

Palestinian Talmud, yNiddah 2:4 (50a)

R. Judah [said] in the name of Samuel: “The chamber is further in than the front hall, and the upper chamber is located on top of the chamber, halfway above the front hall. And the door of the upper chamber opens into the front hall.”

Babylonian Talmud Niddah 17b

Rami b. Samuel and R. Isaac son of Rab Judah learnt the tractate of Niddah at R. Huna’s. Rabba son of R. Huna once found them while they were sitting at their studies and saying: “The chamber is within, the front hall is without and the upper chamber is built above them, and a passageway (*lul*/לוֹל) opens between the upper chamber and the front hall.” If blood is found anywhere from the passageway/duct inwards, and there is any doubt about its character, [whether it is from the uterus or urinary bladder], it is

40 FONROBERT, 2000, p. 56, emphasizes the rabbis’ depiction of a “woman’s body [...] as the embodiment of interiority versus the male embodiment of exteriority”. For a proximity of metaphors like container, vessel, or storehouse in ancient Mesopotamian and Babylonian Talmudic sources, see STEINERT, 2013; 2015; 2017. The analogy with cupping instruments, a wineskin, jars, or vases can be found also in some Hippocratic texts. Cf. FLEMMING, 2017, especially pp. 126-128.

41 A blending of the conceptual model of vessel and house occurs in the Babylonian Talmud, Niddah 31a: “Our Rabbis taught: During the first three months the embryo occupies the lowest chamber [*madur ha-tachaton*], during the middle ones it occupies the middle chamber and during the last three months it occupies the uppermost chamber; and when time to emerge arrives it turns over and then emerges, and this is the cause of the woman’s pains [in labor].”

Cf. also Babylonian Talmud Berakhot 61a: “What is meant by the words *And the Lord built the rib* הַצֵּלֶע/את ה' ויבן ה' (Gen. 2:22)? R. Chisda said (some say, it was taught in a Baraita): ‘It teaches that [God] built (variant MS Paris 671: created/בראה) her/Eve after the fashion of a storehouse (כבנין אוצר). Just as a storehouse is narrow at the top and broad at the bottom so as to hold the produce [safely], so a woman is narrower above and broader below so as to hold the embryo.’” The different witnesses for this passage use both Hebrew terms for the embryo(s): *wld*/וילד (MS Munich 95; Cambridge T-S F1 (2) 66; Print Vilna); and *wbrym*/עוברים (MS Paris 671). For rabbinic concepts of embryology, see KESSLER, 2009.

deemed unclean but if it is found anywhere from the passageway outwards, and there is a doubt about its character, it is deemed clean.⁴²

From these sources, we can learn that the rabbis saw almost no need for clarifying the Mishnaic metaphors, as such. Both Talmudic traditions accept the number and names of the different rooms, while specifying the actual layout of the inner female house. The Bavli adds the *lul* (לול) – a direct passageway or duct connecting the “upper chamber” and the “front hall”.

The above three passages have caused much confusion among Jewish traditional commentators and academic ever since the medieval period. Their variegated attempts to make sense of this floor plan according to their contemporary medical knowledge were doomed to fail. Charlotte Fonrobert, thus, speaks of an analytical or interpretive “impasse”. Alternatively, she questions the rabbis’ exact, anatomical knowledge about what they were actually talking.⁴³

This last suggestion seems worthy of further consideration. Almost certainly, the pictorial conceptualization of female genitalia in analogy to rooms and buildings constituted a kind of fictitious or fanciful anatomy. However, the use of highly metaphorical and comparative language that does not tally with modern, scientific medical knowledge should not be held against these texts as to diminish their epistemological value. Medical images and imagination played a crucial role even in Mesopotamian or Graeco-Roman medicine with their greater preference for empiricism. As already mentioned, in most ancient cultures empirical, anatomical experiments through dissection were constrained by socio-religious taboos, although physical examinations of female genitalia were occasionally performed by male and female health practitioners. Scholars have also pointed out that ancient doctors’ penchant for speculation was not in the first place due to this lack of accessibility, but rather because of their philosophical and theoretical inclinations. Their metaphorical conceptualizations, which often exhibit a high degree of sophistication, functioned as

42 Cf. Mishnah Niddah 5:1: “all women transmit impurity in the external house [*bayit ha-hitson*] [...]” and the discussion in FONROBERT, 2000, pp. 53f.

43 Cf. FONROBERT, 2000, pp. 40-61, here: 52. An interesting point of comparison, which exhibits a similar degree of abstract knowledge of the female body, is the ancient Greek idea of the “wandering” womb, which moves around in women’s bodies and symbolizes their lack of control over their own sexuality. Cf. DEAN-JONES, 2003, pp. 191-195. This concept seems to contrast with the culturally dynamic, though but still rather static, metaphor of the house in Jewish rabbinic thought.

a closed system or “mental model” (Renn) for medical reasoning within their epistemic limits.⁴⁴

Such a tendency toward the scientific use of metaphor seems to suit the rabbis who were not even doctors or medical writers. Thus, the rabbis, in contrast to male and female doctors, were in practice locked out of the women’s “inner house”. Still, there were various ways to (re-)gain access. First, the sages could consider their own knowledge of female anatomy and physiology based on personal experience within the context of marital relations. Second, they might have obtained information from female experts in these matters, such as doctors, midwives and other female healers, or from other women who shared their bodily knowledge.⁴⁵ Third, the sages could (re)gain entrance to, and control over, the female “house”, precisely via their Talmudic discourse and its speculative, or imaginary anatomy.

I suggest that the rabbis’ penchant for conceptualization and control weakened here their interest in any approved empirical knowledge of the body, which might have been also out of reach from them. Their depiction of the female genitals as a house did not aim for ultimate physiological accuracy.

44 For the “mental model”, see RENN, 2015 and above, p. 137. This model making as a shared feature found among most ancient medical cultures in the Mediterranean is summarized by STEINERT, 2013, p. 1; and 2017, pp. 287f. The centrality of metaphorical depictions and analogical reasoning in those traditions is emphasized and exemplified in all contributions to WEE, 2017. The emic perspective of ancient Egyptian pharmaceutical knowledge is discussed by POMMERENING, 2017. The lack of precision in rabbinic language with respect to depicting the body and its functions is due to the penchant in ancient sciences for metaphors and pictorial language that also prevails in Graeco-Roman texts. This point was explicitly criticized by Galen, who, of course, could not free himself from this tendency. Cf. VON STADEN, 1997a.

45 While virginity tests and physical examinations seem to have been standard procedures to a modern reader, this feature is rather absent in most of the ancient Mediterranean cultures prior to the rise of Christianity, as shown by LILLIS, 2017. According to her (esp. pp. 290-311), even after the “anatomical turn” and the introduction of the hymen as corporal marker of virginity, we have to be aware that the accessibility of female bodies through physical close-up examinations of the genitalia might still have been rather uncommon for both male and female healers. Although midwives and other female healing experts, surely, could have relied on their own bodily experience regarding sexuality, menstruation, and pregnancy, one should not presume a complete anatomical, empirical illiteracy among male physicians and male obstetricians. I am grateful to Julia L. Kelto Lillis for her comments on a previous version of this paper and for sharing with me her doctoral dissertation.

First, this image functions as an apt theoretical model that was good to think with in discussions of religious law (*Halakha*) on im/purity, which built on wider cultural metaphors related to women's bodies and the female domain (i.e., the "house").⁴⁶ Second, this theoretical inclination is less surprising if we consider the audience at whom this Talmudic discourse on women's bodies aimed. Regarding the constructions of the female body in ancient Greek medical texts, Helen King has pointed out that the main interaction in the medical sphere of women's ailments would have been between two men: the doctor and the responsible male member of the woman's household (*kyrios*). Hence, "explanations for the woman's illness would thus have needed to convince the *kyrios*, rather than the patient and may have been most successfully phrased in a way which reinforced his views of female nature".⁴⁷ Greek medical writers and doctors conceptualized female physiology according to the cultural expectations of other men (clients or fellow medical experts) in order to raise their authority and communicate with their main audience or clients. In a similar fashion, rabbis built their discussions of these matters on broader cultural metaphors of the house and the (female) body, which served as appealing frames of reference for their rabbinic colleagues and their (male) fellow Jews.⁴⁸

Yet, this conceptualization, as already shown regarding the empirical examination of a corpse, has another advantage. For it allows the rabbis to feel "at home" in a twofold sense. First, the conceptualization in terms of the familiar "house" provides access and control to a sphere that is distinctly marked as female and conceived as somewhat opaque, unstable and in need of control. This applies to both the household and the female body, or better still, female

46 The description of the layout of inner rooms serves a definition of blood that renders the woman impure. The schematic localization may help to classify the different occurrences of blood without anatomically clarifying if this blood is, in fact, menstrual, genital, renal, or vesical (from the bladder). Moreover, one might discern the reason for the bleeding: intercourse, menstruation, pregnancy, or an illness. MEACHAM, 1995, discusses the exceptional phenomenon of *dam himud* ("blood of desire"), an unusual bleeding triggered by sexual arousal preceding the wedding night or by anticipating the reunion with one's husband. Another explanation resembles the Greek idea that interprets certain types of blood as female semen. Cf. MEACHAM, 1989.

47 KING, 2014, p. 22.

48 The competitive aspect and the ambition on the side of doctors and medical authors to comply with certain (cultural) expectations and assumptions of their audience regarding female bodies and the nature of women is emphasized by FLEMMING, 2000, especially pp. 361-367.

sexuality and reproduction. Second, this “mental model” grants the rabbis access precisely through application of their main expertise – exegesis and dialectics. In the discourse on menstruation and impurity, as in other cases of medical or technical knowledge, the rabbinic authors deploy certain elements of self-fashioning to claim their expertise in matters of the female body. I suggest that these strategies, strikingly labelled by Charlotte Fonrobert as “displacement of the native speakers”,⁴⁹ function on two interpenetrating levels.

On the one hand, these discussions aim at creating conceptual models and taxonomies, here of female anatomy and physiology that structure rabbinic discourse surrounding the female body. The neat integration of these models into the core of rabbinic traditions strongly suggest that they represent the most significant sources of knowledge on the body. On the other hand, from early on (i.e., in the first layers of rabbinic literature), rabbis were depicted as the most competent experts advising women regarding menstruation. Based on rabbinic models and taxonomies, those sages appear as medical interpreters who literally apply an exegesis of bloodstains and related issues. Thereby, they gradually conceal and replace first-hand experience and female sensory “knowledge of the body”.⁵⁰

Ultimately, those who are deeply involved in those medical issues in practice (i.e. female doctors, midwives, wet nurses) or who possess an abundance of female bodily experience (women in general) are no longer actors or knowing subjects, but become objects of a rather male discourse. Even if rabbinic knowledge draws on female informants, such information would be part of “a framework which already constructed their bodies as inferior and in need of external control”.⁵¹

Ishai Rosen-Zvi has summarized the rationale behind this transfer of expertise: “the sages transformed these laws into a complicated taxonomy of shapes, locations, and colors which demands external expertise. New kinds of knowledge engender new kinds of experts.”⁵² Accordingly, the observance of

49 FONROBERT, 2000, p. 110.

50 On the ‘rabbinic science of blood’ and male hermeneutic dominance, see FONROBERT, 2000, pp. 103-127; this discussion is taken up by LIBSON, 2018, pp. 64-97.

51 DEAN-JONES, 2003, p. 194.

52 ROSEN-ZVI, 2013, p. 4; cf. also FONROBERT, 2000, p. 110.

rabbinic body knowledge requires rabbinic observation, examination and supervision.⁵³

II: Knowledge of the Body and Embodied Knowledge

The previously addressed examples of rabbinic discourse primarily emphasized theoretical or conceptual models of the human body with a clear focus on anatomy and physiology (pregnancy/menstruation). However, the majority of medical passages in Talmudic literature displays rather a strong interest in practical aspects of medicine, such as the origins and symptoms of a disease, and possible therapies or preventive measures (diet and bodily regimen). In some rabbinic teachings, medical information appears only in passing as but one of a number of different areas in which certain religious rules apply. For example, in a discussion of the laws of tithing in the Palestinian Talmud, two types of plasters (*malagma/malugma*) and eye-salves (*kylor*; i.e., *kollyrion*) are mentioned. Although being aware of the medical use of these two remedies, the rabbis, however, zero in on determining if and how the main ingredients (i.e., flour and wine) have to be handled regarding different types of tithing.⁵⁴

This kind of appearance as rather common knowledge of medical issues subjugated to overarching questions of religious law were sometimes held

53 Cf. BALBERG, 2011, p. 337, who, in relation to rabbinic discourses on the examination of signs of puberty or skin afflictions, states: “However, the rabbinic medicalization of the inspection procedure should not be understood only in terms of a power fantasy, although this is certainly one of its aspects. Rather, it must be understood in the context of the rabbis’ larger hermeneutical claim. The rabbis are, first and foremost, interpreters; their special skill, their *technē* if you will, is their ability to read texts and decipher the clues, the *semeia*, that are hidden in those texts. The physical examination of skin afflictions allows a direct transition from the realm of the text to the realm of the ‘real,’ and, moreover, to the most critical and obsessed-with realm of the ‘real’ at this period, that of the body.”

54 Palestinian Talmud, tractates yShabbat 7:2, 10b and its parallel in yDemai 1:3, 22a read: “[It has been taught (in a baraita):] (1) wine to put into a kollyrion (*qylwr* – *qwlyr*/קילור-קוליר) and (2) flour with which to make a *malagma* [מלוגמא] are liable [to be tithed] as a certainly yet untithed produce, and exempt from [tithing as] *demai*-produce [something doubtful regarding its status of tithing and thus, being fit for sacrifice].”

against the Talmud as not containing proper medicinal and scientific information. In an attempt to amend earlier scholarship with a new focus, recent studies highlight the astonishing degree to which Talmudic texts incorporated technical or expert knowledge from different fields, while also referring to experts and practitioners, both as their informants and competitors.⁵⁵ Such deeper acquaintance in the realm of healing can be substantiated by looking at passages that depict rabbis as being familiar with the course of particular diseases, fevers, and appertaining therapies in a way that involves or suggests personal experience.

An illustrative passage contains a teaching on fever and possible cures in the context of the various restrictions of such healing and of preparing certain remedies on Shabbat:

One may prepare *enomlin* (wine mixed with honey, spiced with pepper) on Shabbat. (Mishnah 20:2)

[The Talmud now discusses this particular mishnah:]

A) Our sages taught (*tanu rabbanan*/ת"ר): One may prepare *enomlin* (אנומלין/*ʿnwmljn*) on Shabbat, but one may not prepare *aluntit/eluntit* (אלונטיה/*ʿlwnty*) on Shabbat.

What is *enomlin* and what is *eluntit/aluntit*?

Enomlin – is [a mixture made of] wine, honey and pepper [thus constituting spiced wine, which is commonly consumed and therefore permitted].

Aluntit/Eluntit – is [a mixture made of] old wine, pristine water and balsam (*aphar-semon*/אפרסמון)⁵⁶

B) {which is prepared as a cooling in the bath house (by *mswt*/מסותא/בי).

R. Yoseph said: “Once, I entered the bathhouse (byt b’ny/בי באני/בית) after Mar ‘Ukba. On leaving I was offered a cup of (such) wine, and I experienced (a cooling sensation) from the hair of my head (right) down to the nails of my toes. And had I drunk another glass I would have been afraid, lest it be deducted from my merits in the future world.” But Mar “Ukba drank it every day? Mar “Ukba was different, because he was accustomed to it.”⁵⁷

(Bab. Talmud, Shabbat 140a)

55 Cf. NOVICK, 2014; 2017; MEACHAM, 2019 (forthcoming), BALBERG, 2011; LEHMHaus, 2017a; 2017b.

56 Cf. Babylonian Talmud Berakhot 43a, Yoma 38a.

57 The whole section B) in *italics* is in Aramaic, whereas the first part, A), is completely in Hebrew.

This text, based on a discussion in the earlier layers of tradition, contrasts the permitted preparation of *enomlin* (Gr. *oinomeli*)⁵⁸ on Shabbat with the forbidden preparation of *aluntit/eluntit*. The underlying rationale, according to other Talmudic passages, distinguishes between substances with a possible medicinal effect, which are commonly consumed or applied and, thus, permitted, while other potions because of their specific or even primarily medical use are not allowed for use on Shabbat.

Going beyond the sheer explication of the different ingredients, the Babylonian Talmud, in the concluding part of this passage (section B), offers a specific context for the application of the second (forbidden) mixture. R. Yosseph's statement attests to the drinking of this potion for cooling the body after visiting the bathhouse. Both the qualification about the application and the following anecdote occur in Aramaic. Already this particular shift, or even deliberate choice of language seems to stress the local, Babylonian character of this anecdote which serves as a proof story. It is very likely that this passage illustrates a local appropriation of earlier Western knowledge, which is amalgamated here. This can be corroborated by a passage in the Palestinian Talmud where a liquid with a similar name (*elentin*, *aluntin*/אלונתין/אלניתין) is applied externally in case of fevers, even on Shabbat.⁵⁹ Local knowledge and the ability to intertwine it with transmitted ideas played an equally important role in the discursive universe of the rabbis, as in other ancient expert or elite cultures, including among medical authors.⁶⁰

Moreover, the exclusive first-hand report by R. Yoseph about the bodily "cooling sensation" he experienced, as well as the reference to Mar Uqba's inurement to the effects of the potion lend a great deal of local and experiential authenticity to this particular piece of knowledge. The rabbi's own overwhelming bodily sensations prove the efficacy of the actual potion. The contextualization of the customary consumption of this drink in the bathhouse, however, purges *eluntit/aluntit* from the primarily medicinal and uncommon

58 Cf. KOTTEK, 1996, p. 2928.

59 Cf. Palestinian Talmud, yShabbat 14.3 (14c), yBerakhot 1.2 (3a) and Tosefta tShabbat 12.12.

60 For the high value of local knowledge and custom for rabbinic discussions of religious and ritual matters, see VIDAS, 2017. TOTELIN, 2012, p. 309, stresses Galen's sophisticated use of local pharmaceutical knowledge that highlights his Pergamene background as a source of practical experience, while simultaneously underscoring his ability to connect this specific information to his larger patterns and the humoral theory that shaped his pharmacology.

usage on which the prohibition of certain mixtures was based in the Western rabbinic traditions.

The importance of personal experience figures even more prominently when it comes to actual recipes or therapies. The following passage can be found after an anecdote about the famous Rabbi Yochanan who was suffering from *şifduna*-disease (possibly an inflammation of the mouth)⁶¹ and was healed by a female healing expert.

Said R. Nahman b. Isaac: *şifduna*/*şofdina*-disease is different, because though starting in the mouth it extends to the intestines.

- 1) **What are its symptoms/signs (מאי סימניה)?** If one places anything between his teeth, blood comes from the gums/rows of teeth.⁶²
- 2) **What brings it on (ממאי הוי)?** a) The chill of cold wheat-food and b) the heat of hot barley-food; c) also the leftovers of small [*harsana*-] fish-hash⁶³.
- 3) **What did she [the female healer in the preceding narrative] apply⁶⁴ to him (מאי עבדה ליה)?**
 - a) Said R. Aha the son of Raba: yeast-water, olive oil, and salt.
 - b) Mar son of R. Ashi said: Goose-fat on a goose feather.
 - c) Said Abaye: I did all this but was not cured until a certain Arab (*taya'a*) told me: 'Get pits of olives that have grown only one third ripe; burn/roast them on a new hoe/shovel and paste [the ashes] onto the gums!' I did so and was cured (Bab. Talmud, Avodah Zarah 28a).

61 JASTROW, 1903, p. 1295: scurvy (cf. bYoma 84a); SOKOLOFF, 1992, p. 463: "şifdun" = a sickness (from Z'F'D = to press/contract); generally considered to affect the gums and other organs. Variant spellings: *şafdina*, *şofdina*, *şufdana* (yShabbat 2 (40d)), *şifduna*, *şefidna* (also ending with heh or aleph). PREUSS, 1992, 196f. identifies it as "stomatitis", i.e. an inflammation of the mouth and lips, often after or together with inflammation of the gums (*gingivitis*). Modern medicine knows of several causes for stomatitis, including infections, nutritional deficiencies, and allergies. For a critical survey of all identifications, see KOTTEK, 1996, pp. 2925f.

62 A parallel of this discussion in the Babylonian Talmud, bYoma 84a reads 'gums' (דררי).

63 This is explained by the later Geonic commentators (8th-11th c.) as a dish cooked with small salted fishes, flour and vinegar. Cf. SOKOLOFF, 2002, p. 590.

64 Literally: what did she do to him?

The entire passage is clearly based on the preceding anecdote about R. Yochanan's encounter with a female healer. Striking aspects of this medical case story regarding the figure of the woman and the recipe, to be found in its two versions in the Palestinian Talmud, have been discussed elsewhere.⁶⁵ The Babylonian version of the anecdote lacks some interesting details such as the name of the female expert or the ingredients of the recipe, which are presented afterwards, precisely in the passage at hand. Thus, the main difference lies in its discursive function in the new context. Although the Bavli appears to follow along the lines of the halakhic discussion of several broader topics predefined in the Palestinian Talmud (dangerous diseases, healing in life-endangering situations, acceptance of medical experts), the compilers decided to digress from those paths. In fact, they use the case story and the whole discussion on healing in case of emergency as a springboard to add a host of very detailed medical information – not only about *šifduna/šofdina* in the passage cited but also on various other dangerous or severe ailments that fit into this category.⁶⁶

Most interesting in this regard is the following sequence, where the anonymous voice of the compilers provides a disease taxonomy modelled after common patterns of Talmudic dialectics. Their discussion covers the actual symptoms (1), the possible causes or etiologies of this ailment (2a-c) and different therapeutic approaches (3a-c). While regarding the cures the first two opinions of R. Aha and Mar, son of R. Ashi come as second-hand knowledge, Abaye's statement is different due to its empirical twist.

Abaye's opinion provides not only another cure but uses a multi-layered strategy of experiential proof and knowledge transfer to qualify as the most compelling. First, he reports how the remedies proposed by his fellows did not work. Such a rejection of competing medical ideas, on empirical or theoretical grounds, is a common feature of ancient scientific discourse, with authors

65 Cf. LEHMHAUS, 2017a, pp. 241-247. For some more theoretical implications of reading this passage, see LEHMHAUS, 2017b. Tal Ilan (ILAN, 1997, pp. 263-265; 2002, pp. 191-195; 2006, pp. 167-172) has discussed the figure of the female healing expert, her possible background and the rabbinic discursive strategies to 'silence' female experts.

66 See the discussion in bAvodah Zarah 28a-b on open wounds, an excrescence shaped like a berry, an abscess or ulcer, a slit in the rectum, and earache, for which several remedies, recipes and therapeutic advice are provided. The medical cluster continues well onto folio bAZ 29a.

often not shying away from strong invective.⁶⁷ Second, he indicates that “his” recipe was revealed to him in a personal encounter with a *Taya’a* – an Arab nomad, merchant or peasant who is portrayed in rabbinic texts as having exclusive access to knowledge of the human body and nature. As in the anecdote about the bathhouse, this confession functions as marker of local knowledge and authenticity. Furthermore, calling on the reputation of the *Taya’a* in other rabbinic traditions, Abaye, in his first-hand report, “stages” this non-Jewish expert not in his own right. Though making a short appearance, he is – in ways similar to the “displacement of the native speakers” in the texts on female physiology – demoted to the role of a discursive helper who underscores ultimately Abbaye’s own proficiency in medical knowledge.⁶⁸ Third, Abaye not only reveals the actual recipe or prescription, but he also brings proof of its efficacy by referring to his own ailment and experience of full convalescence. This discursive move functions on two levels. On the one hand, through Abaye’s statement, the specific recipe that stems from a source of exclusive knowledge is disclosed, incorporated in the Talmud’s textual universe, and thus made available to future recipients. Moreover, intertextually, this disclosure, as well as the recipe itself, is more than a bow to the story about R. Yochanan, who unveiled the pharmaceutical information provided by the female healer. The proximity functions also on the level of two great rabbinic figures who suffered from the same disease and were healed due to their willingness to interact with non-rabbinic informants.⁶⁹ On the other

67 Cf. TOTELIN, 2012, especially p. 311; on Galen’s criticism of predecessors and contemporaries, see MATTERN, 2008, pp. 72-80.

68 On the *Taya’a* or *Tayaye* in rabbinic texts, see BAKHOS, 2006, p. 159, note 70; and FIRESTONE, 2010, pp. 5-9. Sara Ronis, in her paper “Taming the Other: The Magical Arab in Rabbinic Literature” (presented at the SBL Annual Meeting in San Antonio, Texas, 20 November 2016), has drawn some thought provoking parallels between the rabbinic discursive deployment of the *Taya’a* and the film trope of the “magical negro” in American cinema. For the reference to the reputation of certain experts or ancient authorities as sources for a recipe, see STEINERT, 2015, especially pp. 125-132.

69 Strikingly, the actual recipe, its ingredients, and the form of application resemble very closely the cure prescribed by the female healer as described in the Palestinian Talmud parallel of this passage. Her recipe includes as the main substance the ashes of (half) burnt date stones, mixed with barley husk, and the dried excrement of a young child. This observation triggers questions about the peculiar discursive strategies at work in the Babylonian Talmud for the same discussions. For an in-depth inquiry into the *materia medica* in the Palestinian Talmud, see LEHMHAUS, 2017a.

hand, Abaye's readiness to prove the medicinal benefit of the recipe by testing it with his own body sets his proposed remedy apart from the merely abstract second-hand proposals of his colleagues. As has been shown in numerous studies, ancient medical texts make frequent use of first-person statements, as well as of references experience and empirical proofs often coined in labels or phrases that served to prove the efficacy of a cure and to foster their claims to expertise.⁷⁰ In Greek medicine, especially in Galen and the authors of later medical compilations, frequently, "qualified experience (*diorisme peira*), takes precedent over reasoning in acquiring pharmacological knowledge".⁷¹ The strategic deployment of personal case stories about cures and tested remedies serving as final proofs figures prominently also in other Talmudic medical clusters.

Knowing Bodies of Knowledge

In the discussion of three sample passages, I have highlighted the different strategies used to establish and legitimize rabbinic engagement with, and expertise in, bodily and medicinal matters.

The first part inquired into the reconciliation between two conflicting anatomical accounts – the list of limbs in Mishnah *Ohalot* and the examination of R. Yishmael's students (*Bekhorot* 45a) – and their underlying epistemologies, via the exegesis of biblical verses. Thus, this passage highlights conflict and overlap between two important ancient "epistemic genres" and their modes of cognition that intertwine in Talmudic discourse: the case and the commentary. The recourse to the textual interpretation of earlier, authoritative traditions (commentary) appears as a *rabbination* of knowledge derived from experiment and practice (case).⁷² Empirical knowledge of the body challenges traditional bodies of knowledge (Mishnah/Oral Torah), but is

70 In Mesopotamian medicine, one finds a range of "tested remedies" and efficacy labels or phrases, which imply "that knowledge of effective drugs and remedies had been acquired through practical experience and repeated trials and formed an important part of medical knowledge" (STEINERT, 2015, p. 104.). For the strategic use of "I" and first-person claims in ancient scientific texts, see TOTELIN, 2012, pp. 308-310; FÖGEN, 2009, especially pp. 106-289; DOODY/TAUB, 2009.

71 TOTELIN, 2012, p. 310. For the concept of "qualified experience" in Galen, see VAN DER EIJK, 1997.

72 On the case and the commentary as "epistemic genres", see POMATA, 2014.

challenged itself in this process. In the end, the text constructs a possible co-existence of knowledge derived from empirical examination and revelation – without smoothing away their generic or ontological difference. The “mental model” used here in order to mediate between those approaches builds on a pre-existing semantic web in Jewish traditions (biblical and rabbinic) and its strong association between women, female sexuality, and the domestic sphere (“the house”).⁷³

The second strategy comprises the taxonomic conceptualization and even the usurpation of non-rabbinic body expertise – as illustrated by the rabbinic take on anatomy of the womb, embryology, women’s body knowledge, and female sensations regarding menstruation. This discursive “domestication” refines specific religious-cultural semantics (the “house”) into anatomical concepts, or creates complicated taxonomies (the scale of blood colors) based on first-hand sensory experience. Still, this overtly theoretical discourse rather ardently seeks meeting the conventions of Talmudic dialectics or complying with the cultural semantics about women and their bodies instead of zeroing in on a conceptualization of the body grounded in empirical examination. Making recourse to cultural models deeply entrenched in general culture, facilitated the rabbis’ claim to anatomical and exegetical expertise in striking similarity to ancient Graeco-Roman physicians and their strategies of self-assertion vis-à-vis competitors and clients.⁷⁴

The examples related to the third strategy stressed how the personal and, in fact, the bodily involvement of sages lends greater authenticity to the medical knowledge conveyed through familiar patterns of rabbinic oral culture and Talmudic dialectics.⁷⁵ Empirical proofs and experience in medical issues may have amplified their claims to expertise and, thus, enhanced the adoption of certain ideas and practices. This observation tallies with the key role of the

73 Cf. RENN, 2015 for the ability of epistemic or mental models to accommodate new insights and empirical data without causing harm to the previously existing knowledge model.

74 HOLMES, 2009, p. 10: “Such research has persuasively shown that the medical writers, while lively polemicists, in many cases provided new justification for conventional wisdom. The constructed and ‘fantastic’ nature of what the medical writers believe about the body is particularly evident in their ideas about the female body, which dovetail neatly with long-held cultural stereotypes about female inferiority and women’s childbearing function.”

75 For the oral and interactive dimensions of ancient medicine and sciences, see TOTELIN, 2012; and TAUB, 2008, especially pp. 1-30. TOTELIN, 2009, pp. 21-64, stresses the oral nature of pharmaceutical knowledge in Hippocratic texts.

sages as transmitters or carriers of (medical) knowledge in Talmudic culture who frequently stage themselves not only as Torah scholars, but also as experts in various fields of (medical) knowledge. This adaptation builds on a twofold expertise of the rabbis grounded in their own tradition (Bible, rabbinic lore, and hermeneutics) and in secular or scientific knowledge, often informed by their immediate practical involvement.

On the level of cultural semantics, one may explain these modes of knowledge transfer and transformation in Talmudic texts, in accordance with Brooke Holmes's observation regarding the emergence of the physical body (*soma*) in ancient Greek culture. First, this new "epistemic thing" called "the body" has a twofold nature. While it is a "model of intelligibility" allowing for manipulation and explanation by the expert of medical *tekhne*, it also remains an unstable and opaque entity, whose functioning is hidden, and which defies intentional control. Second, given the opacity of this internal physiology, Holmes stresses the crucial importance of signs and symptoms serving as "springboards into an unseen world that has been adventurously reconceptualized".⁷⁶ Thus, the "autonomy and authority of medicine" was mainly based on its experts' and practitioners' ability to read, interpret, and intervene rendering the body "an object of technical knowledge and manipulation".⁷⁷ The three passages around which the current study is based are perhaps best understood in terms of shared approaches: the readability and interpretability of physical and textual bodies. The Talmudic authors blend these medical and exegetical-dialectical approaches, as we have seen, in various ways: Torah-based explanations of empirical evidence, anatomical conceptualization rooted in the cultural semantics of female domesticity, and discussion of disease taxonomies and therapies in the guise of Talmudic dialectics. The rabbis' ability to handle bodies by navigating between two bodies of knowledge expands the scope of both their discourse and their fields of expertise.

I propose that the discursive integration of medical knowledge as well as the rabbis' self-fashioning as (medical) experts are deeply entrenched within their broader late antique framework of shared discourses and cultural competition among and between elites by the means of medicine – in practice, but also in theory.⁷⁸ Already, some twenty-five years ago, scholars of ancient

76 HOLMES, 2009, p. 4. On the "epistemic thing", see *IBID.*, p. 18f.

77 *IBID.*, p. 25.

78 One of the research 'sideshows' of my current project on rabbinic medical knowledge relates to the question of how a broader tendency towards encyclopaedism

medicine began adopting a more pluralistic view of medicine as a field of “diversity and dispute”, where “Greek and Roman physicians constructed their authority, formulated [...] their ideas in order to gain paying patients as well as the esteem and respect of a wider audience”.⁷⁹ Furthermore, several recent studies have highlighted the extensive use of detailed medical knowledge in exegetical works, sermons, and other primarily religious texts authored by early Christian writers. This appropriation of a medical discourse was interpreted as a deliberate strategy of demonstrating “mastery” in a field of knowledge, which simultaneously enriches a Christian *paideia* and proves its all-encompassing superiority.⁸⁰

However, this contextual framing should not belittle the complex epistemological efforts made by the rabbis in appropriating and developing the medical ideas and approaches prevailing within their cultural contexts. It were precisely those discursive strategies of the sages that facilitated the transfer of late antique “knowledge of the body”, featuring but not limited to medical episteme, through their very own rabbinic “knowing bodies” into authoritative traditions – the Jewish “body of knowledge” per se: the Oral Torah or Talmudic tradition. This development is strongly linked to a common notion and the self-fashioning of the rabbis as representing a “living tradition”, or “embodied Torah”. Here we have come full-circle, when the rabbis as “knowing bodies” ensure and procure the appropriation and legitimation of old and new forms of knowledge making about the human body and through their own bodies. In a variety of ways, still to be studied in detail, rabbinic discourse and

and changing concepts of *paideia* in Late Antiquity might have played a role in the formation of the Talmudic traditions and the rabbinic projects of knowledge making. Some preliminary thoughts on this matter have been presented in my talk at the bi-annual meeting of the *Shifting Frontiers in Late Antiquity* at Yale in March 2017, and in a paper (“Encyclopaedic turns in Late Antiquity and Talmudic knowledge culture”) circulated in the seminar “What did the rabbis know? – rabbinic knowledge cultures in late antiquity”, which I had organized at the annual meeting of the *Association of Jewish Studies* in Washington, D.C., December 2017.

79 FLEMMING, 2000, p. 9.

80 In addition to the works cited in notes 5 and 6 above, I would like to mention here the studies on early Christian traditions by GRIFFITH, 2006; CHALMERS, 2014; PENNIMAN, 2015; MAYER, 2015; HEYNE, 2011; FORMISANO, 2013; and the contributions in MARX-WOLF/SECORD/MARKSCHIES, 2017. For a general survey, see NUTTON, 2014, pp. 293-317; FERNGREN, 2009; and PORTERFIELD, 2005, especially pp. 43-65. For strategies of self-fashioning as medical experts among early Christian missionaries, see BAZZANA, 2009.

interpretive practices engaged with and created medical knowledge of the body, which ultimately became part of dynamic bodies of Jewish knowledge in Late Antiquity and beyond.

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THE RECEPTION AND REJECTION OF “FOREIGN” ASTRONOMICAL KNOWLEDGE IN BYZANTIUM

ALBERTO BARDI (WASHINGTON, D.C.)

Methodological Premises and State of the Art

The present article focuses on the reception of astronomical tables stemming from Persian tradition within the Byzantine Empire in the thirteenth and fourteenth century CE.¹ In order to investigate this case of the transfer of knowledge across cultural boundaries, a historical-philological approach was utilized, following the methods and terminology proposed by Hans-Jürgen Lüsebrinck for describing cross-cultural contacts and transfers.²

Astronomical tables contain values (numbers), except for the titles and the names of chronological or astronomical parameters mentioned in them, such as years, months, days, hours, and longitude, latitude, signs, degrees, etc. Such values must be combined through precise mathematical operations in order to get the true position of a celestial body or to predict a celestial phenomenon, such as syzygies, or solar and lunar eclipses. The system upon which these tables are based is Ptolemy's *Almagest*, the major astronomical work for

1 The article presents the preliminary results of a work in progress. Some of these results were published in an article of mine. I have partially reprised that work here in the section “Conclusions” (see below). See BARDI, ALBERTO, *The Paradosis of the Persian Tables. A Source on Astronomy between the Ilkhanate and the Eastern Roman Empire*, in: *Journal for the History of Astronomy* 49.2 (2018), pp. 239-260, especially pp. 252-255. New insights and updates from ongoing research will be published in due time. I am grateful to the editors of this volume and the organizers of the congress.

2 For instance, LÜSEBRINCK, 2005, pp. 129-138.

Western and Middle Eastern astronomy from the second century CE until the age of Copernicus.³ Several commentaries on astronomical tables were written from the fourth century CE onwards. The most famous is the so-called *Small Commentary to the Handy Tables of Ptolemy* by Theon of Alexandria (fourth century CE).⁴

The *Handy Tables* of Ptolemy of Alexandria (second century CE) are the model of all subsequent structured sets of tables.⁵ They were later imported into the Islamic world. Arab scholars translated the *Almagest* and the *Handy Tables* from the ninth century CE onwards. This was not a mere process of direct inheritance. Arab scholars realized that the tables were outdated, because the observational data did not correspond to the mathematical data the tables provided. Therefore, Arab astronomers made innovations on the mathematical astronomy of the Greek tradition, and later also Persian astronomers (from at least as early as the twelfth and thirteenth centuries) inherited the innovations of the Arabs and made their own improvements to the mathematical astronomy of the Greek tradition. To sum up, the results of the improvements of those scholars are the updated astronomical tables and commentaries on how to use them.⁶

In thirteenth- and fourteenth-century Constantinople, Byzantine astronomers regarded themselves as the successors of the Greek tradition. Therefore, the astronomy stemming from Ptolemy was not considered as foreign astronomical knowledge by Byzantine scholars. Foreign astronomy is the astronomical knowledge *not* directly stemming from Ptolemy, which came to Byzantium for instance from the Persian tradition of astronomy, *Persia* corresponding today to the area across Azerbaijan, Iran, Iraq, and Armenia, which was ruled by the Mongols of the Il-khanid dynasty in the thirteenth century. Astronomy had flourished there thanks to observatories built in Maragheh, Baghdad, and Tabriz through the support of the Il-khanids, and to brilliant scholars, as for instance the renowned Muslim astronomer Naṣīr al-Dīn al-Ṭūsī (1201-1274). In the Byzantine Empire, Ptolemy's tables were outdated in the thirteenth century. Therefore, Byzantine scholars imported Persian astronomical tables and commented on them, because they were more accurate than those set out in Ptolemy's *Handy Tables*.

3 Edition of the *Almagest*: HEIBERG, 1898-1903. See also JONES/PEDERSEN, 2011.

4 Edition: TIHON, 1978.

5 Edition: TIHON/MERCIER, 2011.

6 See KENNEDY, 1956 and KING et al., 2001.

In the following sections, the process of importation of the Persian Tables in Byzantium will be accurately analyzed. The analysis is based on, firstly, a series of primary-source texts, entirely or partially edited, of Byzantine commentaries on Persian Tables, and secondly, on a series of scholarly contributions in this research field, especially those of Anne Tihon.⁷ The primary texts have been studied from a historical-philological perspective, paying attention to the features of the reception process and the different ways in which the material was read and used among Byzantine scholars. The existing data about the process of importation were also discussed in terms of my research on the text entitled *Παράδοσις εἰς τοὺς περσικοὺς κανόνας τῆς ἀστρονομίας* (*Instructions for the Persian Tables of Astronomy*), henceforth referred to as the *Paradosis*. It is a Byzantine astronomical commentary on how to use a set of Persian Tables, composed in the middle of the fourteenth century.

The *Paradosis* was examined in the light of the existing research on the reception of Persian astronomy in Byzantium. The results of this examination are structured following the guidelines proposed by the main questions of this volume.

The historical-philological approach used in the present article benefits from a survey by Fabio Acerbi.⁸ Some words on the methodology I adopted are necessary before going on. Studying Byzantine and Greek astronomical texts, such as the *Paradosis*, according to the standard methods of classical philology may be misleading, because it could happen that a branch of a tradition offers a “good text”, but this may be the result of a revision, therefore deceptive for the editor, as the “good text” in that case is not a clue to a text close to the original.

Editing such texts seems a simple task, as those texts provide no great linguistic difficulties in comparison to the texts of classical literature. The content of mathematical and astronomical texts is characterized by variants of mechanical nature and errors related to the content; the vocabulary used in Greek mathematics is coherently technical, the syntax is rigid. Variants interesting for the editor of a mathematical text are, in most cases, portions of text that are of considerable length. We may talk about macro-variants, which can be the result of interpolation, contamination, or omission; in any case, they are evidence of a

7 Cf. PINGREE, 1964; NEUGEBAUER, 1975; TIHON, 1987a; TIHON, 1996; BYDÉN, 2003, pp. 241-257; SALIBA, 2011.

8 See ACERBI, 2016, especially pp. 137-143 for a full-length discussion on the problems in editing Greek mathematical and astronomical texts.

will to modify the text at some point in its transmission. When this type of intervention is recorded in significant quantities or occurs systematically in the branch of a tradition, then this branch probably represents and transmits a recension. We will see one case of such a recension in the following sections, which gives new hints of the nature of the reception of Persian astronomy in Byzantium. The recension will be evidence of a process of “integration” of the Persian astronomical tradition into Byzantine astronomy.

Revisions were frequent because the Byzantine scribes worked within a specific genre of texts, which were read and studied with a practical goal, and which were used for teaching purposes. In Classical Antiquity, mathematics was learned by writing mathematics, that is, by mastering the stylistic codes of Greek mathematics: it was a common practice handed down for centuries among educated people, who became, through practice, experts in mathematical texts, that is, masters in adopting and redacting them. Even in the Byzantine era, as will be seen in the case of *Paradosis*, those who revise the text relate to a well-defined canon within the history of Greek mathematics. These features illustrate an astronomical and mathematical tradition with well-defined canons and with a normative character. That is why processes of “integration” from other astronomical traditions into the dominant Byzantine astronomy were successful, as we will see.

Authority and Legitimation of Persian Astronomy in Byzantium

During the reign of Andronikos II Palaiologos (ruled 1282-1328), astronomy flourished among Byzantine scholars. The number of edited and unpublished sources in this field is very high and of heterogeneous nature; therefore, I will only be able to briefly discuss some of the key points.⁹ The renowned Byzantine scholar Theodoros Metochites (1270-1332) is considered the restorer of Ptolemaic astronomy in Byzantium, because of his strong interest in this tradition. He wrote a primer to the *Almagest*, entitled the *Stoicheiosis astronomiké*, and a commentary on the same work.¹⁰ Through his work, an interest in Ptolemaic astronomy was transmitted to a further generation of

9 See TIHON, 1996 for a broader survey on this topic.

10 See BYDÉN, 2003.

Byzantine scholars. Among them the interest in astronomy grew considerably and it became a field of challenge. The controversy involving Metochites’ pupil Nikephoros Gregoras¹¹ (1290/1-1358/61) and the philosopher Barlaam of Seminara¹² (around 1290-1348) is a case in point. The controversy was caused basically by different theological opinions, but developed also in the sphere of astronomy, precisely in predicting eclipses using the tables of Ptolemy, as knowledge of the heavenly bodies was conceived as a road leading to God.¹³

Still, Ptolemy’s *Handy Tables* were outdated in the thirteenth century. Differently from their Arab and Persian counterparts, the Byzantine astronomers did not have observatories at their disposal, as far as it is known. Once Byzantine scholars recognized the better accuracy of the Persian Tables, they consequently imported them to Constantinople. The Byzantine scholar George Chrysokokkes (active in the middle of the fourteenth century) is the only one at the time explicitly writing about this process of importation in the introduction to his astronomical work, the so-called *Persian Syntaxis*.

The history seems to have gone as follows.¹⁴ Between the end of the thirteenth century and the beginning of the fourteenth century, the Byzantine scholar Gregory Chioniades (ca. 1250-1320) was granted financial support by Alexios II Komnenus to travel to Tabriz and study astronomy there. Chioniades authored the earliest known translations into Greek of works of Persian astronomy, or at least these works are ascribed to him.¹⁵ His opus consists of translations of Persian works founded on earlier works: the *Zīj as-Sanjari* (composed around 1120) by al-Khāzinī, and the work of the Persian astronomer Shams al-Dīn al-Bukhārī commenting on the *Zīj al-Alai* (composed by the Arab astronomer Al-Fahhad around 1176); al-Bukhārī was recognized by Pingree as teacher of Chioniades.¹⁶ Chrysokokkes reports also that he learned astronomy in Trebizond from a priest named Manuel. His identity was not recognized, but he certainly lived after Chioniades, and therefore in the first half of the fourteenth century, and owned the works translated by Chioniades.

11 PLP 4443.

12 PLP 2284.

13 See MOGENET et al., 1983 and TIHON, 2011.

14 The text by Chrysokokkes is partially published in USENER, 1876, p. 27. For a further discussion of Chrysokokkes, see LAMPIDES, 1938.

15 PINGREE, 1964, p. 141.

16 See LEICHTER, 2004, pp. 6-12. Editions of Chioniades’ works: PINGREE, 1985; PASCHOS-SOTIROUDIS, 1998.

The starting phase of the reception of Persian astronomy into the Byzantine Empire is thus led by an individual agent, Chioniades, motivated by a strong interest in astronomy. His works show a process of “imitation” of the Persian astronomical tradition. In fact, however, these works are better regarded as translations, their style only partially features the canonical traits of Greek mathematical language: the Persian astronomical content, therefore, is not entirely subsumed by the mathematical canons of the dominant culture. This process of imitation led to Persian astronomy achieving a measure of success in Trebizond.

However, the number of manuscripts containing Persian astronomy from the first half of the fourteenth century is miniscule in comparison to the large amount of manuscripts containing astronomy stemming from Ptolemy, and especially his *Almagest* and *Handy Tables*. From the middle of the fourteenth century, commentaries on the Persian Tables redacted by Byzantine scholars began to appear, with the number of manuscripts containing texts of Persian astronomy greatly increasing from about the middle of the fourteenth century onward.

The *Persian Syntaxis* by the aforementioned George Chrysokokkes (redacted ca. 1347) is transmitted in more than thirty manuscripts; the *Paradosis*, composed around 1352, in twenty-one manuscripts.¹⁷ The textual tradition originating with Chrysokokkes has never been carefully studied.¹⁸ The transmission of the *Paradosis*, instead, makes it likely that renowned Byzantine scholars personally copied, annotated, and modified the text, for instance Isaac Argyros (around 1300-1375)¹⁹ and Bessarion (1399/1400-1472).²⁰ The manuscripts of the *Paradosis* are documents of a rich scholarly activity on these texts, as they contain many structural reorganizations of the content, marginal notes, and integrations. The transcription process is often done in a careful manner.

The *Persian Syntaxis* and the *Paradosis* are evidence of a process of integration of material from Persian astronomy into the Byzantine tradition:

17 For a manuscript lists, see TIHON, 1987a, pp. 486f. and BARDI, 2017.

18 This constitutes the subject of my ongoing research project. There is an unpublished thesis on the subject, *Etude sur la syntaxe perse de Georges Chrysococcès* by Françoise Oerlemans, supervised by J. Mogenet, but this resource could not be accessed even through the international borrowing services of several institutions.

19 PLP 1285.

20 PLP 2707.

their astronomical content is Persian, but it is explained in the canonical stylistic codes of Greek mathematics, as attested in Greek astronomical commentaries. This style features the “procedural language” and the “algorithmic language”.²¹ Briefly, the procedures describe chains of operations through a normative syntax based on participial forms and indicative future. They never feature numbers (conversion factors and non-variable values excepted) but employ long denotative expressions to describe the astronomical magnitudes involved in the computation of planetary positions, as they are aimed at providing the most general description of a well-defined operation. The algorithms employ the second person of the imperative mood to describe an operation, they always feature a paratactic syntax, and are aimed at summing up the operations expounded in the procedural part through applying them to a computation sample.²²

The *Paradosis*, as already stated, is a commentary on a structured set of Persian tables starting from the year 720 of the Persian calendar, that is the Yazdegerd Era, which corresponds to the year 1350 CE.²³ The original text is based on eighteen chapters, each composed of two parts. The first part explains in procedural language the mathematical operations one should do to compute a determined astronomical magnitude and which values and which tables should be used in each single case. The instructions expounded are applied to an example, again in procedural language. In the example, the computations are usually applied to the year 722 of the Yazdegerd Era, that is the year 1352 CE. After this, the second part, in algorithmic language, is composed by the chain of the computations summed up in textual or tabular form. The structure of the chapter in two parts was already adopted by Theon in the *Small Commentary* in the fourth century CE. The Greek language used in the *Paradosis* is not much different from the one used by Theon, but this is no surprise, because the technical languages involved are usually conservative, and the Greek mathematical code had well-defined canons. The Byzantine scholars, as already stated, used the canonical style employed for redacting astronomical handbooks: the “procedural language” for the first part of the chapter and the “algorithmic language” for the second.

21 This terminology is adopted from an article by Fabio Acerbi, who detected and described the stylistic codes of Greek mathematical language for the first time. See ACERBI, 2012.

22 See ACERBI, 2012, pp. 183-193 for the description at full length of these languages.

23 The Yazdegerd Era is reckoned from the June 16, 632 CE, the day in which the king Yazdegerd III ascended to the throne.

The textual tradition of the *Paradosis* shows that Byzantine scholars aimed at possessing the most complete version of the instructions for this set of tables. On this account, most of the scribes modify the original structure of eighteen chapters, adding new chapters with new computations based on years more recent than 1352 CE, adding alternative computations, or omitting some chapters, according to the interest of each single scribe.

Although no edition has been produced – to date – of the tables commented on in the *Persian Syntaxis* and in the *Paradosis*, the translations of Chioniades and the significant amount of manuscripts containing the *Paradosis* are evidence of a real interest in the Persian Tables on the part of Byzantine scholars. Persian astronomy in Constantinople was given authority through translating, copying, and using for practical purposes the manuscripts containing the Persian Tables, and later through adapting them to the canons of Greek astronomy.

Another Byzantine astronomical treatise provides significant evidence for the processes underlying the legitimation of Persian astronomy in Byzantium. Before 1368, the renowned scholar Theodoros Meliteniotes (1320-1393?),²⁴ archdeacon of the Church Hagia Sophia, major treasure minister (μέγας σακελλάριος) of the Patriarchate, and director of the Patriarchal School in Constantinople, redacted an astronomical work in three books, the *Tribiblos Astronomike*.²⁵ The first book deals with logistics (calculations in the sexagesimal system applied to astronomy) and the use of the astrolabe, the second with Ptolemaic astronomy, the third with Persian astronomy. The third book is, more specifically, a commentary on the same set of tables commented in the *Paradosis*, and it constitutes a refined and enriched version of the *Paradosis*. In principle, the text of the third book is “better”, but its style and variants, once compared to the *Paradosis*, reveal that we are dealing with a recension of the *Paradosis*, rather than an independent text.²⁶ Briefly, the style is systematically “normalized” and additional texts are added to ensure a religious, historical-philosophical, and ethical framework for the Byzantine reader.

Given the importance of Meliteniotes in Constantinople, Book III of the *Tribiblos* is evidence that Persian astronomy was accepted within the milieu of the Emperor and of the Patriarch. The composition of the Book III is in perfect

24 PLP 17851.

25 About this work and its textual tradition: LEURQUIN, 1985; 1990-1993; 1991. About the Patriarchal School of Constantinople see SPECK, 1974.

26 See BARDI, 2017 for an in-depth comparison of the two redactions.

accordance to the years in which Meliteniotes worked as a professor at the Patriarchal School of Constantinople. His recension adapted the work to an official pedagogical framework, and there are also traces of use by a student (see below).

The legitimization of the subject of Persian astronomy from both a philosophical and religious perspective is to be found in the prologue of Meliteniotes’ treatise.²⁷ It is a high-level rhetoric piece, where the scholar explains, through both quotations and indirect allusions to Aristotle, Plato, Patristic, and Biblical sources, that astronomy is a road leading to God, a pillar of the orthodox faith. That is why it had to be studied by a Byzantine student. The text also provides the ethical rules a perfect Byzantine citizen had to follow in order to be accepted by the community. Divine inspiration is invoked for help in writing the three books of the *Tribiblos*, and Book III ends with a thanksgiving prayer to the holy Trinity.

In its introduction, Book III of Meliteniotes also contains a list of Persian astronomers, and this mechanism of genealogy is another tool the author uses to legitimate Persian astronomy. The author mentions Arab and Persian astronomers who had studied the astronomy of Ptolemy and made innovations onwards. This genealogy leads us to look for the sources of the translation of Persian astronomy into Greek.

According to Meliteniotes, his sources of inspiration, to quote some of them, al-Battānī (ca. 858-929), known as Albategnius in the West, Shams al-Dīn al-Bukhārī (thirteenth-fourteenth century) and Naṣīr al-Dīn al-Ṭūsī (thirteenth century).

All the astronomers mentioned by Meliteniotes existed and are traceable. Two of them redacted works translated by Gregory Chioniades. A Persian source was also identified by Raymond Mercier for the *Persian Syntaxis* by George Chrysokokkes (redacted around 1347); it could be the translation of the Persian Tables of the *Zīj-ī Īlkhānī* of the renowned Persian astronomer Naṣīr al-Dīn al-Ṭūsī.²⁸ All these traceable sources are evidence of how Byzantine astronomy of the thirteenth and fourteenth century was indebted to the Arab and Persian traditions.

27 Edition in LEURQUIN, 1990-1993, I, pp. 82-90, with translation into French.

28 MERCIER, 1984. Also, the sources of Chrysokokkes are currently under investigation.

Effects of the act of borrowing

During the act of borrowing from Persian astronomy, Byzantine astronomers did not create new concepts, but took over the innovations of Arab and Persian astronomers.²⁹ The fundamental principles of the tables are those made by Persian astronomers. The mathematical devices introduced by Islamic scholars, which are innovative compared to those of Ptolemy, are usually not modified by the Byzantines.³⁰ Moreover, in all Byzantine commentaries on Persian astronomy, the meridian of reference for the tables is not Constantinople, but a town of the Middle East, namely Tabriz for Chioniades, and *Tybini* (Τυβήνη), i.e., the ancient Armenian capital Dvin, for Chrysokokkes, for the *Paradosis* and for Meliteniotes, like in Al-Tusi's *Zīj-ī Īlkhānī*.³¹ The tables are organized with respect to the Persian calendar, namely the Yazdegerd Era (reckoned from June 16, 632 CE), and not according to the Julian calendar or Byzantine Years (from September 1, 5509 BC), that were reckoned from the creation of the world. Therefore, Byzantine astronomers had to convert their calendar to the Persian one in order to use the tables, and this often led to errors. For this reason, and of course because of the complexity of the innovative mathematical devices provided by the Persian Tables, using the tables was usually difficult for Byzantine scholars.

Social Implications of Persian Astronomy in Byzantium

Among Byzantine scholars, from the beginning of the thirteenth century, one had to study astronomy as a compulsory subject and a learning trend, not only as pure interest.³² Astronomy was ranked second, after theology, in the hierarchy of science introduced by Metochites in his *Stoicheiosis astronomike*.³³ This classification, based on Aristotelian principles, lasted until the fall of Constantinople in 1453. Similar statements about astronomy to those

29 See SALIBA, 2007, pp. 131-170 for the innovations of Islamic astronomy.

30 A survey on this topic is currently ongoing.

31 MERCIER, 1984, p. 56.

32 See TIHON, 2009.

33 See ŠEVČENKO, 1962, pp. 69-76.

of Metochites are to be found in Meliteniotes’ treatise, as discussed above.³⁴ The epistemic value of Persian astronomy was integrated into this general classification of sciences, as the prologue of Meliteniotes shows.

Byzantine astronomers were especially interested in the Easter computus, and by implication in the calculation of syzygies³⁵ and eclipses, which are preliminary steps to calculating the date of Easter. Although in the fourteenth century, the Easter computus was no more at issue, calculating syzygies and eclipses was a field of challenge between scholars.³⁶ Therefore, scholars needed updated and accurate tables. That is why renowned Byzantine scholars of the thirteenth, fourteenth, and fifteenth centuries showed an interest in Persian astronomy. Because of the difficulties in the use of Persian Tables for such computations, Byzantine scholars used at the same time the *Handy Tables* or mixed methods from both sets.³⁷

As was common in Byzantium, the scholars interested in Persian astronomy had knowledge above all in theology,³⁸ and most of them were linked to the social milieu of the Emperor and the Patriarchate. Moreover, some of them taught at schools, and Persian astronomy was among the subjects. The already mentioned Theodoros Meliteniotes³⁹ is author of the *Tribiblos astronomike*; his personal copy is preserved in the manuscript *Vaticanus graecus* 792.⁴⁰ John Chortasmenos⁴¹ (1370-1431) was professor at the Patriarchal School in Constantinople in the first quarter of the fifteenth century, then notary at the patriarchal chancellery in Constantinople (1391-1415). His transcription of Meliteniotes’ *Tribiblos* from the manuscript *Vaticanus graecus* 792 appears in the manuscript *Vaticanus graecus* 1059, adding further computations, and organizing the context of the *Tribiblos* in two columns per pages, so that the theories and their practical application can be

34 For the text see LEURQUIN, 1990-1993, I, pp. 82-84.

35 This word usually means the conjunctions and oppositions of the Sun and the Moon taken the Earth as observational reference. See NEUGEBAUER, 1975, I, pp. 118-124 and JONES/PEDERSEN, 2011, pp. 221-226.

36 See PINGREE, 1971, p. 198 and TIHON, 1987b.

37 See examples in CAUDANO, 2003.

38 For further discussion of the system of education in Byzantium in the fourteenth century see COSTANTINIDES, 1982; CACOUROS, 1997; TIHON, 2009.

39 PLP 17851.

40 Further details about the manuscript are available in LEURQUIN, 1985.

41 PLP 30897; HUNGER, 1969; CACOUROS, 1997.

read in parallel.⁴² Bessarion,⁴³ one of the pupils of Chortasmenos during the first quarter of the fifteenth century in Constantinople, uses the manuscript of his teacher to write integrations to his own copy of the *Paradosis*, preserved in his own manuscript *Marcianus graecus Z 333*.⁴⁴ Bessarion (1399/1400-1472) was a polymath: he was appointed metropolitan bishop of Nicaea in 1437, he participated at the council of Ferrara-Florence as unionist, converted to the Catholic faith in 1439, and was elevated to the position of cardinal, following which, he moved to Italy. He was also a collector of manuscripts and owned manuscripts not only containing Ptolemaic, but also Persian astronomy. For instance, he was the owner of some manuscripts which contain the *Paradosis* and several other astronomical texts, and the iterations of the *Paradosis* in those versions show hints of a particular interest in the text on the part of Bessarion.⁴⁵

The political positions held by Meliteniotes, Chortasmenos, and Bessarion, and the teaching activity of Meliteniotes and Chortasmenos are evidence of the importance the subject Persian astronomy gained in Byzantium in the middle of the fourteenth century.

Conclusions

It is difficult to assess the reception of Persian astronomy in Byzantium, for a huge number of documents makes this page of history very complicated. It seems that Persian astronomy was considered not so important, or even worse than Ptolemaic astronomy and somewhat heretic in Byzantium, as it was partially developed by Islamic scholars.⁴⁶ Probably due to his interest in Persian astronomy, Gregory Chioniades was charged of heresy by the Patriarchate at the beginning of the fourteenth century and had to undertake a public defense in Constantinople and reaffirm his orthodox Christian faith.⁴⁷

42 For a further discussion of the manuscript and its properties, see CANART/PRATO, 1981, pp. 125-131; LEURQUIN, 1990-1993, pp. 51-67.

43 MOHLER, 1923, 1927, 1942; FIACCADORI, 1994; MÄRTL et al., 2013. See also PLP 2707.

44 See MIONI, 1985, pp. 62-66 for a description of the manuscript.

45 See BARDI, 2017.

46 PINGREE, 1964, p. 140; TIHON, 1987a, p. 484.

47 See WESTERINK, 1980.

It is true that astronomical tables could also have been used to make astrological predictions, and astrological texts do appear in manuscripts in which Persian Tables are also contained, but they are to be found in manuscripts containing Ptolemaic astronomy as well. This is no surprise. Astrology and magic were known and practiced by scholars in Byzantium even before the introduction of Persian astronomy, and the difference between these two activities was known in Byzantium.⁴⁸ Theodoros Meliteniotes himself explained the theoretic and epistemic differences between the two activities and condemned astrology in the introduction of his *Tribiblos*. Briefly, astronomy aims at explaining the movements of the celestial bodies through mathematics, whereas astrology aims at connecting those movements to personal human actions in order to find justification through the former for the latter. The outcome of this is a deterministic system. That is why astrology was seen as being against Christian orthodox faith, against God, against the Byzantine State, and therefore to be rejected and condemned.⁴⁹

It is possible that Byzantine scholars interested in Persian astronomy used the tables to make astrological predictions. However, astrology was also practiced by scholars who used the *Handy Tables* of Ptolemy, as it was a fashionable activity. In any case, no Byzantine scholar, either from the Patriarchate or from the Emperor’s group, ever put in question the better accuracy of the Persian Tables. Even Byzantine scholars, such as Nikephoros Gregoras, who seems to have studied only Ptolemaic astronomy, admitted that the *Handy Tables* of Ptolemy were not reliable anymore in the fourteenth century.⁵⁰

The present survey shows that Persian astronomy, namely astronomical tables made by Persian astronomers, were borrowed, translated, and commented upon by Byzantine scholars. Therefore, this kind of foreign knowledge was well received in Byzantium at the beginning of the fourteenth century and extensively used since the middle of the fourteenth century, as the large amount of associated manuscripts and annotations allows us to claim. The initial phase of this transfer of knowledge could be interpreted as an imitative process, with regard to the translation by Chioniades of Persian and Arab

48 Astrology was object of different interpretations in Byzantium. This topic still requires surveys. See MAGDALINO-MAVROUDI, 2006 and especially the essay by Anne Tihon within that collection.

49 See the Greek text in LEURQUIN, 1990-1993, I, p. 88.

50 BYDÉN, 2003, pp. 252f.

works, where Chioniades acts as an agent of transfer moved by personal interest. Thanks to his translation activity, Persian astronomy was spread into the Byzantine Empire; this is in accordance with the extant source we have about the history of Persian astronomy in Byzantium, namely the introductory tale of Chrysokokkes to his *Persian Syntaxis*. Thus, around the middle of the fourteenth century, the transfer became an integrative process from the Persian astronomical tradition into the more dominant Byzantine one, the evidence of this is provided by the Greek mathematical canonical style (procedural along with algorithmic language) used by Chrysokokkes, Argyros, and Meliteniotes in the redaction of their works on how to use the Persian Tables. The integration into the dominant culture is not only due to private intention, but it becomes also institutionalized, as Meliteniotes let Persian astronomy enter into the program of official teaching at the Patriarchal School of Constantinople. In this framework, the epistemic value of Persian astronomy was equal to the astronomy of Ptolemy, the dominant Greek tradition, and perfectly integrated into the classification of the sciences employed by most Byzantine scholars in fourteenth century: Astronomy is placed a step under theology and it is conceived as a road leading to God and a sustain for the orthodox faith, because its research object is the heavens created by God, and the heavenly bodies as abstract objects.

The passage from imitation of the non-Byzantine culture into a process of incorporation into the frameworks of the dominant culture acts on two levels: linguistic and ideological. First, the scholars after Chioniades commented on the Persian Tables writing in the Greek mathematical language following the canons for Greek commentaries. Secondly, the Persian Tables were incorporated into the official teaching program in Constantinople: it means that they were considered eligible by the Empire and the Patriarchate; therefore, their content had nothing against both the Byzantine imperial ideology and the dogmata of the Christian orthodox faith.

Despite the fact that Persian astronomy was inherited and integrated into the Byzantine culture, this transfer of knowledge did not lead to further mathematical innovations. The lack of production of manuscripts containing Persian astronomy in the first half of the fourteenth century still needs to be explained.

The important political appointments obtained by some scholars who wrote and worked on the *Paradosis* are evidence of the interest Persian astronomy gained in the upper echelons of Byzantine society around the middle of the

fourteenth century (as discussed above, Theodoros Meliteniotes, John Chortasmenos, Bessarion). The recension by Meliteniotes aimed at teaching Persian astronomy at the Patriarchal School in Constantinople and the integrations transcribed by Bessarion from Chortasmenos’ copy of Book III show that Persian astronomy was taught in official pedagogical environments.

The historical-philological approach used to reconstruct the textual tradition of the *Paradosis* brought enough data to explain with more accuracy than was previously possible the reception of Persian astronomy in the Byzantine Empire, and especially in Constantinople. This transfer is indeed a case of reception from a non-Byzantine culture into the Byzantine (dominant) one, a multifaceted phenomenon involving processes of imitation and integration, with linguistic and ideological layers; individual and institutional interests. More evidence about the importance of Persian astronomy in Byzantium and its intricate connections with other astronomical traditions will be reached through studying both the textual tradition of the *Persian Syntaxis* and the tables commented on by Chrysokokkes and by the *Paradosis*, a task I am currently tackling at the time of writing.

Abbreviations

MM = *Acta et diplomata graeca medii aevi sacra et profana*, edited by FRANZ MIKLOSICH/JOSEPH MÜLLER, vol. I-IV, Vienna 1860-1890.

PLP = *Prosopographisches Lexikon der Palaiologenzeit*, edited by ERICH TRAPP/RAINER WALTER/HANS-VEIT BEYER, vol. 1-12, Vienna 1976-1996.

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**SECTION 2:
OF MAN AND MOON –
KNOWLEDGE AND CULTURAL MEANING
OF THE MOON**

“HE ASSIGNED HIM AS THE JEWEL OF THE NIGHT” – THE KNOWLEDGE OF THE MOON IN MESOPOTAMIAN TEXTS OF THE LATE SECOND AND FIRST MILLENNIA BCE

TIM BRANDES (MAINZ)

Introduction

Several hundred letters and reports written by Mesopotamian scholars to various Assyrian kings survive from the palace archive of the Assyrian capital, Nineveh.¹ Within these documents, one group of themes that was obviously of outstanding interest to the king and his scholars appears repeatedly: namely, the observation of the celestial bodies. Within this group, reports concerning the observation of the moon take a special position as regards quantity.

The moon was of importance for the Babylonians and Assyrians in two ways: Firstly, the moon was the manifestation of the moon-god, known as Nanna in Sumerian and Sîn in Akkadian. The moon-god was one of the high gods of the Mesopotamian pantheon and thus had been of fundamental importance. Like every other deity in ancient Mesopotamia, he received offerings, was the object of cultic activities, and had temples and cultic personnel. In this article, the moon as a personalized god will not be taken into further considerations.² Nevertheless, the divine nature of the moon has to be

1 Edited by HUNGER, 1992 and PARPOLA, 1993.

2 For the moon as a deity, see HALL, 1995; SJÖBERG, 1960; KREBERNIK, 1995, pp. 360-369.

kept in mind discussing the knowledge of the moon in ancient Babylonia and Assyria. Secondly, the moon was not only worshipped as a deity, but was – as a celestial body – at the same time the object of scientific interest. As a result, Mesopotamian scholars acquired considerable knowledge about the moon, its path in the night sky and its phases. Knowledge of the moon was always mixed with the religious beliefs of the people, as was the knowledge of nature in general. *Science* and *religion/theology* cannot be differentiated in respect to ancient Mesopotamia. Both blended into each other. There was no discrepancy in this for scholars in ancient Babylonia and Assyria.

The following article aims to, firstly, give an insight into the knowledge of the moon existing at the time of the late second and early first millennia BCE in both Assyria and Babylonia,³ and, secondly, to examine the role played by this knowledge in these societies. Since a detailed analysis of the sum of all knowledge of the moon in these societies would massively exceed the limits of the article, only selected insights will be given here.⁴ Therefore, two domains were chosen in which the knowledge of the moon was of crucial importance: the calendar, on the one hand, and celestial omens, on the other. After that, the book's superordinate topic of knowledge being transferred from or to other cultures shall be examined more closely.

3 In the historical setting this article deals with, Assyria had grown from a territorial realm to a vast empire, which came to an end in the late seventh century BCE. In the first half of the first millennium BCE, the power of the Neo-Assyrian Empire was at its peak. In this period, Assyria dominated its southern neighbour Babylonia politically and militarily. Culturally, however, it was the other way around. From the mid-second millennium onward, Assyria increasingly borrowed elements of Babylonian culture, especially with regard to religious practice and science (in the broadest sense).

Although formally Babylonia and Assyria were two separate political entities, we can assume that there were strong political and cultural connections between these two, a common cultural basis, with the details being slightly different. This, not least, becomes apparent through the common language, Akkadian, used by both the Babylonians and the Assyrians.

4 Accordingly, this paper makes no claim of being complete. Texts dealing with the physical appearance of the moon, for example, will not be taken into account. The same applies to mathematical astronomical texts of the second half of the first millennium BCE.

The Moon as an Indicator of Time

Many ancient societies developed a calendrical system to organize their social and economic activities. The societies of ancient Mesopotamia were no exception to this. Originally, there was no common calendar across Mesopotamia. In the third millennium BCE, most of the urban centres still used their own calendrical system.⁵ Probably around 2000 BCE, the calendar of the ancient, important Sumerian cultic centre of Nippur became prevalent in Babylonia, as would later be the case in Assyria.⁶ This calendar was luni-solar in its structure.

The written sources of Babylonia and Assyria demonstrate that the cycles of the celestial bodies were of primary importance for the perception of time in general and the corresponding formation of the calendar. Among all the celestial bodies, the moon was of outstanding significance. One demonstration of this might be found in the introduction of Rm. 288, a hymn to the moon-god Sîn:

1) *a-na* ^d30 *na-an-nàr AN-e [u KI-tim]*

2) *a-pir AGA* ^d*a-num-ú-ti š[á]*

3) [*m*] *u-ad-du-ú u₄-me ITI u M[U]*

- 1) For Sîn the light of the heavens [and the earth],
- 2) who is covered with the crown of Anu-ship⁷ of [...],
- 3) who assigns day, month and ye[ar ...].⁸

Thanks to its obvious dominance in the night sky and its regular cycle, the moon was responsible for the perception of time in the Mesopotamian scholarly tradition. The year, for example, was dependent on the cycle of the moon insofar as it consisted of twelve months. This is stated explicitly in the so-called *Diviner's Manual*, which not only summarizes the curriculum of a

5 For a comprehensive overview of Mesopotamian calendrical systems from the third millennium up to the first millennium BCE see COHEN, 1993.

6 COHEN, 1993, pp. 11 and 225f.

7 Anu (or An in Sumerian) was the god of the sky. He was depicted in both Sumerian and Akkadian literature as one of the highest gods. He was, for example, considered the father of Enlil, the king of the gods. For a comprehensive overview, see WOHLSTEIN, 1976.

8 Edited by PERRY, 1907, pp. 28-30.

diviner, but also gives instructions about how to practise this profession.⁹ Within these instructions, one passage begins with the words:

57) 12 ITI.MEŠ šá MU.1.KAM 6 UŠ *u₄-me-ša*

57) Twelve are the month of the year; six times sixty are its days.¹⁰

The month was also obviously dependent on the cycle of the moon. In several texts, it is clear that a new month started with the first visibility of the moon after its phase of invisibility.¹¹ Accordingly, Assyrian and Babylonian scholars made use of the synodic month, i.e., the timespan the moon needs to go from one lunar phase through to the same lunar phase again. Although hardly mentioned explicitly, it is clear that the calendrical day in Mesopotamia officially started in the evening.¹²

Altogether, knowledge of the cycles of the moon was the foundation of calendar and time. Several mythological texts specifically deal with this fact. It especially becomes clear in the mythical text *Enūma eliš*.¹³ The text describes the rise of the Babylonian city-god Marduk to become the king of the gods. Prior to his elevation, Marduk had to defeat the primeval goddess Tīamat, who planned to wipe out the gods. Out of her dead body, he formed the cosmos. In the course of creation, he also established the stars and let the moon become apparent, as described in the fifth tablet:

1) *ú-ba-áš-šim man-za-[za an ...¹⁴ GA]L.GAL*

2) MUL.MEŠ *tam-šil-šu-n[u lu-ma-š]i uš-zi-iz*

3) *ú-ad-di MU.AN.NA m[i-iš-ra-ta] ʿú'-aš-šir*

4) 12 ITI.MEŠ MUL.MEŠ 3.TA.[ÀM] *uš-zi-iz*

[...]

12) ^dNANNA-*ru uš-te-pa-a mu-šá i[q-t]i-pa*

13) *ú-ad-di-šum-ma šu-uk-nat mu-ši a-na ud-d[u-ú] ʿu₄'-mi*

9 Edited by OPPENHEIM, 1974, pp. 197-220.

10 IBID., pp. 200 and 205.

11 See BEAULIEU, 1993, p. 66.

12 As discussed by SMITH, 1969, p. 74. Cf., among others, BEAULIEU, 1993, p. 66; BROWN, 2000a, p. 107 and STEELE, 2011, p. 471.

13 Latest edition by LAMBERT, 2013.

14 Other manuscripts show that the lacuna has to be complemented by DINGIR. DINGIR – “gods”. See KÄMMERER/METZLER, 2012, p. 228.

- 14) *ar-ḫi-šam la na-par-ka-a ina a-ge-ʿeʿ [ú]-šir*
- 15) *i-na SAG ITI-ma na-pa-ḫi ʿeʿ-[li ma-a-t]i*
- 16) *qar-ni na-ba-a-ta a-na ud-du-ú 6 [u₄]-mu*
- 17) *i-na U₄.7.KÁM a-ga-a [lu ma-aš]-la*
- 18) *[š]á-pat-tu lu-ú šu-tam-ḫu-rat meš-l[i ar-ḫi]-šam*
- 19) *[e-n]u-ma ^dUTU i-na i-šid AN-e ina-[x-x]-x-ka¹⁵*
- 20) *[ina š]iʿ-imʿ-ti šu-tak-ši-ba-am-ma bi/pé¹⁶-ʿni arʿ-k[a-nu]-uš*
- 21) *[u₄-mi bu-ub-bu-l]um a-na ḫar-ra-an ^dUTU šu-taq-ri[b-m]a*
- 22) *[šá-pat-tu¹⁷ U₄.3]0.KÁM lu šu-tam-ḫu-rat ^dUTU lu šá-na-at*

- 1) He (=Marduk) formed the position for the great gods.
- 2) He established the stars, their likeness, (as) *lumāšu*-stars.¹⁸
- 3) He assigned the year, drew the plan.
- 4) Twelve months (consisting of) three stars each he established.

[...]

- 12) He made Nannaru (=the moon-god) appear (and) entrusted the night to him.
- 13) He assigned him as the jewel of the night to determine the days.
- 14) Month by month without cease, he marked (him) with a crown:
- 15) "At the beginning of the month, while rising over the land,
- 16) you shine with horns to reveal six days.

15 LAMBERT, 2013, p. 98 complements *ina-[at-ṭa-l]u-ka*.

16 KÄMMERER/METZLER, 2012, p. 231 read this sign as *pé*. LAMBERT, 2013, p. 98, however, offers the reading of this sign as *bi*. The different readings imply the usage of different verbs: *banû* – "to grow" on the one hand, and *panû* – "to turn" on the other hand. *The Chicago Assyrian Dictionary* b, *banû* B 1., 91 applies the verb *banû*. The different verbs, however, do not change the general meaning of the line, i.e., the decreasing of the moon.

17 The meaning of *šapattu* – "fifteenth day, fifteen days" in this context remains unclear. KÄMMERER/METZLER, 2012, p. 232 omit the translation of the word in their edition: "Der Ša[pattu des] 30. Tages sei wiederum ausgeglichen mit Šamaš." LAMBERT, 2013, pp. 98f. even applies an alternative transliteration, omitting the word *šapattu* completely: "šá [x (x) ud-3]0-kám lu šu-tam-ḫu-rat ^dšamaš lu šá-na-at" and translates the line accordingly ". [. . .] the thirtieth day, stands in conjunction and rivals Šamaš."

18 According to the *Chicago Assyrian Dictionary* l, *lumāšu*, pp. 245f. the term *lumāšu* refers to stars, "whose heliacal risings fall at or near the solstices and equinoxes, and which therefore serve to divide the year". It can also be used as a term for star or for a zodiacal constellation. Considering that Marduk establishes perceivable time in this passage, the first identification just quoted seems to be the most likely in this context.

- 17) On the seventh day, (your) disc shall be halved.
- 18) On the fifteenth day, in the middle of each month, you shall stand in opposition.¹⁹
- 19) As soon as Šamaš (= the sun-god) sees you on the horizon,
- 20) reach properly your full measure and form yourself back.
- 21) At the day of disappearance, approach the path of Šamaš.
- 22) [... 3]0. day you shall stand in conjunction. You shall be equal to Šamaš.²⁰

The lines just presented illustrate how the astronomical knowledge at the time was connected to a mythological narrative.²¹ According to this text, Marduk established the constellations of the stars, and as part of that also the year and its twelve months. The year was fixed by assigning three stars each to each month.²²

Finally, Marduk let the moon, or rather, the moon-god become apparent and gave him instructions about how to behave within one cycle. This means that the *Enūma eliš* describes the induction of the phases of the moon. Thus, the phases of the moon were associated with concrete days of the month and formed the basis for the Mesopotamian calendar.

The *Enūma eliš* incorporates by far the most extensive cosmological passage in Akkadian literature and so contains the most extensive report of the creation of perceivable time. However, it represents only one tradition among several others.²³ An older tradition is concisely written down in the context of

19 Literally, *šutamḫuru* means “to assume the same rank as someone else, to compete with someone, etc.”. However, in this context, as well as in line 22, it refers to the position of the moon in respect to the sun (i.e., conjunction and opposition). See *Chicago Assyrian Dictionary* m1, *maḫāru* 11 a, p. 70.

20 *Enūma eliš* tablet V. Transliteration according to Manuscript B (K 3567 + K 8588), which covers all the lines presented here. KÄMMERER/METZLER, 2012, pp. 228-232.

21 For a detailed analysis of the relationship between Astronomy and the *Enūma eliš* see, among others, HOROWITZ, 2014, pp. 1-8; LAMBERT, 2013, pp. 169-200.

22 Apart from *Enūma eliš*, this system, usually referred to as “Zwölfmaldre”, is best known from the so-called “Astrolabes”. For the designation see WALKER, 1977, pp. 27 and 34. For a detailed edition of these texts, see also HOROWITZ, 2014.

23 LAMBERT, 2013, p. 169 points out that there is actually no systematic treatment of cosmology in the Sumerian and Akkadian literature, and that the *Enūma eliš* was construed out of the textual material and traditions already available. This becomes even more clear when the fact that the *Enūma eliš* is the only text attributing the introduction of perceivable time to Marduk is considered. Other texts ascribe these deeds to Anu, Enlil, and Ea, a triad of gods already occurring in Sumerian literary texts. The earliest Akkadian text mentioning the three gods as establishers of the

a large series of tablets concerning celestial omens called *Enūma Anu Enlil*. Altogether, the three short mythological passages of this text describe quite similar themes to *Enūma eliš*, including how the three gods Anu, Enlil, and Ea put the celestial bodies in place and thus made time perceivable for humankind.²⁴ Both, the *Enūma eliš* and *Enūma Anu Enlil* clearly state that the moon was established in respect to the perception of time, which in turn was inseparably associated with the calendar.

It is worth discussing at this point another aspect of the moon as a celestial body of time. As already explained, every month began with the first visibility of the moon and the foundation for the length of the month was the so-called synodic month. Since a year consisting of twelve synodic months is only about 354 days long, it does not match the actual solar year. To fill the gap, the Mesopotamians intercalated an entire month as soon as they realized that this was necessary. It was not until the fifth century BCE that the intercalation-system was formalized.²⁵

This practical handling of the calendar was juxtaposed with an idealized idea of the calendar, and the corresponding ideal movement of the celestial bodies. Scholarly texts of several kinds describe the year as consisting of exactly 360 days, consisting of twelve months of thirty days each.²⁶

The ideal lunar month was also worked into the lines of the *Enūma eliš* mentioned above. Marduk gave the moon instructions for exactly thirty days. The ideal time was thus arranged at the beginning of creation and was therefore an integral part of the cosmos.

In Mesopotamia, the theological practice of identifying the high gods with certain numbers existed. In this numerical system, the moon-god was identified with the number thirty, which goes together with the idea of this ideal lunar month.²⁷

The ideal course of time was closely connected to the paths of the celestial bodies: every star and every constellation was supposed to rise on a certain day

celestial bodies is KUB IV 47 rev. 37-38, a Hittite ritual-tablet found in the Hittite capital Hattuša (Boğazköy). See LAMBERT, 2013, p. 177.

24 For the latest translation of these passages see LAMBERT, 2013, pp. 175-177.

25 BRITTON, 2007, pp. 115-131.

26 Compare the line of the *Diviner's Manual* cited above.

27 PARPOLA, 2000, pp. 182-184.

of the year. Therefore, the stars virtually fixed the calendrical months to their places.²⁸

Equally, the moon was supposed to cross certain constellations in its path during an ideal month. The astronomical-astrological Compendium MUL.APIN I iv 31-39 states:

- 31) DINGIR.MEŠ *ša i-na* KASKAL ^d30 GUB.MEŠ-*ma* ^d30 *e-ma* ITI
 32) *ina pi-rik-šú-nu* DIB.MEŠ-*ma* TAG.MEŠ-*šú-nu-ti*
 33) MUL.MUL ^{MUL}GU₄.AN.NA ^{MUL}SIPA.ZI.AN.NA ^{MUL}ŠU.GI
 34) ^{MUL}GÀM ^{MUL}MAŠ.TAB.BA.GAL.GAL ^{MUL}AL.LUL ^{MUL}UR.GU.LA
 35) ^{MUL}AB.SÍN ^{MUL}*zi-ba-ni-tu₄* ^{MUL}GÍR.TAB ^{MUL}PA.BIL.SAG
 36) ^{MUL}SUḪUR.MÁŠ ^{MUL}*gu-la* KUN.MEŠ ^{MUL}SIM.MAḪ
 37) ^{MUL}*a-nu-ni-tu₄* ^{MUL}LÚḪUN.GÁ
 38) PAP *an-nu-tu₄* DINGIR.MEŠ *šá ina* KASKAL ^d30 GUB.MEŠ-*ma e-ma* ITI
 39) *ina pi-rik-šú-nu* DIB.MEŠ-*ma* TAG.MEŠ-*šú-nu-ti*

31/32) The gods who stand in the path of Sîn (= the moon-god) and whose regions Sîn crosses in the course of a month and whom he touches:

- 33) The Pleiades, the Bull of Heaven, the true Shepherd of Anu, the Old Man,
 34) the Crook, the Great Twins, the Crab, the Lion,
 35) the Furrow, the Scales, the Scorpion, Pabilsag,
 36) the Goat-Fish, the Great One, the Tails, the Swallow,
 37) Anunītu and the Hired Man.

38/39) All these gods stand in the path of Sîn, whose regions Sîn crosses in the course of a month and whom he touches.²⁹

The ideal – or harmonic – course of the cosmos was more or less the measuring stick the actual world had to compete with. Thus, the Assyrian scholar Balasī warns his King:

28 This especially becomes clear in the schemes written down in MUL.APIN. The Text edited by HUNGER/PINGREE, 1989 contains several sections in which astronomical phenomena are linked to fixed calendrical dates or time intervals. See, e.g., MUL.APIN I ii 36-47 and I iii 1-12.

29 Edited by HUNGER/PINGREE, 1989, pp. 67-69.

8) ITI *lid-ru-ru* MUL AN-*e gab-bu*

9) *it-ta-ma[r]-ku-u ina* HUL I^{III}ŠE

10) *lu la et-ti-iq lid-ru-ru*

8) Let them intercalate a month; all the stars of the sky

9) have fallen behind. (The month) *Addaru* must not pass unfavourably!

10) Let them intercalate!³⁰

From this report, we learn that it was considered an evil portent when parts of the cosmos were no longer in balance with their ideal pattern. The same can be observed with respect to the moon. The moon bothered the Babylonian and Assyrian scholars insofar as a synodic month is not – like the ideal state of the cosmos demands – exactly thirty days long but in average only 29.53 days. Because of certain variations, a synodic month can accordingly be twenty-nine or thirty days long.³¹ For Mesopotamian Scholars, this represented a practical problem inasmuch as the beginning of a month could not easily be computed in advance. Accordingly, the beginning of a month had to be determined by observation most of the time.³²

The Moon in the Context of Celestial Divination

The problem of the moon departing from its ideal path also leads straight to the second domain of knowledge discussed here in which the moon was of great importance: omens. Over the centuries, the Babylonians and Assyrians developed a rich literature on good and evil portents. In this respect, recognizing and interpreting omens and, if necessary, performing their ritual resolution, formed one of the main interests of Mesopotamian scholarship. For this purpose, all parts of the surrounding world were observed very closely, because almost every conspicuity in nature, from lightning up to human physiognomy and behavior, could be a sign sent by the gods to proclaim their benevolence or their anger.³³ Hence, the night sky and the moon were observed precisely. Of the few early examples of celestial divination from the Old Babylonian period,

30 K 760. Edited by HUNGER, 1992, p. 57, no. 98.

31 BRACK-BERNSSEN, 2007, p. 83.

32 BEAULIEU, 1993, p. 66.

33 MAUL, 1994, pp. 3f.

most texts are concerned with lunar omens.³⁴ This might give an impression of the importance of the moon within the sphere of celestial divination.

The Babylonians developed a system according to which they were at least theoretically able to detect whether the cosmos still followed its ideal path by observing the celestial bodies and the time of their appearance.³⁵ The Assyrian palace archive of Nineveh with its letters and reports of scholars was mentioned at the beginning of the article. Among these reports, the matter was often discussed of the month reaching its ideal length of thirty days or the moon being seen too early, as in the following example K 696:

- 1) DIŠ 30 *ina* U₄.1.KÁM IGI
- 2) KA GI.NA ŠÀ KUR DÙG.GA
- 3) DIŠ *u₄-mu a-na mi-na-tu-šú e-ri-ik*
- 4) BALA U₄.MEŠ GÍD.MEŠ
- 5) DIŠ 30 *ina* IGI.LAL-šú AGA *a-pir*
- 6) LUGAL *a-šá-ri-(du)-tú* DU-*ak*

- 1) If Šin becomes visible on the first day.³⁶
- 2) (this signifies) reliable speech; the heart of the land will be glad.
- 3) When the day reaches its appropriate length:
- 4) (this signifies) a rule of long days.
- 5) If Šin wears a crown on his appearance:
- 6) the king will have a good reputation.³⁷

The text demonstrates that the appearance of the moon is not just of calendrical interest. The exact time of the moon's appearance was interpreted as an omen. If the moon appeared according to the divine plan after thirty days, it was considered a good portent. Nevertheless, if the moon was seen too early, mean-

34 ROCHBERG-HALTON, 1988, p. 9.

35 As Brown has already demonstrated the corresponding schemes recorded in texts such as MUL.APIN, *Enūma Anu Enlil*, and i.NAM.giš.hur.an.ki.a (a mystical or rather explanatory text combining philological and mathematical explanations) are ideal schemes, which means they are not based on observation but are elaborated and idealized. See BROWN, 2000b, pp. 113-125.

36 Meaning the expected first day of the new month. It implies that the previous month lasted exactly thirty days. See BROWN, 2000b, p. 147.

37 Edited by HUNGER, 1992, p. 10, no. 10.

ing on the thirtieth day of the old month or even earlier, the consequences were negative. This is also mentioned in several letters and reports, such as K 722:

- 1) DIŠ 30 *ina* ^{III}AB U₄.30.KÁM IGI
- 2) SU.BIR₄ ^{KI} *aḥ-la-mu-ú* GU₇
- 3) EME *a-ḥi-tum* KUR MAR.TU^{KI}
- 4) EN-*el*

- 1) If Šin becomes visible on the thirtieth day of (the month) *Ṭebētu*,
- 2) the Arameans will devour *Subartu*,³⁸
- 3/4) A Foreigner³⁹ will rule *Amurru*.⁴⁰

However, letters and reports are not the only sources containing material related to lunar omens. The most characteristic sources for Mesopotamian divination are the omen collections: texts dealing with a certain phenomenon and its good and evil portents according to behaviour, appearance, time, and other variables.

Only scant material evidence related to celestial omens survives from both the Old and Middle Babylonian periods, i.e., the first half of the second millennium BCE.⁴¹ Sometime during the second half of the second millennium BCE, Mesopotamian scholars began to compile and canonize individual omen-texts into large omen collections. These collections have come down to us from the neo-Assyrian and neo-Babylonian periods in the first millennium BCE. As a result, a very comprehensive collection of omens concerning all the signs observable in the sky (both celestial and meteorological) was written down. This collection called *Enūma Anu Enlil*⁴² comprises at least seventy tablets,⁴³ of which the first twenty-two tablets are concerned with omens of the moon alone. Further tablets are concerned with solar omens, weather omens, and omens relating to stars and planets.⁴⁴

According to a catalogue from Uruk, the lunar part of the series can furthermore be subdivided into omens concerning the appearance of the moon

38 A designation for the land of Assyria.

39 Literally, one of a foreign language.

40 Edited by HUNGER, 1992, p. 147, no. 264.

41 HUNGER/PINGREE, 1999, p. 12.

42 See also the previous section of this paper.

43 ROCHBERG-HALTON, 1988, p. 18.

44 HUNGER/PINGREE, 1999, pp. 12f.

(Tablets 1-14) and separate from those, lunar eclipse omens (Tablets 15-22).⁴⁵ The following lunar phenomena (cited from Hunger and Pingree) were of interest for scholars concerned with celestial divination:

The first section contains omens concerning unusually early or otherwise irregular (*ina lā minātišū*) appearances of the moon. There follow possibly dark risings of the moon. Many omens are taken from the moon's horns, and from the stars, which are observed next to them. Tablets 8-10 deal with lunar halos. Little is preserved of Tablets 11-13. Tablet 14 is made up of tables for the moon, i.e. it is largely astronomical [...]. Tablets 15-22 deal with lunar eclipses.⁴⁶

It might be interesting to point out again that the mythological passages describing the instalment of the moon by Anu, Enlil, and Ea, as mentioned above, were written as an introduction to the omen collections of *Enūma Anu Enlil*.

The sheer amount of twenty-two tablets with lunar omens makes it clear that knowledge of the moon and its associated phenomena was of crucial importance for Babylonian and Assyrian scholars. Among the lunar omens, those concerned with eclipses seem to have been the most important and the most closely observed. The scholars of Babylonia and Assyria considered eclipses to be an exceedingly dangerous sign. Accordingly, they paid great attention to this phenomenon. As already mentioned, the collection of eclipse omens in *Enūma Anu Enlil* alone comprises eight tablets. A short example from Tablet 21 § VI, 1 f. shall be given here:

- 1) DIŠ *ina* ^{III}KIN U₄.14.KAM AN.MI GAR-*ma ina* ^{IM}SI.SÁ SAR-*ma ina* ^{IM}U₁₈.LU
 KIMIN ^{IM}KUR.RA *iz-ku*
ina EN.NUN AN.ÚSAN SAR-*ma ina* EN.NUN MURUB₄.BA *iz-ku* ^{IM}SI.SÁ *ina*
 ŠU-*ka tu-kal*
 KA_xMI-šú IGI-*ma ana* LUGAL URI^{KI} EŠ.BAR SUM *ana* LUGAL ĦI.GAR
 šum-*ma* LUGAL AN.MI *i-te-ti-iq-šú* ŠĖG.MEŠ *ina* AN-*e* A.KAL.MEŠ *ina* IDIM
 TAR.MEŠ
 SU.KÚ *ina* KUR GÁL UN.MEŠ TUR.MEŠ-*ši-na ana* KÙ.BABBAR BÚR.MEŠ

45 *IBID.*, p. 13.

46 *IBID.*, pp. 14f.

- 2) DIŠ U₄.15.KAM AN.MI GAR DUMU LUGAL AD-šú GAZ-*ma* AŠ.TE DIB-*bat*
KIMIN KÚR ZI-*ma* KUR KÚ

[...]

- 1) When in the month *Ulūlu*, on the fourteenth day, an eclipse occurs (and) it begins in the north and clears in the south – variant: east, (that eclipse) begins during the evening watch and clears during the middle watch; the north you keep in mind; You observe the eclipse; for the king of Akkad⁴⁷ will the prediction be set: There will be a rebellion against the king. If the eclipse goes past the king, the rain in the sky and the flood in the springs will be cut off. There will be a famine in the country; people will sell their children for silver.
- 2) If on the fifteenth day an eclipse occurs, the son will kill his father and seize the throne – variant: an enemy will rise and devour the land.

[...] ⁴⁸

According to this example, the consequences connected to a lunar eclipse were quite dramatic. Either the king would be somehow deprived of his throne or the water supply of the land somehow cut off – both causing an existential crisis for the entire land. All in all, knowledge of the moon was a crucial factor in divination, and by that one could even say that from the ancient point of view the knowledge of the moon even was of fundamental importance for the king and all his country.

Transfer of Knowledge

Since the overall topic of the conference seeks to investigate the origin and transfer of knowledge, it is now time to turn the attention towards this issue, having outlined the knowledge of the moon available to and used by Babylonian and Assyrian scholars. This shall be done by initially giving a short overview of the best-known instances of knowledge transfer in the ancient Near East. Here, one has to assume the occurrence of an external transfers between the different cultural spheres of the ancient Near East and internal

47 Meaning Babylonia.

48 Edited by ROCHBERG-HALTON, 1988, p. 241.

transfer involving the passing on of knowledge over the course of time within one cultural sphere (inheriting).

To start with, there is no hint that the scholars of Mesopotamia adopted elements of their body of knowledge about the moon from any of the other surrounding cultures. If there were any sign of foreign knowledge, one would expect to find it either indirectly in the texts themselves, e.g., through loanwords, or directly through ascriptions in the colophons of the texts. However, none of these things can be proven with respect to the body of knowledge about the moon. It does not necessarily mean that no foreign knowledge was ever adapted – the preconditions were certainly there – but if it happened, it was not emphasized in any way. Colophons, for example, sometimes give information about the origin of the text copied on its tablet.⁴⁹ However, the information of the colophons gathered and published by Hermann Hunger⁵⁰ refer entirely to Mesopotamian cities.⁵¹ Accordingly, they are more indicative of an intra-Mesopotamian transfer of knowledge. This internal transfer, as well as the transfer from Mesopotamia to other regions of the ancient Near East, has already been the subject of several studies. Therefore, it should suffice to point out the well-known “highlights” from this research on knowledge-transfer.

Considering the internal transfer of knowledge, we can assume that at least part of the knowledge was simply inherited from Sumerian traditions of the third millennium BCE. The areas of Sumer and Akkad, with their ancient city-states, lay in southern Mesopotamia and later became the heartland of Babylonia. Although Akkadian displaced Sumerian as a spoken language roughly around 2000 BCE, Sumerian did not vanish in any way. On the contrary, Sumerian remained an important literary language until the end of cuneiform writing. Accordingly, traditions and knowledge of Sumerian texts were passed on over the course of time. Babylonian scholars thus directly followed Sumerian cultural traditions and knowledge. The prestigious and venerable cities of southern Mesopotamia were also important to Assyrian kings, as will be demonstrated below. The importance of these old traditions for both Babylonian and Assyrian scholars can be illustrated through the

49 HUNGER, 1968, pp. 6f.

50 *IBID.*

51 Cf. Index II of HUNGER, 1968, pp. 157f., which lists the places of origin mentioned in the colophons discussed in the book. As pointed out previously by FRAHM, 2012, p. 17, note 7, the collection is no longer up to date in respect to new texts and is in need of revision.

example of the colophon of KAR 177, a hemerological tablet found in Assur and dating to the Middle Babylonian Period.

25) U₄.ME DÙG.GA.MEŠ KA 7 [up⁵²-pa-a-n]i

26) GABA.RI UD.KIB.NUN^{KI} NIBUR^{KI}

27) KÁ.DINGIR.RA^{KI} UD.UNUG^{KI}

28) ŠEŠ.UNUG^{KI} UNUG^{KI} u eri-du₁₀^{KI}

29) *um-ma-a-ni ú-na-as-si-ḫu-ma*

30) *ú-na-as-si-qu-ma*

31) *a-na* ^m*Na-zi-múru-^rtaš*

32) LUGAL ŠÚ SUM-*nu*

25) The favourable days according to the wording of seven T[ablets]

26) (after) the originals of Sippar, Nippur,

27) Babylon, Larsa,

28) Ur, Uruk and Eridu.

29) The scholars excerpted

30) and chose (them)

31) (and) to Nazimaruttaš

32) the king of the universe they gave (it).⁵³

In this colophon, all important cities of southern Mesopotamia are listed. The text thus indicates a crucial aspect concerning the intra-Mesopotamian transfer of knowledge: the cities mentioned were Babylonian cities, but the tablet itself was found in Assur, the longstanding capital and cultic centre of Assyria. Correspondingly, the Assyrian scholars who compiled this tablet must have had access to the Babylonian originals. Indeed, the transfer of an immense amount of knowledge in form of tablets from Babylonia to Assyria is a well-explored theme within Babylonian and Assyrian cultural historiography. This transfer of knowledge increasingly occurred during military conflicts between Assyria and Babylonia in the second half of the second millennium BCE. The Assyrian King Tukulti-Ninurta conquered Babylon and thus gained access to extensive knowledge in form of text-collections.⁵⁴ In the so-called Tukulti-Ninurta-Epic, the king directly states that, after the battle with his Babylonian opponent, he

52 For the reading of this sign as DUB see HEEBEL, 2001, pp. 172f.

53 KAR 177, iv, 25-32. HEEBEL, 2011, pp. 171f.

54 CANCIK-KIRSCHBAUM, 2013, pp. 110f.

plundered his cities and carried off all the tablets available.⁵⁵ Eva Cancik-Kirschbaum describes these events accordingly as “[...] Beispiel der systematischen Abschöpfung, Dissoziierung und Re-Implementierung einer ganzen Wissenskultur in Gestalt ihrer Textüberlieferung [...]”.⁵⁶

The same can be demonstrated several centuries later during the reign of Assurbanipal. After a fratricidal war against his brother Šamaš-šumu-ukīn, who held the throne of Babylon, Assurbanipal took tablets from Babylon, Nippur and Bīt-Ibâ and transferred them to his residence at Nineveh, where he had built up the large and famous collection of cuneiform tablets today known as “the library of Assurbanipal”.⁵⁷

Certainly, the transfer of knowledge did not just take place within the context of military conflicts. Assurbanipal, for example, not only took away tablets by force during his military campaigns in Babylonia, but also advised scholars to send him tablets.⁵⁸ Kings and rulers were not the sole moving force behind knowledge-transfer. Scholars also visited other cities on their own and seem to have copied tablets they found there. Moreover, as certain colophons state, tablets could have been borrowed.⁵⁹ The relative mobility of scholars implies that knowledge could also have been transferred orally.

As already mentioned, the borrowing of foreign knowledge cannot be proven for Mesopotamian scholarly texts, but it is quite clear that scholarly contacts to foreign regions of the ancient Near East existed in both the second as well as the first millennium BCE. The Sargonid Court in Nineveh, for example, not only kept Assyrian scholars, but also Babylonians, Syrians and Egyptians – even if these individuals did not necessarily stay voluntarily.⁶⁰ Probably the best example of knowledge transfer in the second half of the second millennium BCE is the fact that a great number of scholarly texts written in Akkadian were found in Hattuša, the capital of the Hittite Empire in today’s central Anatolia. The transfer of knowledge from Mesopotamia into the Hittite empire occurred indirectly at first: The knowledge spread first into

55 Column VI B 1’-11’. Edited by MACHINIST, 1978, pp. 128f.

56 CANKIK-KIRSCHBAUM, 2013, p. 111: “[...] an example of the systematic absorption, dissociation, and re-implementation of a whole culture of knowledge as constituted by its textual tradition [...]”.

57 FRAHM, 2012, p. 21.

58 *IBID.*, pp. 22f.

59 *IBID.*, pp. 17-20.

60 *IBID.*, p. 24.

the area of northern Syria and from there it reached Hittite territory.⁶¹ Later, during the time of the Hittite Middle Kingdom, knowledge was transferred both indirectly, via Hurrian intermediaries, and directly, through Mesopotamian scholars being sent to the Hittite court for diplomatic reasons and who sometimes settled there permanently.⁶² Similar exchanges are illustrated by the Amarna Letters and can be proven not only for the Hittite heartland, but also for the regions of northern Syria (Emar) and the northern Levant (Ugarit).⁶³

After this very brief overview of the possible ways knowledge might have been transferred, both within Mesopotamia and going out from Mesopotamia, it is time to take a look at the concrete examples presented in this paper concerning the moon.

Regarding the calendrical domain, it can be argued that at least a large part of this calendrical knowledge went back to Sumerian traditions and was therefore inherited. The most striking example is probably the Babylonian calendar itself, or more precisely, its month-names. The calendar used by the Babylonians and Assyrians in the late second and first millennia BCE is the so-called Standard Mesopotamian Calendar. However, in the third millennium BCE, the situation was still quite different: several calendrical systems recognizable through their varying month-names were in use by the various small city- and territorial states.⁶⁴ The first attempts to unify a larger territory under one calendrical system were probably made by Išbi-Era of Isin at the very beginning of the second millennium BCE. For this purpose, he used the local calendar of Nippur, the most important transregional cultic centre at that time. This calendar was adapted throughout southern Mesopotamia. In regions further north, such as Mari for example, local calendars continued to exist besides the Nippur Calendar until the reign of the Old Babylonian king Samsuiluna, after which they disappeared.⁶⁵ This Nippur Calendar clearly used Sumerian month-names.⁶⁶

When exactly the Standard Mesopotamian Calendar came into use, is still not entirely clear. The issue gets more complicated through the fact that this Standard Mesopotamian Calendar used the Sumerian month-names of the Nippur-Calendar as logograms to express the corresponding actual month-

61 BECKMANN, 1983, p. 98.

62 *IBID.*, pp. 102-112.

63 RUTZ, 2016, pp. 19f.

64 See, in general, COHEN, 1993.

65 *IBID.*, pp. 11 and 225f.

66 *IBID.*, p. 226.

names. First syllable writings of the month-names clearly indicating the use of this calendar can be found in several personal-names of the Kassite and Middle Babylonian periods. A lexical list called *ur₅-ra = hubullu* dating to the end of the second millennium BCE records for the first time – so far known – a bilingual juxtaposition of the logographic and its corresponding syllabic writing.⁶⁷ It might be interesting to note that Mark E. Cohen has already pointed out that the syllabic month names were of different origin. In this respect, he remarks:

Based on the peculiarities of this calendar, the Standard Mesopotamian calendar may have been an artificial creation, a means to unify a divergent empire. It may have been difficult to perpetuate the use of a Sumerian calendar outside of Southern Mesopotamia. However, the economic and political advantages of a single, standard calendar were as obvious in the second millennium B.C. as they had been on a smaller scale hundreds of years earlier to Išbi-Erra of Isin. So, rather than select one particular city's calendar as the new Reichskalender – [...] – the Babylonian administration invented a hybrid Reichskalender, culling months from various calendars throughout the realm and beyond, thereby hoping to gain international acceptance.⁶⁸

In the present context, it is of peculiar interest that the Standard Mesopotamian Calendar spread far beyond southern Mesopotamia. Under the reign of Tiglath-Pileser I, for example, this Babylonian calendrical system began to be used in Assyrian documents. Under his successors, the Standard Mesopotamian Calendar even replaced the Assyrian calendar, a system originally completely based on the lunar cycle without any intercalary month like in Babylonia.⁶⁹

It was not only the month-names that were taken over by Babylonian, and later Assyrian, scholars, but the underlying system of time-units as well, likewise the idea of the moon being responsible for these time-units. For example, an inscription from Warad-Sîn from the beginning of the second millennium BCE and written in Sumerian describes the moon-god Nanna:

- 1) ^dnanna en gal
- 2) u₄ an kù-ge si
- 3) men nun-na sag-il
- 4) dingir zi u₄ ge₆-bi h_é-h_é

67 IBID., pp. 13 and 297f.

68 IBID., pp. 303f.

69 IBID., pp. 300-302.

5) iti ge-en-ge-en

6) mu silim-ma

[...]

1) (For) Nanna, the great lord,

2) the light that fills up the pure heaven,

3) who wears the princely crown,

4) reliable god, who *alternates*⁷⁰ day and night,

5) who fixes the month,

6) who completes the year.

[...] ⁷¹

This rather early text demonstrates that all the assignments ascribed to the moon as an indicator of time in the first millennium BCE were already fully elaborated in earlier periods and thus passed on over the course of centuries.

The idea of an idealized system of time reckoning, too, can be traced back to Sumerian origins. The idealized month, in which the complete cycle of the moon lasts exactly thirty days can first be detected in economic texts from the early third millennium BCE and was used as a simplified system for calculation and administration.⁷² Ever since the first half of the second millennium BCE, this scheme had been adopted for scholarly texts. The circulation of this idea found its most widespread application in divinatory contexts.⁷³ Accordingly, this special perception of the moon was not only taken over from earlier traditions. The Babylonian scholars took over the underlying system but massively expanded the field of its application.

Overall, calendrical knowledge of the moon was more or less inherited from earlier traditions. The situation concerning the transfer of the knowledge of the moon in respect to its application as a celestial omen is a little bit more complex. As already mentioned, celestial omens concerning the moon are recorded in the Old Babylonian Period for the first time. Whether they were inherited from earlier traditions cannot be proven, due to a lack of textual evidence.⁷⁴ In this case, conversely, we have the situation that the body of

70 Translation according to IBID., p. 220.

71 IM 85469/IM 85470. FRAYNE, 1990, p. 220.

72 ENGLUND, 1988, p. 131; BRACK-BERNSSEN, 2007, pp. 92f. and CANKIK-KIRSCHBAUM, 2009, p. 33.

73 BROWN, 2000a, p. 103.

74 ROCHBERG, 2006, p. 337.

knowledge related to good and evil portents spread over large parts of the ancient Near East and the omens concerning the moon with them.

The clearest example for this stems from Hattuša, the capital of the Hittite Empire. There, tablets with lunar omens written in Akkadian were found. A short extract from them shall be given here:

- 5) [BE 30 SI ZA]G-šú AN IGI EBUR *nap-ša* KUR KUR G[U₇]
- 6) BE 30 SI ZAG-šú KI IGI EBUR KUR TUR-[*ir*]
- 7) BE 30 SI GÜB-šú AN IGI T.L.A.ḪI.A *ina* KU[R...]
- 8) BE 30 SI GÜB-šú KI IGI ÚŠ.MEŠ *ina* KUR [...]

- 5) [When Sîn] turns his ri[ght Horn] towards the sky, the land will con[sume] an abundant crop.
- 6) When Sîn turns his right horn towards the earth, the crop of the land will be small.
- 7) When Sîn turns his left horn towards the sky, life in the land will be [...]
- 8) When Sîn turns his left horn towards the earth, death will [...] in the land.⁷⁵

The example demonstrates that the visual appearance of the moon and its concrete opposite are interpreted as either positive or negative. As just mentioned, the origin of the tablet is not Mesopotamian. The content of the text, however, is from Mesopotamia. The text is thus a direct example of how the knowledge of the moon was transferred from Mesopotamia to neighbouring regions. Regarding the legitimation of this knowledge, we have the same situation as in Mesopotamia: The origin is not explicitly mentioned. However, it stands to reason that the omens were borrowed from Mesopotamia, since the primary language is Akkadian with a translation into Hittite also provided (which is not taken into account in the example). However, the knowledge was not only copied by the Hittite scribes, but occasionally also adapted to local needs:⁷⁶ The Text KUB VIII 35 contains a series of omens concerning the moon. The apodosis of these omens follows a Babylonian scheme insofar as four regions are mentioned that can be affected by the omen, three, Subartu (i.e., Assyria), Amurru, and Elam, are each well-known from Babylonian omen-texts. The fourth region, however, was changed from Akkad (i.e.,

75 KUB 8.6 and KUB 29.11. GÜTERBOCK, 1988, pp. 163-166.

76 RUTZ, 2016, pp. 36-39.

Babylonia) to Ḫatti.⁷⁷ This makes it clear that the Hittites not only copied Babylonian texts but changed it in order to make it useable for themselves.

In their furthest extent, Mesopotamian lunar omens even reached Egypt,⁷⁸ although apparently not until the Achaemenid period.⁷⁹ A very striking example of this is the demotic papyrus pWien D 6278-6289 + D 6698 + D 10111, copied some time during the second or early third centuries CE.⁸⁰ This demotic text shows how the system of Mesopotamian lunar eclipse omens was adopted by the Egyptian scribe, which becomes especially clear through the use of Babylonian month names. Furthermore, the idea of connecting the evil portent with different countries is definitely of Mesopotamian origin. However, the Egyptian scribe did not simply copy the Mesopotamian text, he used the underlying Mesopotamian system of interpretation and changed it: as was already shown in the textual example of *Enūma Anu Enlil* above, eclipses could have been interpreted differently according to the month, day and night-watch on which they occurred. Furthermore, the differences indicated which land would be affected by the evil portent. The Egyptian scribe took this system and altered the content so that it fitted Egyptian circumstances and needs. The Babylonian months were written but at the same time identified with Egyptian ones, and the possible lands affected by the eclipse were exchanged with lands important for the political sphere of Egypt.⁸¹

77 FINCKE, 2004, pp. 235.

78 In relation to knowledge of the moon in Egypt, see the corresponding article *Shapeshifter – Knowledge of the Moon in Graeco-Roman Egypt* by Victoria Altmann-Wendling in this volume.

79 The editor of the text pWien D 6278-6289 + D 6698 + D 10111, Richard A. Parker, argues that the material must have reached Egypt sometime between 625 and 482 BCE. He hypothetically limits this date even further to the reign of the Persian King Darius I, whose reign falls into this time-span and who is probably mentioned in Text A Column IV, 10. For a detailed explanation see PARKER, 1959, pp. 29f.

80 *IBID.*, p. 3.

81 For a detailed analysis of the text's Babylonian origin see *IBID.*, pp. 28-34. Additionally, Victoria Altmann-Wendling extensively discusses this text in her article published in this volume.

Summary

To sum up, Babylonian and Assyrian scholars of the late second and first millennia BCE had accumulated a considerable amount of knowledge concerning the celestial bodies. For practical reasons, the moon had always been of special interest for them: it was the moon on which the Babylonian calendrical system was based, and the moon was probably one of the most important indicators in celestial divination – a profession considered vital for the prosperity of the king and his land. Therefore, the accumulation of knowledge was not only of intellectual interest, but was also actively used within the context of time perception and the science of good and evil portents.

Thereby, Babylonian scholars, and through them also their Assyrian counterparts, profited from a long, direct scientific tradition that can, at least in respect to the calendrical sphere, be traced back to Sumerian origins of the third millennium BCE. The organization of the calendar used by Babylonian and Assyrian scholars from the mid-second millennium BCE onward represents a direct inheritance from earlier periods. Even the Sumerian month-names of the formerly local calendar of Nippur were used in the script as logograms to indicate the month names of the Babylonian calendar. In the scholarly context, the idea of an idealized process of time gained influence. In the third millennium BCE, this idea was only used in the context of economic management, but at least as early as the Old Babylonian Period this conception was transferred into divinatory and other scholarly contexts.

The system of celestial divination cannot be traced back so far with as much certainty. The first texts emerge from the Old Babylonian Period onwards. It might be interesting to mention here that, conversely, celestial divination was probably the most long-living element of cuneiform literature. Even the emergence of mathematical astronomy and the accompanying discovery of the regularity of certain celestial events (including eclipses of the moon) did not put an end to the omen tradition: *Enūma Anu Enlil* was still copied in the second half of the first millennium BCE.⁸² This might give a hint to the importance Mesopotamian scholars ascribed to their own traditions. This divinatory knowledge also appealed to the rest of the Near East. Hence, the knowledge was transferred from Mesopotamia to regions such as Anatolia, Syria, and, to a certain degree Egypt. In Hatti and especially in Egypt, we can

82 HUNGER/PINGREE, 1999, p. 14.

observe how the body of knowledge was not only adapted, but also transformed in order to make it fit into the local cultural and political milieu.

On the contrary, there are no hints that foreign knowledge of the moon was ever adopted by Mesopotamian scholars. The scholars sometimes wrote about the origin of texts in the colophons of tablets, but the data given there only refer to an intra-Mesopotamian exchange of tablets. No input from other regions is explicitly mentioned there so far.

Overall, from the mid-second millennium BCE onward, Mesopotamian scholars not only preserved the knowledge they inherited from earlier periods, but they also used it, worked with it, and ultimately further developed it. The best proof of this is the rise of mathematical astronomy from the middle of the first millennium BCE onward. This topic was not elaborated in this article, but it could serve as another example and a reminder that the knowledge of the moon presented here is just a glimpse on the knowledge of the moon in Mesopotamia.

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SHAPESHIFTER – KNOWLEDGE OF THE MOON IN GRAECO-ROMAN EGYPT

VICTORIA ALTMANN-WENDLING (MUNICH)

Introduction

Apart from the sun, the moon is the largest and brightest celestial phenomenon as seen from earth. Furthermore, in pre-industrial societies without electric lighting the shifting intensity of nocturnal illumination by the moon played a significantly larger role than today. Hence, it is not astonishing that people used to reflect on the causes and effects of its shift in shape and other associated phenomena. Besides the day-and-night-cycle, the moon's phases are clearly the most evident means of chronological orientation and therefore lunar-based calendrical systems are quite universal.¹

This paper will present the practical application of the lunar phases to the calendar, the regulation of religious festivals, and the temporal organisation of the priests' services. These indirect pieces of evidence will be further elaborated by Demotic and Greek papyri that contain computations of the moon's movement and phases. Another topic is the role of the moon in astrology, i.e. how visual phenomena (like eclipses), lunar phases or positions of the moon in the zodiac were used to predict the future. Furthermore, I will also show how the moon and the astronomical phenomena related to it were integrated into the religious imagery and symbolism of ancient Egypt. Since the sources derive mainly from the Graeco-Roman period, during which Egypt was characterised by its multicultural society with increasing contacts to the rest of the Mediter-

1 Cf. NILSSON, 1920, pp. 4f., 15f., 147-239.

ranean and Near Eastern world, reflections on possible exchange, transfer or adoption of knowledge are possible.

“Scientific” Knowledge I: Calendars, Accounts, and Astronomers

Initially, knowledge about the moon in ancient Egypt was acquired through careful observance of the heavenly body. That this “finding” of knowledge took place can be deduced from several facts. First of all, the Egyptian month consisting of thirty days, which suggests that lunation was the basis of the division of time: thirty is the average length of the synodic month with about 29.53 days, the time span the moon takes to gain the same visual appearance again. Nevertheless, the solar, so-called Civil Calendar of 365 days dominates over a sometimes-presumed original lunar calendar back as far as the earliest written records. The existence of a lunar calendar is in any case much debated.² However, there is no doubt that the moon played an important role in the division of time. For example, days within the lunar cycle are sometimes given in historical inscriptions alongside solar-calendar dates.³ Thus, even if there is little evidence for the existence of a lunar calendar in parallel to the civil calendar, there is at least evidence that lunar cycles were counted in some form, which indicates that the constant observation of the moon’s phases must have been carried out.

Further evidence of lunar observation can be deduced from the fact that several festivals and rituals follow lunar phases,⁴ including crucial stages such as new moon, first crescent visibility, and full moon. However, the sixth lunar day, which has no obvious astronomical significance, played an important role

2 Discussed e. g. by LEITZ, 1989, pp. 54-57; LUFT, 1992; DEPUYDT, 1997; LEITZ, 2000, pp. 77f.; NOLAN, 2003; SPALINGER, 2004; BELMONTE, 2009; – On the civil calendar, see most recently GAUTSCHY, 2011; RAMCKE, 2014.

3 Their correlation forms the basis for the absolute chronology of Egyptian history in modern Egyptological research (on these double dates cf. PARKER, 1950, pp. 17-23; LEITZ, 1989, pp. 80-89 [with references]; DEPUYDT, 1997, pp. 177-215; DERSTINE, 2016).

4 A complete list can be found in GRIMM, 1994, pp. 124f., 419-441; BURKARD, 1995, pp. 96-110.

in numerous rituals.⁵ All of them were most probably annual “high feasts” rather than monthly events, because specific solar months are given in calendar lists: While a specific period of time in the civil calendar was fixed, the exact date of the beginning of the festival was determined by the lunar phase; this is comparable to the Christian Easter date.⁶ The New Moon and Behedet Feast was a particularly famous feast occurring in the month Epiphi (III. *šmw*). It celebrated the arrival of Hathor of Dendera in the temple of Horus of Edfu and their joint journey to the local necropolis.⁷ Its duration of fifteen days is evidently oriented towards the lunar cycle, as this represents the time span from new moon to full moon, on which the climax of the festival took place, probably with special processions that reproduce the constellation of sun and moon on that day.⁸ However, the term “give appearance to (the god) Min every new moon (*šḥ j(t) Mnw n psḏn.tyw nb*)” that is preserved in a festival list in the Temple of Kom Ombo suggests that there were also monthly festivals.⁹ Further evidence for this is provided by practices associated with the day of the new moon, on which the moon remained invisible and was therefore thought to be in an endangered state and needed to be secured by rituals against its enemies.¹⁰

From the time of the Middle Kingdom onward, the lunar calendar also determined and regulated priestly service.¹¹ The priests were organised in four, later five, so-called *phylai* (sg. *phyle*, literally “tribes”, äg. *s3*), each *phyle* being on duty in the temple for one month. Service was to begin on the second lunar day (*3bd*), i.e. the first day the crescent is visible. From the dates given in wheat receipts from the Roman village of Soknopaiou Nesos, the length of the priests’ service could be calculated.¹² The services lasted twenty-nine or thirty days, pointing to a connection with the astronomical lunar month and not with average month lengths or months of the solar calendar. By calculating the

5 The most fundamental work is JUNKER, 1910. Further examination of the date can be found in my doctoral thesis on the moon in Graeco-Roman Egypt (ALTMANN-WENDLING, 2018, pp. 833-843).

6 Cf. RICHARDS, 1998, pp. 345-378.

7 See NAGEL, 2014.

8 ALTMANN-WENDLING, 2017, pp. 426-435.

9 GRIMM, 1994, pp. 124f.; BURKARD, 1995, pp. 108f.

10 Concerning the “Book of the New Moon Festival” see most recently VUILLEUMIER, 2016, pp. 176-221; another new-moon ritual that comprises the ritual destruction of the enemies is studied by LEITZ, 2012, pp. 127-129.

11 DEPUYDT, 1997, pp. 147-151; BENNETT, 2008.

12 LIPPERT, 2009.

actual lunar phase that prevailed on the beginning of the service, Sandra L. Lippert has been able to show that these regulations were based on the old Egyptian calendar and did not draw on the Alexandrian calendar that was introduced after the Roman conquest, and which inserts a leap day every fourth year.¹³ Furthermore, the comparison between the beginning of each *phyle* and the computed lunar phase revealed that one half gives a date for the re-appearance of the moon that is one or two days too late.¹⁴ Because the beginning of the month is determined by the observation of the old crescent, this means that the priests would have announced the last crescent on a day where there definitively was none.¹⁵ Therefore, according to Lippert, the new crescent was probably not observed, but calculated. Unfortunately, no calculation table is known yet which fits into the observed pattern.¹⁶

The Egyptian lunar month starts with new moon, i.e. the phase of invisibility.¹⁷ During this time span, the moon stands between the sun and the earth and is therefore not illuminated by sunlight as seen from earth. To determine the exact day when the moon disappeared, the thin crescent had to be closely watched. Prior to the use of computed tables in the Graeco-Roman period, the thin crescent had to be closely watched in order to determine the exact day when the moon disappeared.¹⁸ Because the observation of a celestial body near to the horizon is very difficult due to atmospheric disturbances, one has to factor in a certain amount of inaccuracy,¹⁹ although in general, the observation conditions were probably better than today.²⁰

The astronomical observation was carried out by priests, the earliest record dating to the Old Kingdom (the first half of the third millennium BCE) concerning a priest called Tjenti, who bears the title “Overseer of the secret of

13 IBID., pp. 186f.

14 IBID., p. 188.

15 IBID. Conversely, this might indicate that the start of the period of priestly service was determined by observation of the new crescent, not by awaiting the day after new moon. If this was the case, the faint new light could easily have been missed and the *phyle* accordingly started one or even two days delayed.

16 IBID., pp. 193f., see below.

17 The same starting point applies to modern astronomy.

18 See below.

19 WELLS, 2002; DOGGETT/SCHAEFER, 1994; SPALINGER, 2002; BENNETT, 2008, pp. 525-554; GAUTSCHY, 2011, pp. 4f.

20 GAUTSCHY, 2011, p. 14; p. 130; RAMCKE, 2014, p. 323 with notes 30 and 35.

the sky, who sees the secret of the sky (*hry-sš3 n p.t m33 št3 n p.t*).²¹ Other possible verbs and designations for stargazing from the Old Kingdom to the Graeco-Roman period are *sb3y/wnw.ty*,²² *wnwn*,²³ and perhaps *wr m3.w*, “Greatest of the Seers”, the name of the high priest of Heliopolis, the important religious centre that was known for its solar cult, but where important observations of other celestial phenomena also took place.²⁴

However, the most important and best-known sacerdotal title associated with astronomical observation is *wnw.ty* (from the Middle Kingdom on) resp. *jmy-wnw.t* (since the Ramesside period), literally “the one who belongs to/who is in the hour” and therefore called in Egyptology “hourly priest”.²⁵ This designation shows that their task was principally strongly connected with the measuring of time. The exclaiming of the current time by these priests is mentioned in several temple texts.²⁶ But besides this function, an inscription on the statue of the priest Harkhebis from the Ptolemaic period recounts detailed knowledge of astronomical processes, such as the rising, setting, and culmination of the celestial bodies, the heliacal rising of the star Sirius which marked the beginning of the year, the course of the sun through the year, and the division of the hours during day- and night-time; furthermore, the conjunctions and probably the phases are also mentioned.²⁷ Another text on a similar statue of the same period names also the praising of the moon (*dw3 Jwn-h'*) as the epithet of an *jmy-wnw.t* priest.²⁸ Demotic inscriptions from Philae and Dakke

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- 21 On the history of Egyptian astronomers, cf. FISSOLO, 2001; LULL, 2004; WINKLER, 2016, pp. 269-274. The title *wrš* “Watchman”, known from as early as the Old Kingdom, has been suspected of having been a denomination of stargazer, too, since his place of work was located on high buildings, a reasonable spot for observing the sky. However, a lookout tower would be equally adequate for an actual guard, which seems more plausible for some of the textual appearances of this title (FISSOLO, 2001, p. 16).
- 22 ČERNÝ, 1963; LULL, 2004, pp. 67f. (with fig. 2). Another possible reading is *wnw.ty* (DAOUD, 1993, p. 263).
- 23 Wb I, 318, 12; VON LIEVEN, 2000, p. 42, note c.
- 24 MOURSİ, 1972, pp. 147-154. On this location as an important reference point for the known dates of new moon and the heliacal rising of Sirius, cf. LEITZ, 1989, pp. 30f., 51 with note 13, 79, 89-92; GAUTSCHY, 2011, pp. 18, 120, 131.
- 25 SAUNERON, 1959; DERCHAIN-URTEL, 1989, pp. 178f.; JONES, 1994, pp. 42f.; DIELEMAN, 2003, pp. 278f.
- 26 Cf. BIRK, 2014, pp. 81-84; SAUNERON, 1959, pp. 36-39.
- 27 Cf. the extensive commentary by DERCHAIN, 1989, and, more recently, DIELEMAN, 2003, pp. 280f., 285f.; WINKLER, 2016, pp. 272f.
- 28 BIRK, 2014, pp. 80-84.

that originate from one family of priests mention the title “Prophet of Sothis” (= Sirius), “general” of the moon, priest of the five living stars (= planets), who knows the time of the eclipses of sun and moon (*hm-ntr n Spd.t jmy-r3²⁹ ms’ n j’h w’b n p3 sb3 5 ’nh.w nty rh p3 ws n jr ’b n r’ j’h*).³⁰ Here, the interpretation of solar and lunar eclipses as portents appears.³¹ Further proofs for astronomical knowledge derive from papyrus lists containing information regarding different kinds of priestly knowledge that name the designations of the lunar days and additionally portray the lunar phases in pictorial form, albeit in a much schematised manner.³²

The attributes of those priests that figure in reliefs and on statues include their measuring devices: a “visor staff”, made of a palm leaf, and a shadow clock.³³ With those instruments, the priest had the means to measure time by day and by night. They are also mentioned in the *Stromateis* of Clement of Alexandria (second century CE), who describes the appearance and knowledge of the astronomers in a passage discussing the different types of Egyptian philosophy:

And after the singer advances the hour-watcher (*hōroskōpos*)³⁴ with a horologe (*horologion*) in his hand, and a palm (*phoinix*), the symbols of astrology. He must have the astrological books of Hermes, which are four in number, always on his lips. Of these, one is about the order of the fixed stars that are visible, <the second about the position (*táxis*) of the sun, the moon, and about the five planets>,³⁵ another about the conjunctions (*sýnodoi*) and luminous appearances (*phôtismoi*) of the sun and moon; and the rest respecting their risings (*anatolai*).³⁶

29 New reading after QUACK, forthcoming, (chapter 1.2.3.17 Ägyptische astrologische Texte). This could, according to Quack, be the head of a cultic community.

30 GRIFFITH, 1935-1937, pp. 26-31.

31 See below.

32 OSING/ROSATI, 1998, pp. 22-24, Tav. 1; GRIFFITH/PETRIE, 1889, p. 23, plate IX; LEITZ, 2014a, p. 447, plate 91.

33 See the overview by BIRK, 2014; LULL, 2004, pp. 76f.

34 Cf. HEILEN, 2016, p. 534.

35 This part is mentioned later regarding the *Hierogrammateus*, but is allocated to the astronomer in most editions in order to reach the mentioned number of four books (cf. WINKLER, 2016, pp. 271f.).

36 *Clem. Al. Strom.* VI.4, 35, 4, cf. JONES, 1994, pp. 42f.; translation and commentary: DIELEMAN, 2003, p. 278; BIRK, 2014, p. 82; WINKLER, 2016, pp. 271f.

The passage seems to imply that the sharp contrast between scientific astronomy and astrology, the latter considered today predominantly as esoteric superstition, was not existent in antiquity.³⁷ Archaeological finds of the measuring devices of the astronomer assign them to hourly priests (*jmy-wnw.t*).³⁸ Again, the inscriptions on those objects provide information about the knowledge of the astronomer, including insight into the course of sun and moon. One of them says: “I know (*rh*) the course (*nmt.t*) of the two discs [= sun and moon] and each star at its place (*dmj*).” Other inscriptions about the duties of the hourly priests refer to the announcement of festivals and the temporal organisation of food offerings.³⁹ Thus, the exact division of time by means of sun, moon and stars mainly served a ritual purpose rather than organising the daily life of every Egyptian.⁴⁰ It becomes clear that the observation of the moon constitutes an important part in the duties of the hourly priest and it is therefore not astonishing that this continuous activity over hundreds of years led to detailed knowledge of the movements and phenomena of the earth satellite.

“Scientific” Knowledge II: Calculations, Conjunctions, and Astrology

Several texts from Egypt survive that we, from our present-day perspective, would describe as “astronomical texts”.⁴¹ These include tables with dates for the new moons covering cycles of twenty-five years, the period of time that elapses before the pattern of lunar phases is repeated. The reason for this is that

37 Nevertheless, sceptical voices about divination from stars were raised in antiquity, too. One example can be found in Cicero’s *De divinatione*: while he portrays his brother Quintus in the first book as being in favour of divination, Cicero himself speaks in the second book clearly against it (I am grateful to Dominik Berrens for pointing this out to me).

38 BORCHARDT, 1899; BIRK, 2014, p. 82.

39 Cf. note 14.

40 SAUNERON, 1959, p. 36, note 3 compares this to medieval monasteries in which the division of time was mainly related to prayer, with the bells marking prayer times also possibly useful to the laity. In an as yet unpublished manuscript, the sage Imhotep tells the king about the sun, moon, the planets and Sirius in connection with the correct times of festivals (QUACK, 2014, pp. 54f.).

41 JONES, 1994; JONES, 1997; QUACK, 2016, esp. p. 235. – On Egyptian astronomical texts and the problems with interpreting them see recently SYMONS, 2016; HOFFMANN, 2016; on the specifics of Greek astronomical texts JONES, 2016.

exactly 309 synodic months fit into that period.⁴² A similar system was utilised in both Babylon and the Hellenistic World, which consisted of a nineteen-year-cycle containing 235 lunar months, referred to by the Greeks from the fifth century BCE onward as the Metonic cycle.⁴³ Unlike earlier in Mesopotamia, where the beginnings of the months were determined by the observation of the first crescent, the months' lengths were calculated in advance for the Metonic cycle, because the number of days for one cycle is fixed at 6940. The twenty-five-year cycle mentioned in Ptolemy's *Almagest* must in contrast be based on Egyptian models, since only the Egyptian civil year with 365 days fits into this scheme.⁴⁴ This can be taken as an indication for a transfer of knowledge between Egypt and Greece, and furthermore, in which direction it took place.

The most famous of the tables is the Demotic papyrus *Carlsberg 9* from the second century CE.⁴⁵ Its heading says: "Here is the procedure of enumerating the 25 years of the moon in order to make them known (*dj=j-s p3 g3y jp t3 25.t rnp.t j'h r dj.t rh [']m*)."⁴⁶ The first list on the papyrus equates the beginnings of five of the cycles with the regnal years of the Roman emperors Tiberius to Antoninus (19/20-144/145 CE).⁴⁷ After a second list containing a number of zodiacal signs, the papyrus enumerates in a third list the civil day dates for the beginning of the first lunar month in each of the twenty-five years of the cycle. To obtain the dates, the lines of numbers in the papyrus first had to be transformed into reasonable tables, whose arrangement has been discussed by many scholars.⁴⁸ The fourth list shows, according to Leo Depuydt, the scheme by which it is possible to complement the dates for the remaining months.⁴⁹ For the first year, the beginnings of the lunar months are named for all twelve months, while in the following years only the ones for the season *Akhet* (*3h.t*). The dates start only with the second lunation, because the first lunation was mentioned already in the third list. Following this pattern, all remaining

42 Strictly speaking, 309 lunar cycles are about one hour shorter than 9123 days (DEPUYDT, 1998, p. 1281).

43 DEPUYDT, 1998, pp. 1283f.; LEHOUX, 2007, pp. 90-93.

44 Cf. also QUACK, 2016, p. 234.

45 NEUGEBAUER/VOLTEN, 1938; NEUGEBAUER/PARKER, 1969, pp. 220-225; DEPUYDT, 1997, pp. 151f., 198-208; DEPUYDT, 1998.

46 NEUGEBAUER/PARKER, 1969, pp. 221 and 223.

47 Concerning the reading of the emperors see DEPUYDT, 1998, p. 1281, note 9; LIPPERT, 2009, pp. 189f. (with table 5).

48 Cf. with the most recent theory and older references DEPUYDT, 1998, pp. 1284-1294.

49 *IBID.*, pp. 1290f.

months can be calculated. Nevertheless, it remains unclear, if a month had twenty-nine or thirty days, and in which order these hollow (twenty-nine) or full (thirty) months were to be arranged.⁵⁰

This, however, is provided by a similar table in the Greek papyrus *Rylands IV 589*, (formerly *Rylands inv. 666*) produced in Egypt in the second century BCE (180 BCE).⁵¹ In its heading, it explains the content explicitly:

Table of lunar new moons, showing how they are related to the days of the Egyptian twelvemonth. The period of the table is 25 years, 309 months (including intercalary months), 9125 days. It indicates the lunar months and which of them are full, which hollow, which intercalated; the Zodiac sign the sun will be in during each month. When the sun has traversed the 25 years it will return to the same starting point and revolve in the same manner.⁵²

It lists not only the dates for the first lunar cycle of each year, but of every new moon. This is in contrast to *pCarlsberg 9*, because the exact length of every lunar month must have been calculated beforehand. *pCarlsberg* starts with a year in which the beginning of the cycle coincides with I. *zh.t* 1, which seems to be a natural choice, as it is the first day of the civil year. The starting point of *pRylands* on the other hand, I. *zh.t* 20, has probably been chosen because Ptolemy VI, whose regnal year 1 is mentioned at the beginning of the text, ascended the throne in that year.⁵³

Further Egyptian papyri written in Greek containing calculations of the moon's movements and phases are known, mainly from the ancient city of Oxyrhynchus in the Fayum,⁵⁴ but also from Tebtunis.⁵⁵ One of them is *pLund 35a*, which registers the apogees of the moon, i.e. the days of the least progress in longitude when the moon is at its most distant point from the earth, covering the years 69-109 CE, expressed by the regnal year of the emperor and the Egyptian solar calendar date.⁵⁶ It gives the moon's position in the zodiacal signs and its degree inside the sign. In total, a period of 3031 days is covered, which equals 110 anomalistic months, i.e. the time the moon takes between

50 Cf. *IBID.*, pp. 1292f.; LIPPERT, 2009, pp. 192f.

51 TURNER/NEUGEBAUER, 1949, pp. 80-96; DEPUYDT, 1998, pp. 1294f.

52 English translation: TURNER/NEUGEBAUER, 1949, p. 94.

53 DEPUYDT, 1998, p. 1295.

54 Cf. JONES, 1999; see also the list in JONES, 1997, p. 30.

55 JONES/PERALE 2012.

56 *IBID.*, p. 2.

two apogees or perigees (when it is at its nearest point to the earth). Another example is *pRylands 27* (250 CE), which mentions the movements of the moon, not only with respect to the longitude (east-western movement) but also the latitude (height), given in “steps” (*bathmoi*) of 15° each.⁵⁷ Papyrus *PSI 1493* is a table of the moon’s progress on consecutive days, the preserved part of which covers day 80 to 135.⁵⁸ Again, the longitude is given in degrees and minutes. The positions in all the papyri named were calculated by using a predictive scheme that Alexander Jones called the “Standard Lunar Scheme”.⁵⁹ It allowed for the determination of the conjunction (new moon) with a level of accuracy of less than two hours. According to this scheme, the moon’s daily progress varies between about 11.7° and 14.7°, with constant increments of a little over 0.2° per day.⁶⁰ This is evidence for existence of an elaborate theory of lunar and solar movement, although it is unclear whether the calculation was carried out geometrically as in the *Almagest* of Ptolemy or arithmetical as the Babylonians did.⁶¹

Furthermore, papyri with calculations of the moon’s movements and phases exist, albeit seldomly, in the native Egyptian language of that time, Demotic. They were mainly discovered in Roman Tebtunis in the Fayum, where papyri are generally well preserved.⁶² As many of them have just recently come to light during excavations or are still in the process of being published, our understanding of astronomical knowledge in ancient Egypt might still expand.⁶³ Ostracon *Berlin P. 30539* contains dates with an interval of around thirty days, which already makes it likely that the moon was the astronomical body observed.⁶⁴ A conversion revealed that it represents a list of new moons in 184/185 CE. Papyrus *Carlsberg 638* gives the position of the moon between August and September 13 CE, and would, if complete, probably have covered each day of the year 13/14 CE.⁶⁵ That the given dates refer to the earthly satellite could already be concluded from the fact that the movement of up to 15° per day

57 *IBID.*, pp. 2f., 31-34 (translation).

58 *IBID.*, p. 3 with references.

59 *IBID.*, pp. 4-31.

60 HOFFMANN/JONES, 2009, p. 18.

61 HOFFMANN, 2010, p. 235.

62 RYHOLT, 2005, pp. 152f.; QUACK, 2016, p. 235 with note 30.

63 HOFFMANN, 2010, p. 236 mentions two unpublished papyri with lunar dates: pOxford 24/50 from Tebtunis and pStrasbourg 19 vso. from Soknopaiou Nesos.

64 HOFFMANN, 2010, pp. 233-236.

65 HOFFMANN/JONES 2009, pp. 10-20. Hoffmann speculates that it might be a teaching text (*IBID.*, p. 16).

corresponds only with the moon's orbit around the earth. The text lists the day, the sign of the zodiac in which the moon is seen, and the degrees inside the constellation.⁶⁶ *pCarlsberg 638* represents the earliest proof of the "Standard Lunar Scheme" that was in use until the fourth century CE.⁶⁷

A papyrus from Roman Soknopaiou Nesos (*pVienna D 4876*) contains the days and hours of full moons, as could be deduced from the temporal distance between the dates.⁶⁸ Since lunar eclipses only appear at full moon, this table might have been used for the observation of such events. That calculations were definitely also used for eclipses of the moon, in addition to tracking its movements and marking the beginning of the month, is demonstrated by a papyrus from Abusir el-Melek (*pBerlin P. 13146+47*), which lists explicitly the days of lunar eclipses.⁶⁹ It gives two dates for each year where an eclipse could be observed, twenty instances in total. Furthermore, the text states the zodiac sign in which the moon would be seen. The interval of five or six months between the dates is in accordance with the astronomical facts, because a lunar eclipse can only occur when the moon crosses the so-called lunar node, which happens twice a year. The pattern of the eclipses and the position in the signs of the zodiac indicate a date between 84-73 BCE, and the application of the Egyptian civil calendar. With this date, it is the oldest proof for the use of the zodiac in Egypt.

This leads to another field of lunar observation in ancient Egypt: Astrology. In antiquity, it was virtually the same as astronomy and mostly not regarded as less valid.⁷⁰ Thus, a definite allocation of most texts to one field of knowledge or the other is impossible.⁷¹ Although the *loci* ("houses") seem to stem from Egypt,⁷² horoscopes and depictions of zodiacs, whose provenance is clearly of

66 The text finds a close parallel in the Greek Papyrus *Oxyrhynchos 4174* rto. (JONES, 1999, p. 169).

67 Cf. JONES, 1997, pp. 29f.

68 NEUGEBAUER/PARKER, 1969, pp. 243-250.

69 NEUGEBAUER et al., 1981.

70 Cf. above, note 37; VON LIEVEN, 1999, pp. 99f.

71 HEILEN, 2016, p. 507 argues that a distinction between "astrological" and "astronomical" texts is still possible: As a criterion for astrological texts he states that they deal "with changes that these astral motions allegedly bring about on earth", while astronomical texts deal "with mathematical theories and models of the motions of the heavenly bodies".

72 VON LIEVEN, 1999, pp. 101f.; GREENBAUM/ROSS, 2010, pp. 167f.; WINKLER, 2016, p. 247. See *IBID.*, pp. 247-260 on an astrological manuscript (*pCarlsberg 81* and related manuscripts) that contains horoscopes that refer to the positions of planets,

Babylonian origin, were only known in Egypt since the Ptolemaic and (mostly) Roman period, because in Mesopotamia the zodiac was not formalised before the second half of the first millennium BCE.⁷³ However, zodiacs soon started to gain a widespread acceptance.⁷⁴ This becomes visible from zodiacs that were frequently depicted in the lids of Roman coffins. Apart from the zodiac schemes, sun and moon are often included in those representations, which is comparable with zodiacs being depicted together with the solar and lunar cycle on temple ceilings.⁷⁵ Here as well, an intermixture of new knowledge and old tradition becomes visible.⁷⁶ Recent finds of Demotic papyri from the ancient cities Oxyrhynchos, Narmouthis (Medinet Madi), and Tebtunis shed light on Egyptian astrology, too.⁷⁷ Horoscopes in the Demotic language are mostly written on Ostraca, while those in Greek are written on papyrus.⁷⁸ Parts of astrological manuals or theoretical treatises have survived, though many are as yet unpublished.⁷⁹ For example, *pBerlin P. 23547* from year 33 of Augustus (2/3 CE) contains a planet board, with the date (month and day) for the entry of each planet into a zodiac sign.⁸⁰ *pWien D 6005* from the Roman period contains the birth dates of several persons, even with the hour in which they

sun and moon in the different *loci* at the time of birth (cf. pp. 251f., 258f. on the moon).

73 E.g. BRACK-BERNSEN/HUNGER, 1999.

74 On the development of the horoscope and the contribution of Egypt's indigene astral lore to it, cf. GREENBAUM/ROSS, 2010; on the earliest sources of astrology in the Hellenistic world, cf. CAMPION, 2000, pp. 539f.; on the acceptance and incorporation of this foreign knowledge, cf. DIELEMAN, 2003, p. 282.

75 On the astronomical ceilings as representation of encyclopaedic knowledge, see LEITZ, 2014b, pp. 1024-1026.

76 Cf. LEITZ, 2006.

77 Cf. for the Tebtunis astrological manuscripts RYHOLT, 2005, pp. 152f.; WINKLER, 2009.

78 QUACK, 2016, pp. 235f. He assumes that the reason is a difference in wealth, not a deviating ethnicity, since the Egyptian elite was mostly bilingual (WINKLER, 2016, p. 246).

79 Cf. WINKLER, 2009, p. 364-366; QUACK, 2016, pp. 236f. with a division in: 1., judicial texts, i.e. they concern king and country; they are mostly based on the heliacal rising of Sirius, but a differing example, which is based on the moon's appearance, is *pVienna D 6286* (see below); 2., decanologies, i.e. they determine the destiny of a child regarding its birth under one of the 36 decans; according to Quack they show a tendency to insist to traditions; 3., Demotic treatises about the planets in the zodiacal signs (*Dodecatropos*, i.e. the twelve "places").

80 HOFFMANN, 1999.

were born.⁸¹ They seem to be notes of an astrologer, who would generate a horoscope for those people. Astrological manuals that include the positions of the moon are the hitherto unpublished *pCarlsberg 66*, *pCarlsberg 81* and *pCarlsberg 89*.⁸²

The interpretation of celestial phenomena for the prediction of the future was one of the main interests for Mesopotamian stargazers.⁸³ Although most Egyptian divination texts date to the Graeco-Roman period, there is evidence for the interpretation of natural phenomena, astral included, since the Ramesside period.⁸⁴ As astral signs usually the star Sirius⁸⁵ and the decans⁸⁶ are used, but there is one text from the ninth century BCE that indicates that the moon was seen already as a portent: In the so-called *Chronicle of King Osorkon* (twentysecond Dynasty), rebellion is mentioned in connection with a lunar eclipse; the utilised term is (*'m p.t j'h*) “the sky swallows the moon”.⁸⁷ This term is also present in two other sources: in a literary and in a religious text.⁸⁸ However, a technical term for “eclipse” is only documented in Demotic: *jrj 3b3* (lit. “to perform an eclipse”) or *3b3 j'h* (“eclipse of the moon”).⁸⁹ In the Roman period, the moon was definitely used as an omen. For example, the *Book of the Temple* (a normative text about the ideal temple) mentions the “omens of (lunar) eclipses (*shn.w jby*)” in the context of priestly knowledge.⁹⁰

81 HOFFMANN, 1995.

82 WINKLER, 2009, pp. 366-368.

83 An overview is given by CAMPION, 2000; cf. also the contribution of Tim Brandes in this volume.

84 JAMBON, 2013, pp. 158-161; VON LIEVEN, 1999, p. 104; QUACK, 2017, pp. 189f.

85 HUGHES, 1951; see also QUACK, 2017, pp. 191f. with a new translation of the Roman pCairo 31222, with Sirius omens *IBID.*, pp. 200f.

86 *IBID.*, p. 193.

87 The passage is much debated; see most recently and again arguing in favour of a lunar eclipse, more precisely the partial eclipse of February 15, 756 BCE, THUIS, 2010, pp. 180-182. – Other alleged mentions of lunar eclipses, but which more probable describe only the prolonged invisibility at new moon, are cited by DERCHAIN, 1962, pp. 31f. The rare description of eclipses – either lunar or solar – is, especially in religious context, probably based on the reluctance to mention irregular phenomena, which pose a threat for the Egyptian concept of the world order called “Ma’at”.

88 Cf. recently RYHOLT, 2011, pp. 68f.; ALTMANN, 2010, pp. 93-97.

89 However, this word might derive from the older Egyptian *bj3.yt* “wonder”, possibly referring to the rarity of the phenomenon.

90 QUACK, 2002, pp. 168f. RYHOLT, 2005, p. 162 proposes the translation “omina and eclipses” since eclipses are seldomly documented; WINKLER, 2016, p. 270, note 80

Furthermore, the text indicates that the task of interpreting celestial omens was carried out only in an advanced stage of the priests' careers.⁹¹

The most famous astrological treatise concerned with the moon is *pVienna D 6286+6283+6284+6287*, which dates to the late first century CE.⁹² It is obviously influenced by Babylonian omen literature, as indicated by the concordance of Egyptian and Babylonian months at the beginning of the text.⁹³ By interpolation of these months the origin of the text as such – not the papyrus manuscript – could be dated to the seventh to fifth century BCE.⁹⁴ The date is further supported by a new reading of the royal cartouche preserved in the text, which Kim Ryholt identified as the name of King Necho II of the twenty-sixth Dynasty (610-595 CE) and as identical with the legendary Nechepsos.⁹⁵ This can be taken as further proof that the possible exchange of knowledge had already taken place before the Greek and Roman dominion that has often been stated as cause for the introduction of astrology in Egypt. The most plausible date of transfer of astrological concepts seems to be the time of the Assyrian and then the Persian dominion over Egypt beginning in the seventh century BCE.⁹⁶ This is further supported by records from Nineveh that mention scholars and scribes from Egypt together with Assyrian astrologers.⁹⁷ In contrast, the autobiographical inscription of an Egyptian called Udja-horresne describes how he was made chief physician of the Persian King

thinks of an interpretation as a *pars pro toto* for all celestial phenomena that found use in divination.

- 91 However, the occurrence of astronomers in connection with the low-ranking *pastophoros* seems to contradict this high status (WINKLER, 2016, pp. 273f.). Furthermore, the title *jmy-wnw.t* can appear together with other duties, e.g. those of a scribe (IBID.).
- 92 PARKER, 1959; cf. on the dating due to palaeographical reasons in the first instead of the second century CE QUACK, 2000, p. 85, note 10; see also QUACK, 2016, pp. 236f.; VON LIEVEN, 1999, pp. 101f.; DIELEMAN, 2003, p. 281; QUACK, 2017, p. 193.
- 93 PARKER, 1959, pp. 29f.
- 94 More precisely 625-482 BCE (PARKER, 1959, pp. 29f.). This is further supported by the early Demotic language of Text B (QUACK, 2000, pp. 85f.).
- 95 RYHOLT, 2011, see below.
- 96 Quack discusses whether the transfer happened directly from cuneiform tablets or via Aramaic texts (QUACK 2018, p. 95). For example, in the fifth and sixth centuries BCE, a Jewish-Aramaic community lived in the city of Elephantine, which is documented by several sources appearing in papyri, ostraca and other media (cf. recently ROHRMOSER, 2014).
- 97 GREENBAUM/ROSS, 2010, pp. 176f.; ROCHBERG, 1988, p. 34.

Cambyses and was later under Darius I sent back from Persia to Egypt to rebuild the destroyed “Houses of life”, the Egyptian centres of knowledge.⁹⁸ The exchange of personnel from one country to the other shows a possible way how texts and knowledge could have been transferred.

The divination that is described in the papyrus Vienna is of the judicial or universal type, meaning that it concerns king and country as is common in the Mesopotamian texts.⁹⁹ Furthermore, both the Mesopotamian and the Egyptian apodoses, i.e. the outcomes of the predictions, often concern agricultural and military themes (see Table 1).¹⁰⁰ Several times the event of death is predicted at the beginning of the year, a time that was generally regarded as dangerous according to both Mesopotamian and Egyptian belief.¹⁰¹ All in all a slight tendency to negative prediction prevails.

Topic	Subtopic	Column and line	Evaluation ¹⁰²
<i>Agriculture</i>	famine/no harvest	IV, 21; IV, 24; IX, 13; XIV, 10-11	–
	high/abundant inundation	IV, 22; XIII, 3-4; frag. 1a, 3	+
	barley and emmer abundant	VII, 4; VIII, 15; IX, 10-11; XIII, 12; frag. 1a, 4	+
	fish and fowl abundant	VIII, 9-12; frag. 1a, 6-7	+
<i>Military</i>	ruler sends to ruler	IV, 20; VII, 13-14	+/-

98 DIELEMAN, 2003, p. 281; see recently STERNBERG-EL-HOTABI, 2017, pp. 15-19; the respective passage *IBID.*, p. 24. Herodotus (3.129.2) also discusses the Egyptian physicians of King Darius (this reference was provided by Dominik Berrens). On the transfer of medical knowledge in general, see POMMERENING, 2018, on the exchange with Babylonia especially pp. 171-175.

99 This seems to be the original use of celestial omens (QUACK, 2017, p. 191). Also, the judicial omens make use of rare phenomena such as eclipses, whereas predictions for individuals are more concerned with the regular movements of the planets in the zodiacs (*IBID.*).

100 Cf. the lists in MISIEWICZ, 2016, pp. 376-382; see the edition of the lunar omens in the *Enuma Anu Enlil* (ROCHBERG, 1988).

101 Col. XIV, 3; PARKER, 1959, p. 46; XVI, 2; *IBID.*, 1959, p. 47.

102 My own assessment.

	ruler attacks ruler	IX, 8; XVI, 6	–
	ruler is captured	IV, 27	–
	army is defeated	IV, 26; IV, 27	–
	army revolts	XV, 6-9	–
	foreign countries attacking	VIII, 5-7	–
	great fighting	VIII, 4-5; IX, 9	–
	internal turmoil	IX, 6; XII, 3-4; XII, 11-12; XIV, 7-8	–
	Egypt mourns	XIII, 12-13	–
	Egypt is strong	XIII, 17-18	+
	Egypt slaughters enemies	VII, 6-7; VIII, 8-9; XII, 5-6	+
	peace with enemies	XIII, 15-16	+
others	very happy	IV, 25; IV, 31	+
	good things	IX, 11-12; frag. 1a, 4	+
	King of Egypt lives happily	frag. 1a, 5-6	+
	people of Egypt lives	XVI, 7	+
	death	IV, 28; VII, 5; VIII, 15-16; X, 3; XIII, 6-8; XIV, 3-4; XVI, 2-3; XVII, 3	–
	poverty	VII, 4-5	–
	theft among Egyptians	XII, 12-14; XIV, 8-10	–
	strong wind	XIII, 13-14	–
	death of a star	frag. 1a, 7	–

Table 1: The topics mentioned in the apodoses of the predictions of pVienna.

Two texts are included: The first (A, col. I-V) deals with eclipse omens, and is very close to examples known from Mesopotamia in terms of phraseology and

content.¹⁰³ Thus, the predictions refer not only to Egypt, but also to four foreign territories: Crete, Amurru, Assyria and Hebrew(-land).¹⁰⁴ Furthermore, it divides the celestial dome into different areas that are allocated to different countries; the same holds true for the months and the hours of day and night.¹⁰⁵ As is explicitly stated at the beginning of the text, both solar and lunar eclipses (*3b3 p3 r' j' h*) are treated.¹⁰⁶ The concordance of the months and the divisions of months, sky and hours are repeated a second time before the section about the lunar eclipses. A passage on an unplaced fragment also probably belongs to the lunar passage, as it mentions the day of the full moon and the number of fifteen days, which constitutes the time span of half a month:

[*n3 s*]šw *r h p3 tš* [...] *p3 t3 p3 Jšwr* [...] *mtw=w jr p3 hrw nw* [...*p3*] *hrw 15 r-hr=f* [...] *jr smd.t r-hr p3* [...].¹⁰⁷

[... the wr]itings of knowing the pattern [...] the land of the Syrian [...] and they make the day of seeing [...the] 15 days before it [...ma]ke the 15th (lunar) day before the [...]

Both negative and positive predictions occur.¹⁰⁸ The text says for example:

*jn*¹⁰⁹-*n3.w j' h jr 3b3 IV. pr*[.t *p3 3bd js n3 Grty dd=f r p3 t3*] *rn=f r nfr m-sš*.¹¹⁰

103 PARKER, 1959, pp. 28-34. See also the contribution of Tim Brandes in this volume.

104 The lands mentioned are an adaptation to the demands of an Egyptian text and the contemporary political situation, which speaks in favour of an original composition of the text in the seventh and sixth centuries BCE (QUACK, 2017, p. 196).

105 PARKER, 1959, pp. 30-33. Here as well, deviations from the Mesopotamian system are visible. Thus, the sky is partitioned in the Egyptian text into three and not four parts. Furthermore, it divides the months into three groups in the section about the sun, and into four parts in the section about the moon. While the division into four groups is known from the Mesopotamian sources, this dual system is not proven. The first might be derived from the three Egyptian seasons, while the four groups in the lunar section could be influenced by the four parts into which the lunar month can be subdivided (PARKER, 1959, p. 32).

106 Col. I, 24: PARKER, 1959, pp. 8f.

107 Unplaced fragment, a-e: transliteration and translation: PARKER, 1959, pp. 16f.

108 However, Quack's statement that "no normal or even especially positive prognoses for the foreign regions are attested" (QUACK, 2017, p. 195) does not apply on text A from *pVienna*, since both for Crete and for Amurru it is stated that the land in question should be "exceedingly happy (*nfr m-sš*)" (Col. IV, 25 and 31: PARKER, 1959, pp. 24-27).

If the moon eclipses in (the month) IV. *pr.t*, [(since) the month belongs to the Cretans, it means: The land] named shall be exceedingly happy

Quack points out that, because of the relative high frequency of lunar eclipses – compared to solar eclipses – the fear of disastrous conditions must have prevailed, if the omens had been believed to be true.¹¹¹ He considers it more plausible that rituals against those negative outcomes were carried out and that the absence of catastrophes would be taken as a sign of their efficacy in appeasing the gods, for example.¹¹² The knowledge contained in the predictions would rather be used by the rulers in order to make his political decisions.¹¹³

Another phrase seems to refer to the acquisition of “new” knowledge and is therefore most important in the present paper:

[r]ḥ [n]3 3b3.w j'ḥ[... r] n3 sš.[w] m3[y r]ḥ 3y nb mtw=fjr n-jm=w ḥn' n3 mš'[...]
 [r]ḥ n3 tš n3 3bd.w [rḥ n3] 3bd.w mtw j'ḥ ḥnm n-jm=w ḥn' n3 h[...]¹¹⁴

[Kn]owing the eclipses of the moon [...according to] the ne[w] writing[s]. [Kn]owing every month which produces them, together with the movements [...].

Knowing the patterns of the months [... Knowing the] months in which the moon is friendly, together with the [...].

Nothing is said about the knowledge being foreign, but this seems plausible, considering the similarities between Mesopotamian omen literature and text A of the Vienna papyrus.

Another related text is the unpublished *pBM* 10651 from the first to second centuries CE.¹¹⁵ It contains predictions according to eclipses and the appear-

109 Instead of *ky* (Parker's reading) cf. QUACK, 2000, pp. 84f.

110 Col. IV, 24-25: PARKER, 1959, pp. 24f. (translation modified after QUACK, 2000).

111 QUACK, 2017, p. 197. It should be pointed out that, although solar eclipses are theoretically more frequent than lunar ones, they can only be seen on a locally limited strip on earth and only total or very near to total eclipses are recognized with the naked eye. Lunar eclipses, on the other hand, are visible on the complete nightside of the earth where the moon stands over the horizon; furthermore, partial eclipses are clearly visible, too.

112 *IBID.*, pp. 197f.

113 The provenance of most of the manuscripts is not distinctive; they probably derive from a priestly milieu, although their exact usage remains unclear (*IBID.*).

114 Col. IV, 7-8: transliteration and translation: PARKER, 1959, pp. 20f.

115 QUACK, 2017, p. 193, partly translated on pp. 204f.

ance of the planets. Yet, the manual is structured according to the genuine Egyptian concept of the decanal stars, i.e. on a ten-day basis. The prognoses resemble mostly those in the Mesopotamian texts and *pVienna* regarding the outcomes that deal with peace and war, fertility and death. But additionally, they mention the efficacy of medical remedies. Its hieratic script, combined with Demotic grammar, is unusual for its date and content; this might indicate that the text is based on an older manuscript, possibly from the Saïtic period.¹¹⁶

The second text of papyrus Vienna (B, Col. VI-XVII) is even more interesting, as it provides unique information without an exact parallel in Babylonian sources. It describes omens that are based on the colour of the moon and on other phenomena that appear on or besides the moon disc that always seems to represent the full moon or phases near to it.¹¹⁷ They might be occultations of stars or planets, or even comets.¹¹⁸ The different colours of the disc are shown in depictions (vignettes).¹¹⁹ The text is divided into two registers, the upper referring to the disc as *p3 jtm* “the disc”, the lower designating it explicitly *j’h* “moon”. This can lead to the presumption that the upper register does in fact show the sun, since it is frequently called “disc”, although other celestial bodies, including the moon, can be called “disc”, too. It was mostly argued that stars beside the disc would eliminate this possibility.¹²⁰ Other researchers have instead suggested sunspots as an explanation.¹²¹ The question cannot be answered definitively, but the mention of the fifteenth lunar day relating to the disc (*jtm*) (col. VIII, 2) might indicate that the moon is the celestial body in question.

An example where the preserved vignette shows a disc with a separate part in the middle runs as follows:

*j.jr=k nw j’h [...] jw=f jwn nb r wn w’ jtm m-hr-jb=f j.jr=k dd hr=f r mwt r hpr p3 t3
dr=f r p3y=f ’nh r nfr m-sš jt bd.t*¹²²

116 IBID., p. 193.

117 PARKER, 1959, p. 35.

118 On the debate whether comets were known in ancient Egypt, see WINKLER, 2011, p. 158, note 208.

119 They have been added after the basic layout, as can be deduced from the application of paint, and from col. X on they are shifted by one position, because by mistake the vignette of one column was left out (IBID.).

120 PARKER, 1959, p. 35; QUACK, 2017, p. 194.

121 BOHLEKE, 1996, p. 27, note 87.

122 Col. VIII, 13-17: PARKER, 1959, p. 40.

If you see the moon in the first month of inundation,¹²³ when it is in the colour of gold, while there is a disc inside it, you shall say about it: Death will occur (in) the entire country, (but) its life will be exceedingly good (with) barley and emmer.¹²⁴

Another one, where the vignette has unfortunately been destroyed, says:

*j.jr=k nw j'h jw=f sh̄ty r wn w' sw h̄nw=f j.jr=k ḏd hr=f r th̄th r h̄pr Kmy rnp.t 3.t mtw p3 ḏry t3y p3 jhy [p3] gb r mn-mtw=w ph̄t=f r nh̄m<=f> jw=w sk3 t3 sh̄.t bn jw=w (r) gm šm*¹²⁵

If you see the moon being bright, there being one star in it, you shall say about it: Confusion will occur in Egypt for three years, and the strong one will take the possession of [the] weak one while he has no power to save <himself>. They will cultivate the field, but will not find harvest.

Again, bad and good predictions are included, although the ones with an ill outcome predominate. Other than Text A, the prognoses refer exclusively to Egypt, though interaction with foreign countries is mentioned. Along with it goes the fact that the phenomena are described as such and not in combination with a month in which they appear, each month being ascribed to a certain country. This represents another difference from the omen manuals from Mesopotamia. Even though there are Babylonian omen interpretations concerning the outer appearance of the moon, such as the direction of the “horns” of the moon,¹²⁶ and the colour (red) or dimness,¹²⁷ no description exactly similar to the second part of papyrus Vienna is known.¹²⁸ However, some

123 QUACK, 2017, p. 202, note 49 proposes the reading *tpj 3h̄.t* instead of *hty* (PARKER, 1959, p. 40).

124 See on those contradicting statements QUACK, 2017, pp. 196f., which are also known from Greek predictions.

125 Col. XIV, 5-11: PARKER, 1959, p. 46, corrections by QUACK, 2017, p. 204.

126 See the contribution of Tim Brandes in this volume. The “horns” do not necessarily refer to the crescent, but can refer to eclipses (MISIEWICZ, 2016, p. 355, note 20). The omens also describe phenomena that cannot be observed in reality, probably to include all possible scenarios that were imaginable for the Mesopotamians (CAMPION, 2000, pp. 536f.).

127 Both appear as well in the Greek texts about lunar omens of the sixth century CE (MISIEWICZ, 2016, pp. 373-375).

128 ROCHBERG, 1988, p. 34.

similarities exist with passages about solar omens in the *Enuma Anu Enlil*.¹²⁹ Nevertheless, at least an independent development of the text is plausible. This is supported by the grammatical form *j.jr=k dd* used in the apodoses of the predictions, which comply with the older form *dd.hr=k* that is typical of Egyptian medical prescriptions, for example.¹³⁰ The text therefore seems to be adopted rather than only translated.¹³¹ This also applies to the aforementioned vignettes, which are frequent in Egyptian papyri, mostly in religious contexts, but obviously impossible on cuneiform tablets. Even if the text was based on a Mesopotamian model, it was clearly edited and adapted to Egyptian style, form and traditions.

Religious Knowledge I: Rising and Setting, Waxing and Waning – The Cycle of Lunation

The other type of knowledge about the moon can be found in the religious texts of the Graeco-Roman period, mostly deriving from temple walls.¹³² What seems surprising for a modern scientific mind is, however, in accordance with the fact that many of the known astronomical texts in Egypt have a religious background.¹³³ In the Egyptian language, the moon was denominated by the terms *J'h* or *Jwn-h'*. Depictions either show the actual celestial body as a disc, combined with a subjacent crescent, or as a deity with such a disc above its

129 VAN SOLDT, 1995, pp. 16-50 (Tablet 24 [25] III). This was pointed out by Andreas Winkler in his unpublished PhD thesis on divination and astrology in ancient Egypt (WINKLER, 2011), which thanks to the author I was able to read.

130 WINKLER, 2011, pp. 158f.; QUACK, 2017, p. 194. Quack points out that the announcement of the prediction by the astrologer cannot be found in Mesopotamian divination texts either (IBID., p. 193).

131 See likewise MISIEWICZ, 2016 on a broader sense of adaption of concepts and not a “word-for-word transmission of omen statements” between Mesopotamian and Greek lunar omens (IBID., p. 358). A direct access to cuneiform tables by the Greek is ruled out by Misiewicz due to the large time gap (see below).

132 A full collection and assessment of these texts and an extensive commentary on all concepts related to the moon can be found in my PhD thesis ALTMANN-WENDLING, 2018.

133 QUACK, 2016, pp. 232-234. VON LIEVEN 1999, pp. 188-190 terms this “religious astronomy”.

head. The Roman temple of Esna presents the unique depiction of the whole lunar cycle with the gradually waxing and waning disc and a lunar crescent standing upright.¹³⁴ This differs from the common iconography of the disc in a lying position, as can be observed in regions near to the equator. It could be interpreted as a very late type of representation adopted from Graeco-Roman culture, if it were not for the relief of the goddess Nut in the Osireion of Sety I in Abydos from the New Kingdom (thirteenth century BCE). Here, the moon is shown as a small crescent near the lap of the goddess.¹³⁵ Moreover, the combination of a disc with a crescent on its right side can be found on a funerary papyrus from the twentieth Dynasty; it can probably be interpreted as the waxing crescent.¹³⁶ Nevertheless, the depiction of the lunar cycle in Esna with a sequence of twenty-eight separate phases has never been shown this way before. The only other known examples of this series of lunar phases are to be found on two papyri from the same period that contain sacerdotal knowledge.¹³⁷

The common illustration of the lunar cycle, however, comprises scenes with thirty or fifteen gods; in the latter case, they only cover the waxing phase, each of them representing one day. Every god proclaims to enter the moon or to fill it with different parts and thus contributes to the process of the lunation. The texts, however, describe many different and more elaborate concepts of the events and phenomena during the month. Some of them deal with the outer appearance of the moon and frequently mention a “disc” (*jtn*), e.g. “disc of the night (*jtn n grh*)”. This illustrates that the focus was always put on the most perfect state of the heavenly body, i.e. the full moon. Further specifications include the terms “disc of gold” (*jtn n ktm.t*) or “he who gleams as the Golden one” (*psd m nbw*). This might describe either the colour the moon can take during its rising, or it may refer to the well-documented concept that the nocturnal disc was seen as an equivalent to the sun.

Further special designations for the waxing and waning moon also exist: “He who casts off his form” (*w3h-qj=f*) can be interpreted as the waning phase, whereas “he who repeats his form” (*w3m-qj=f*) apparently refers to the cyclical

134 A second instance occurs in the temple of Deir el-Haggar in Dakhla Oasis, which also dates back to the Roman period.

135 This means it is in the east and therefore shows the old crescent, because all celestial bodies are swallowed by the goddess when they set (= west), and are born again when they rise (= east).

136 AUFRÈRE, 1995, plates 25f.

137 See note 32.

re-appearance of its phases. The frequent term “secret form” (*sšṯ3*) indicates that the lunar cycle seemed a mystery for the Egyptians as well, as it might allude to the disappearance at new moon. In contrast, the joy of seeing the moon, on the part of either men or gods, is also described.

Another important topic is the rising of the moon, often in connection with the corresponding cardinal point. Caused by the rotation of the earth, the eastern horizon is the usual place where every astronomic body appears. Thus, it is surprising that a rising at the western horizon is also mentioned. Its shining could relate to its setting, especially on the morning after full moon, when the moon sets while the sun rises simultaneously. Indeed, this astronomical constellation is described several times. However, the appearance or rising in the west is a different phenomenon, namely the last crescent visibility. On this day, the moon becomes visible about one hour after sunset and then soon sets itself. As has been pointed out already, this moment had to be observed by the priests in order to define the beginning of the month. This explains its crucial importance in the religious texts about the moon.

Connected to the daily rising of the moon is its progress, which is frequently mentioned in the epithets of the moon god. Of course, its path across the celestial dome leads from east to west, as previously explained. But this is only an imaginary course. A unique characteristic of the moon, and certainly of greater significance, is its proper motion, which originates from its orbit around the earth. Each day during its circulation, the moon moves about 13° to the east with respect to the fixed stars. This motion stands in adverse contrast to the starry sky and was certainly recognised by the ancient Egyptians. Therefore, I suggest that the frequent designations of the moon as “he who traverses the sky” (*hns nn.t*), or “lord of the path” (*nb mṯn*) might refer to this special movement.

Finally, some expressions should be mentioned that might be explanations for the occurrence of new and full moon. In one instance, the beaming of the sun is held responsible for hiding (*sdg*) the moon. This account is in accordance with the astronomical explanation for the conjunction. On the other hand, in a text about the eve of the full moon, the mixing rays of light of the two luminaries are described. This in turn corresponds with the opposition of sun and moon at that moment. In some examples, the sun obviously appears in the dominant part of the illumination. Of course, this might be based on its theological superiority. But statements concerning the moon catching the light of the sun do in fact point to knowledge about the true constellation of sun and moon. For example, it is stated on the propylon of the Khonsou temple in

Karnak that on full moon “the Left (eye) (= the moon) is equipped with the beams of the Right (eye) (= the sun) (*j3b.t 'pr m stw.t n wnm.t*)”.¹³⁸

Religious Knowledge II: Rejuvenation and Radiance – The Religious Interpretation of the Moon

Apart from its shape, the moon was associated with a number of other items or topics. For example, it was frequently termed *Jwn-h'*, which means “The rejoicing pillar”. It was also simply called “pillar of the heavens” which might be the origin of this image. An association with strength and power figures particularly in the designation *k3 psj* “blazing bull” with reference to the full moon. The similarity of the bent horns and the crescent may have contributed to this concept and can also be found in other cultures. In contrast to this powerful state, the waning moon or new moon, when the earth satellite has lost all its strength, was subsequently called “ox (*s'b*)” and a designation for the full moon was *snsn-k3.wy* “the union of the two bulls”. This term might derive from the position of sun and moon during the evening of the full moon, when they can be observed standing directly opposite to each other like two bulls in their “sparring matches”. Associated with the moon’s comparison with a bovine animal is its power to enhance the fertility of bulls and cows, which is frequently mentioned. An association of fecundity and the moon is widely spread due to its waxing during the first half of the month. However, the connection to the inundation mentioned by Plutarch is rather adopted from the moon’s identification with the god Osiris. This frequent relationship can be explained by the similarity and parallel accounts of the lunar cycle (with the temporarily disappearance and subsequent gradual waxing) and the myth of Osiris: The god was killed by Seth, his body parts were scattered across the land and eventually put together and revived. Therefore, lunar scenes and allusions to the moon frequently occur in Osirian temples and contexts.

Another characteristic Egyptian lunar metaphor is the identification of the moon as an eye. The same holds true for the sun, as both celestial bodies can be interpreted as right and left eye of the sun god. Myths that involve these heavenly eyes are often intermingled and dependent upon each other. The

138 CLÈRE, 1961, plate 12.

process of filling, healing, providing and counting of the eye is closely associated with this concept.

Another important identification is that of the moon as a child. Here, the process of lunation is equated with the cycle of human life. It is mostly applied on the first crescent after invisibility, because this reappearance is also called the birth of the moon. Its conception is dated on new moon, the first day of the lunar month that lies only one or two days before the new crescent. Apparently, the short time span between conception and birth raised no problem for the use of this symbolic image. However, the moon does not stay in the state of infancy, rather it ages. This is evidenced in the word *jm3hw*, meaning the “provided one”, a term used for the desired state after death. The moon gains this stadium on the fifteenth lunar day, i.e. the day on which full moon ideally occurs. Furthermore, both its aging and rejuvenation are described as happening in the right moment or the moment the moon desires. Therefore, death and rebirth were seen as equally important stages during lunation. Similar to the Chinese philosophy of Yin and Yang, one cannot exist without the other.

The moon’s fundamental role in chronology becomes evident in expressions like “he who opens the month”, “he who appears at the right time” or “he who divides the seasons, the months and the years”. Yet, the most important task ascribed to the moon in the texts was illumination at night-time. The desire for driving away the darkness is not only connected with superstitious fears, rather it is also related to more practical concerns. In days with little artificial light the lunar radiance was of great importance; in fact, at full moon the illuminance is 250 times brighter than without. Connected with this is the equation or comparison of moon and sun. The moon acts as the sun’s deputy by night, shines and gleams like the star, and is called its companion. This concept especially applies to full moon, when moon and sun appear by coincidence in the same size for an observer on earth. In reality, the sun is 400 times larger than the moon, but its distance to earth is 400 times as far, too.

Even though the moon ranked far below the sun in status in Egyptian theology, its description is not restricted to a few repeatedly used expressions or names. Instead, many different astronomical observations were absorbed into religious imagery and texts, and a broad range of interpretations and equations can be found.

Finding, Inheriting *and* Borrowing – The Ways of Transmission of Lunar Lore

The first kind of knowledge that was presented here, which is displayed in the calendric system, religious festivals and the regulation of the priestly service, can be considered as “found” by the Egyptians themselves. It was acquired by constant observation of the heavenly bodies, one of them being the moon, by a narrow group of people. The main duty of those specialised priests was to announce the time for the punctual execution of rituals and offerings in the temple. In a more or less unbroken tradition over three millennia, the amount and accuracy of this knowledge must have improved on a continual basis. Therefore, one could also speak of an intra-cultural “inheriting” or an Egyptian tradition of stellar lore that was handed down from one generation to the other.

The same holds true for the calculations of lunar months, although they have only so far been proven to have existed since the Graeco-Roman period. Peculiarities in the methods of computation show that the techniques were not directly taken over by other cultures (like the Mesopotamian or the Greek), but were developed in Egypt. Since bilingualism was widely spread in Graeco-Roman Egypt, especially among the highly educated priestly class, the Greek language of some astronomical manuscripts, e.g. *pRylands IV 589*, does not imply that they were written by non-indigenous Egyptians.¹³⁹ These Greek texts found in Egypt are therefore no proof for the acquisition of knowledge by Hellenistic culture.

Regarding astrology, the zodiacal system was surely adopted from Mesopotamia, where the system was initially developed. Nevertheless, it was adapted by the Egyptians to their own cultural and religious framework. For instance, the depictions of the zodiac signs comprise a mixture of Mesopotamian motifs (e.g., Capricorn) and Egyptian ones (such as Gemini, which is represented as the Egyptian divine couple Shu and Tefnut).¹⁴⁰ Obviously, an Egyptian equivalent was preferred, whenever possible, but the exact reasons why one phenomenon would be “egyptianised” and others not, must remain in the dark. The same holds true for the only known Egyptian treatise about lunar

139 QUACK, 2016, pp. 236, 238f.; QUACK, 2017, p. 192; VON LIEVEN, 2012, p. 125; JONES, 1994, pp. 46-48. On bilingualism in Egypt, cf. PAPACONSTANTINOU, 2010.

140 NEUGEBAUER/PARKER, 1969, p. 208; cf. LEITZ, 2006.

omens, which is no mere translation, but has been transformed according to culture-specific requirements with respect to layout, language and content.

It has often been stated that Greek astrology was taken over directly from Mesopotamia and only afterwards transmitted to Egypt.¹⁴¹ However, it can be conjectured that the Greeks might in fact have learnt the new “science” from the Egyptians, as they themselves claimed. Besides the Persian Zoroaster and Babylonian sages – in general called Chaldeans¹⁴² –, the Egyptian king Nechepso (or Nechepsos) together with a priest Petosiris are mentioned in some traditions as the source of Greek astrology.¹⁴³ The existence of this king is doubtful and probably to be understood as Necho II, with the epithet “the wise” (*ⲡⲓ ⲥⲥⲓ*).¹⁴⁴ The association of this king of the twenty-sixth Dynasty with astrology is possibly based on a lunar eclipse that marked the beginning of his reign.¹⁴⁵ His companion Petosiris is not only known from Greek sources, but is also attested as an Egyptian sage under the name Petesis.¹⁴⁶ He might also be identical with an individual from Egypt that is named in Assyrian temple records from the eighth to seventh century BCE.¹⁴⁷ A Greek lunarium names as its two sources firstly, a text which the *Hierogrammateus* Melampous wrote for the same king Nechepso, and secondly, a hieroglyphic text from the temple of Heliopolis from the reign of Psammetichus.¹⁴⁸ Nevertheless, modern scholars mostly consider the transmission of astrological knowledge from Egypt to Greece only as pseudo-epigraphy that was proclaimed in order to legitimise the new knowledge by ascribing it to the admired antique culture of Egypt, which was known for its profound and at the same time mysterious wisdom; the attribution was therefore rejected as unhistorical.¹⁴⁹ However, besides eurocentric views of the nineteenth and early twentieth century that represent the post-enlightenment belief that all European “wisdom” is based on

141 CAMPION, 2000, pp. 538f.; DIELEMAN, 2003, pp. 284f.

142 Cf. e.g. Cicero, *De divinatione* I.2; Strabo, *Geographica* XVI, I.6.

143 GREENBAUM/ROSS, 2010, pp. 176f.; QUACK, 2018, pp. 110-120 – Diodorus even states that the Egyptians believed that the Chaldeans learned astrology from them (Diodorus I.81.6; cf. also Diodorus I.81.3-5).

144 RYHOLT, 2011.

145 *IBID.*, pp. 68-72.

146 On both names as variants of the same individual, see *IBID.*, pp. 70f.

147 GREENBAUM/ROSS, 2010, p. 176.

148 *Catalogus Codicum Astrologorum Graecorum* (CCAG) VIII/4, 105, 2-5, see QUACK, 2017, p. 199.

149 E.g., DIELEMAN, 2003, p. 279, who calls it a “mistaken attribution” and a “paradox”.

ancient Greece, this frequent interpretation was mainly based on a lack of available Egyptian astronomical and astrological texts, a situation only recently rectified.¹⁵⁰ But notably, Greek and Roman astrological texts show no direct parallel with Babylonian astrological treatises, but are instead very close to Egyptian Demotic sources.¹⁵¹ Also, they do not work with the intercalary month of Mesopotamia. Instead, for example, in the *Geoponica* (1.10),¹⁵² the beginning of the year is connected with the heliacal rising of the star Sirius, which is clearly an Egyptian concept of time division. There are other examples of Greek astrological papyri that definitely must have had Egyptian models. Some of them, e.g. the work of Hephaestion of the fifth century CE who was an Egyptian himself, uses omens based on Egyptian concepts like the rising of Sirius or the Decans.¹⁵³ He explicitly names ancient Egypt as a source, especially in his chapter about eclipse omens.¹⁵⁴ Zoë Misiewicz, in a study of the transmission of Mesopotamian lunar omens to the moon book in Lydus' *De ostentis* from the sixth century CE, compares the topics of the apodoses of this source with those from the *Enuma Anu Enlil*.¹⁵⁵ The similarities, although not completely identical, lead her to the assumption that they share the same tradition and that those concepts generally circulated in the ancient world.¹⁵⁶ Since many of the respective topics can also be found in the Egyptian *pVienna* (see table 1), here again Egypt could represent a possible intermediate step in the transmission of astrological knowledge across the Mediterranean. This seems all the more plausible, as Lydus himself names as one of his sources the Egyptians in general, especially the famous Petosiris.¹⁵⁷

Albeit written mostly in Greek, most of the astrological tables are not necessarily derived from Greek culture. There is evidence for the association

150 Cf. QUACK, 2016, pp. 230f., 235.

151 QUACK, 2016, p. 238. See also VON LIEVEN, 2012, p. 125.

152 The text is an agricultural treatise preserved in a version dating to the tenth century but uses Greek authors from the fourth century CE.

153 QUACK, 2017, pp. 198f. Further natural phenomena named by Hephaestion are thunder, the colours of stars and the position of the moon in different zodiac signs, and comets (cf. VON LIEVEN, 1999, pp. 104f.). Except for comets, all of these phenomena can be found in Egyptian sources as well.

154 *Apotelesmatika*, I, 20. This tradition lived even further on since Hephaestion's work has been included in the Byzantine astrological corpus. Sirius omens still appear in texts from later oriental cultures (IBID.).

155 MISIEWICZ, 2016, pp. 376-382; see also ROCHBERG, 1988, pp. 30, 34.

156 MISIEWICZ, 2016, p. 383.

157 Lydus, *De Ostentis*, 2.

of texts written in Greek and Egyptian on one single papyrus and *vice versa*: For example, a Greek commentary on Aristotle appears together with an Egyptian astrological manual, and a Greek astronomical almanac was combined with an Egyptian religious text.¹⁵⁸ Furthermore, the combination of an astrological text in Demotic on the recto and an astronomical manual in Greek on the verso is known.¹⁵⁹ Thus, even though the astronomical and astrological concepts and components of knowledge are at least partially based on the Mesopotamian culture, Egypt is still a plausible intermediate step in the transmission of this knowledge from Mesopotamia to Greece.¹⁶⁰

Astronomical knowledge of the celestial body also becomes visible in the religious texts about the moon (god). It relates, in particular, to lunar movement and the phenomena at the most significant phases of the lunation: new and waning crescent, new and full moon. Their incorporation into the theological concepts of the moon shows the strong interest in the earth satellite that can easily be explained by the monthly monitoring of the moon's phases by the priests to keep track with the lunar cycle in order to organise feasts and the priestly service. The awareness of those basic astronomical facts that belong to the field of celestial mechanics could be obtained by visual observation. Therefore, there is no need to ascribe this knowledge to foreign influence. However, some passages give the impression that the illumination of the moon had already been recognised in the astronomically correct way, i.e. that the true source of light is the sun, whose light is only reflected from the moon's surface. This fact was demonstrably known in Greek culture.¹⁶¹ Some of the required measurements, such as that of the globe's circumference, were even taken in Egypt. Last but not least, the famous Alexandrian Library, the

158 QUACK, 2016, p. 239. One might argue that the papyrus could have been reused, but the content is not typical for reutilisation, which appears mainly with files and accounts (pers. com. Joachim F. Quack). Palaeography affirms a contemporaneous record, too.

159 WINKLER, 2016, p. 245.

160 JONES, 1994, pp. 46-48; GREENBAUM/ROSS, 2010, pp. 175f.; QUACK, 2016, p. 235. Quack even proclaims that "Graeco-Roman Egypt should no longer be seen as a backwater, but as a hotbed of technological transfer" (IBID.). A more loose association can be found in the *Tetrabiblos* of Ptolemy, which contained eclipse omens as well, but used a completely different formula than the Mesopotamian and Egyptian sources (ID., 2017, pp. 199f.).

161 BREIDBACH, 2015.

undisputed centre of knowledge in the ancient world, was based in the land of the Nile. A transfer of this piece of knowledge is thus conceivable.¹⁶²

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162 On the mechanism of cultural transfer e.g. SCHIPPER, 2001; VERHOEVEN, 2005; concerning astronomy and astrology, HOFFMANN, 2000, pp. 103f., 119-125; STEELE, 2016. Some scholars assume that the measurement of the globe's circumference or the insight that earth, moon and sun are of global shape already stem from the Egyptians during the New Kingdom, but this is much debated (cf. *pro*: LEITZ, 1989, pp. 101-104; WESTENDORF, 2002; *contra*: e.g. KRAUSS, 2016).

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CONCEPTS CONCERNING THE MOON IN PLUTARCH'S *DE FACIE IN ORBE LUNAE* – FOUND, INHERITED, OR BORROWED IDEAS

LIBA TAUB (CAMBRIDGE)

In considering ancient Greco-Roman concepts about the moon, particularly with regard to the transmission and legitimisation of different ideas from different sources, Plutarch's dialogue *On the Face on the Moon* (*De facie in orbe lunae*) offers an unusual opportunity to consider a number of distinct views, presented in deliberate juxtaposition within the same work. Indeed, the dialogue form of the work offered Plutarch the possibility of approaching his topic from very different perspectives; the dialogue is a particularly convenient way to introduce distinct – even opposing – concepts to readers. As Scott Montgomery has noted, *De facie* has seemingly been used as an “encyclopedia in the history of lunar studies”: he reminds us of Dreyer's earlier remark, in his *History of Astronomy*, that “all that the most enlightened minds of antiquity could make out with regard to the constitution of the moon is contained in a most delightful dialogue by Plutarch”.¹ In the dialogue *On the Face on the Moon*, the participants in the conversation discuss the nature of the “face” that appears on the moon, as well as the role of the moon in the cosmos. And, while Plutarch does not include absolutely everyone's ideas about the moon, he does cover a good deal of conceptual territory, including questions about the sources and authority of knowledge itself.

1 MONTGOMERY, 1999, p. 32; DREYER, 1953, p. 189. Regarding Plutarch's frequent engagement with ideas about the moon, LESAGE GARRIGA, 2015, pp. 145-154 has suggested that “it would actually be easier to list [his] works in which the moon is not mentioned than those in which at least some mention is made”.

The questions posed by the editors of this volume on finding, inheriting, or borrowing are particularly relevant when reading Plutarch's *De facie*, as he himself seems to have grappled with – and offered some answers to – similar questions. In fact, one can imagine that *De facie* is a response to the questions: What are the mechanisms of legitimisation? Are there special fields of knowledge that are linked to certain societies or social groups? How is “foreign” knowledge given authority? To what extent are the ascriptions by the sources concerning the origin of a specific piece of knowledge (found, inherited, or borrowed) traceable and liable to confirmation? Or might they be unattested, or even fictitious?²

Plutarch (born before 50 and died after 120 CE) was from Boeotia in central Greece; he studied philosophy in Athens, visited both Egypt and Italy, and lectured and taught in Rome. Known as a philosopher and biographer, he was also a priest at Delphi, and played an important role in the revival of the shrine there. Especially through his travels, he had opportunities to encounter many different perspectives. Furthermore, he was heir to several distinct traditions, both philosophical and religious.

Many of his works are dialogues, written in the tradition of Aristotle rather than that of Plato: that is, with long speeches and the appearance of the author himself. Plutarch is, however, regarded as a Platonist, and he was particularly interested in Plato's *Timaeus*. As in the *Timaeus*, the dialogue juxtaposes the ideas and arguments of natural philosophers and mathematicians with mythological accounts. The conversation and discussions reported in *On the Face on the Moon* include the consideration of questions grounded in the Greco-Roman philosophical tradition, as well as mathematical astronomy, relating to the appearance of the moon, its size and material constitution, and also the recounting – in a rather circuitous route, from foreign sources – of what seem

2 Several ancient authors offered what might be regarded as satirical or even pseudo-scientific narrative accounts of travel to the moon; see, for example, Lucian's *A True Story* and Antonius Diogenes' *The Wonders Beyond Thule* (described in Photius' Summary [*Bibliotheca* 166], produced in the ninth century CE); see REARDON, 1989 for translations of both.

I have previously discussed Plutarch's *De facie*, in TAUB, 2008, pp. 57-78. The present contribution builds upon my earlier work, and has benefitted from comments made by participants of the *Finding, Inheriting or Borrowing?* conference held at Mainz in 2016. I am grateful for the impetus to consider further the sources of Plutarch's concepts relating to the moon on an earlier version of this paper, and for further suggestions from Jochen Althoff and John Patterson.

to be rather exotic stories (*mythoi*) about the moon – whether it is inhabited, its relationship to the soul, and its association with various gods and goddesses.

There are questions that emerge from reading Plutarch's dialogue that are relevant to our consideration of the finding, borrowing and/or inheriting of concepts related to the moon. Does the juxtaposition of rational and mythological concepts suggest anything regarding the relative status of these two seemingly contrasting approaches to describing the moon? Are certain types of knowledge more valued than others? Are we meant to have a view regarding the status of the concepts discussed by experts, educated laymen and Strangers?

Overview of *De facie in orbe lunae*

The structure of *De facie* can be understood as a dialogue set within another dialogue. Both are recounted by the same narrator, Lamprias, who reports an earlier conversation to the participants of the “larger”, surrounding dialogue. These participants are: the narrator (Lamprias), two mathematicians (Menelaus and Apollonides, with the latter identified as a geometrician), a Stoic (Pharnaces), an Aristotelian named Aristotle, Lucius, who represents the Academic position, Theon, a literary authority, and finally Sulla, who is identified as a Carthaginian (942 C), who tells a story at the end.

The work, as we have it, begins with the words of Sulla (quoted by the narrator, Lamprias), retelling a myth he heard from a Stranger, who in turn had heard it from the chamberlains of Kronos (945 D); the identity and status of Kronos will be considered below. This is followed by Lamprias' report of an earlier “scientific” discussion about the moon, involving named contributors, and the ensuing conversation by participants in the larger dialogue. The work ends (at 920 B) with Lamprias, recounting the words of Sulla, and the myth that he had heard from an unnamed Stranger.³

We do not have the original beginning of the work, and it is impossible to know what is missing.⁴ The surviving text begins in this way (920 B):

3 “Strangers” play important roles in some Platonic dialogues, notably the *Statesman* and the *Laws*.

4 The beginning of the text appears to be mutilated, see the introduction to Plutarch's *The Face on the Moon* by CHERNISS, 1984, pp. 26f., and 2. As it stands, the structure of the work does not unfold until the reader is well in to the text.

[...] ὁ Σύλλας ταῦτ' εἶπε. “τῷ γὰρ ἐμῷ μύθῳ προσήκει κάκειθὲν ἔστι· ἀλλ' εἰ δεῖ τι πρὸς τὰς ἀνὰ χεῖρα ταύτας καὶ διὰ στόματος πᾶσι δόξας περὶ τοῦ προσώπου τῆς σελήνης προανακρούσασθαι, πρῶτον ἡδέως ἂν μοι δοκῶ πυθέσθαι.”

These were Sulla's words. “For it concerns my story [*mythos*] and that is its source; but I think that I should first like to learn whether there is any need to put back for a fresh start to those opinions concerning the face of the moon which are current and on the lips of everyone.”⁵

That the “fresh start” is done to report an earlier conversation only becomes completely clear well into the text (at 937 C), when the narrator, Lamprias, states: “So we for our part, said I, have now reported as much of that conversation as has not slipped our mind”, indicating the fragility of memory and knowledge. The style of Lamprias' narration – and his concern for what might have slipped his mind – gives a sense of reportage. The reader is encouraged to think that the discussion may have actually taken place amongst real people. Sulla's opening words also reinforce the immediacy of the conversation. He emphasises that the question of why the moon shows a “face” is widely debated: everyone is talking about it.

The work may be read as being composed of two principal sections, each with its own style of explanation. The first part (920 B-940 F) is usually regarded as an exercise in natural philosophy, that is, as a “scientific” debate about the nature of the moon and its place in the cosmos; the second part reports a myth, closing the discourse.

Plutarch, through Lamprias, at various points provides information about the sources of scientific concepts, and of myths. Some individuals are identified by their area of expertise, others by their allegiance to particular philosophical schools, for example that of the Stoics.⁶ Portions of the earlier conversation are reported as indirect discourse (e.g. at 933 F), but most of the debate is presented directly, as an ongoing exchange.

In the “scientific” section of the work, a number of different – sometimes conflicting – natural philosophical and mathematical explanations of the appearance of the moon's “face”, the source of the moon's light, the material

5 Translation: CHERNISS, 1984, p. 35. All translations from Plutarch's *De facie* are from this edition, unless otherwise noted.

6 RIHLL, 1999, pp. 76-80 introduces the participants in terms of their areas of expertise.

constitution of the moon, and whether it belongs to the terrestrial or the celestial region of the cosmos are presented. Rival views associated with the several different philosophical schools (the Academy, the Lyceum, and the Stoa) are aired. The principal participants are Lamprias and Lucius, well-educated men, but not specialists. Nevertheless, the standard of conversation is sophisticated, and specialist, technical works are quoted (for example, Aristarchus' *On the Sizes and Distances*).

So, for example, Lamprias reports the Stoic philosopher Clearchus' explanation of the face on the moon (920 F-921 A):

[...] εἰκόνας ἐσοπτρικὰς εἶναι καὶ εἶδωλα τῆς μεγάλης θαλάσσης ἐμφαινόμενα τῇ σελήνῃ τὸ καλούμενον πρόσωπον. ἢ τε γὰρ ὄψις ἀνακλωμένη πολλαχόθεν ἄπτεσθαι τῶν οὐ κατ' εὐθυωρίαν ὀρωμένων πέφυκεν, ἢ τε πανσέληνος αὐτῇ πάντων ἐσοπτρῶν ὀμαλότητι καὶ στιλπνότητι κάλλιστόν ἐστι καὶ καθαρότατον.

[W]hat is called the face consists of mirrored likenesses, that is images of the great ocean reflected in the Moon, for the visual ray when reflected naturally reaches from many points objects which are not directly visible and the full Moon is itself in uniformity and lustre the finest and clearest of all mirrors.⁷

This is one of many explanations debated by the group; it presumes a degree of familiarity with contemporary science, including optics and meteorology. The discussants do not shy away from mathematical arguments, as when later in the conversation Lucius, speaking to the mathematician in the group in particular, reportedly said (930 Af.):

αἰσχύνομαι μὲν [...] σοῦ παρόντος, ᾧ φίλε Μενέλαε, θέσιν ἀναιρεῖν μαθηματικὴν ὥσπερ θεμέλιον τοῖς κατοπτρικοῖς ὑποκειμένην πράγμασιν· ἀνάγκη δ' εἰπεῖν ὅτι τὸ πρὸς ἴσας γίνεσθαι γωνίας ἀνάκλασιν πᾶσαν οὔτε φαινόμενον αὐτόθεν οὐθ' ὁμολογούμενόν ἐστιν, ἀλλὰ διαβάλλεται μὲν ἐπὶ τῶν κυρτῶν κατόπτρων, ὅταν ἐμφάσεις ποιῇ μείζονας ἑαυτῶν πρὸς ἓν τὸ τῆς ὄψεως σημεῖον, διαβάλλεται δὲ τοῖς διπτύχοις κατόπτροις, ὧν ἐπικλιθέντων πρὸς ἄλληλα καὶ γωνίας ἐντὸς γενομένης ἑκάτερον τῶν ἐπιπέδων διττὴν ἔμφασιν ἀποδίδωσι [...].

In your presence, my dear Menelaus, I am ashamed to confute a mathematical proposition, the foundation, as it were, on which rests the subject of catoptrics [mirrors]. Yet it

7 Translation: CHERNISS, 1984, p. 41.

must be said that the proposition, “all reflection occurs at equal angles,” is neither self-evident nor an admitted fact. It is refuted in the case of convex mirrors when the point of incidence of the visual ray produced images that are magnified in one respect; and it is refuted by folding mirrors, either plane of which, when they have been inclined to each other, and have formed an inner angle, exhibits a double image [...].⁸

The discussion is thoughtful and reflects the high level of education of the participants. Numerous well-known authorities and their texts – including the celebrated philosopher Posidonius (ca. 135-ca. 51 BCE) and the astronomer Aristarchus, who observed the summer solstice in 280 BCE – are cited and in some instances quoted.⁹ The scientific section is challenging in its detail, requiring careful attention in order to be understood, and presuming, in places, a familiarity with natural philosophical and mathematical concepts informing ideas about the moon, including its place in the cosmos (whether in the celestial or the terrestrial region), its material constitution, and the source of its light.

After this scientific section (to 937 C), Lamprias suggests that the time has come to hear Sulla’s promised story. Up to that point, the participants in the dialogue had been out walking; he suggests “if it is agreeable, let us stop our promenade and sit down upon the benches, that we may provide him with a settled audience” (937 C-D). With this change in setting and posture – a further indication of the presumed contrast between science and myth – an eschatological myth dealing with the question of what happens at death is retold by Sulla. The myth describes the role of the moon in the cosmos: the moon is the place to which souls go when they have left their bodies after death (945 A) or have not yet been born into their earthly bodies (943 A).

Sulla refers to his account specifically as a myth (*mythos*), and he makes clear he is simply reciting; he is not the author of the story he tells, having heard it from an unnamed Stranger who had himself learned of it from “the chamberlains and servitors of Cronus [Kronos] (945 D)”. Before sharing the myth, Sulla relates the Stranger’s¹⁰ account of how he had travelled to Carthage (where he met Sulla; 942 B-C). The status of Carthage for Plutarch is

8 Translation: CHERNISS, 1984, pp. 107-109.

9 Posidonius at 929 D and Aristarchus at 932 B.

10 The Stranger (*xenos*) is first mentioned as such at 942 B; the term *xenos* has a range of connotations, some friendlier, some more hostile, than others. For parallels in Plato, cf. note 3.

somewhat ambiguous. Prior to recounting the myth, the Stranger (who is first referred to as such at 941 B) explained to Sulla how he had come to the Isle of Kronos from a continent on the other side of the Atlantic, west of Britain.¹¹ In other words, a place exotic and possibly unknown.

Lamprias' report of Sulla's recounting of the Stranger's myth is lengthy and detailed, as was his report about the earlier conversation about the various concepts relevant to understanding the moon's "face". He also refers to philosophers (including Plato and Xenocrates, head of the Academy from 339-314 BCE, at 943 F), and to the work of geometers (at 944 A), as well as to the Homeric poems, and numerous mythological figures. In other words, numerous and varied sources are cited. And various aspects of the moon, including its material composition (943 F-944 A) are explained; especially its special status and role in our cosmos.

Sulla reported the Stranger's words (942 C): "among the visible gods he said that one should especially honour the Moon, and so he kept exhorting me to do, inasmuch as she is sovereign over life." The moon is responsible for the human soul. The Stranger explained that "most people rightly hold man to be composite but wrongly hold him to be composed of only two parts" (943 A); rather, for the composition of man, "earth furnishes the body; the Moon the soul, and the sun furnishes the mind (*nous*) for the purpose of his generation even as it furnishes light to the Moon herself." Indeed, the moon's most important role (for humans) is as the resting place of the soul, when it is not located within a human body. So, after death "the substance (*physis*) of the soul is left upon the Moon and retains certain vestiges and dreams of life as it were" (944 F); "the Moon is the element [of souls], for they are resolved into it as the bodies of the dead are resolved into earth" (945 A).

The dialogue ends as it begins in our version, with the words of Sulla, stating: "This I heard the Stranger relate and he had the account, as he said himself, from the chamberlains and servitors of Kronos. You and your companions, Lamprias, may make what you will of the tale."

How are Lamprias' listeners and Plutarch's readers meant to form an opinion of what they've heard and read? As Cherniss points out, "hearing it

11 This geographical introduction (941 A-942 C) has attracted a great deal of interest. Johannes Kepler, who published a Latin translation and extensive notes on Plutarch's dialogue, was convinced that this continent was America. See CHERNISS, 1984, p. 21. See also Plutarch's *De Defectu Oraculorum* in which Kronos is described being held on an island near Britain, in COLE BABBITT, 1936, p. 405.

from Lamprias now, the reader has [the mythological] part at fourth hand and the geographical introduction of the Stranger at third hand.”¹² Was this distance from the original source significant for Plutarch in his presentation of the account of the function of the moon in the cosmos? How is one meant to judge the source(s) of the concepts described? Philip Hardie argues that Plutarch’s approach to myth “varies according to the hat that he chooses to wear at any particular time”; how confident are we that we can identify Plutarch’s headgear in *De facie*?¹³ Indeed, it is the diverse wardrobe of “hats” displayed by Plutarch that is distinctive about his approach to presenting differing concepts about the moon. At the end of the work, auditors and readers are invited to choose what they will.

The Sources of the Concepts Presented in the *De facie*

Lamprias, the narrator, provides information about the background of the various individuals named in *De facie*, including Sulla, and the various concepts related to different ways of understanding the moon. The information about philosophical affiliation and expertise enables the auditors of Lamprias’ narration of the earlier conversation, as well as the readers of the work, to form their own opinions, and to evaluate the ideas presented to themselves. The sources of the concepts related to understanding the moon – both the scientific theories and the mythological accounts – are identified, presumably with the view of helping the readers to assess those ideas.

The background of some of the individuals named in the dialogue is indicated by the part they play in the discussion, or by overt references. Lamprias is the narrator of the entire work and mostly speaks in the first person; he also quotes those who took part in the earlier discussion. He is knowledgeable about various philosophical positions, criticising Stoic doctrine and supporting positions identified with the Academy (922 F); he may be

12 CHERNISS, 1984, p. 14.

13 HARDIE, 1992, pp. 4743-4745. HAWES, 2014, p. 127 cautions that “a kind of poststructuralist position has emerged which emphatically highlights the gulf which separates our modern, textual sense of myth as a canonical genre from the more flexible conceptions of ancient writers”; such a flexible conception is helpful when reading *De facie*.

taken to represent the educated layman.¹⁴ Sulla refers to Carthage as his country (942 C);¹⁵ his main role in the dialogue is to recount the myth. It is not certain whether he should be regarded as a “mythographer”;¹⁶ he is not credited by Plutarch here with collecting other myths and his status as a purveyor of myth is ambiguous. Some of the participants in the dialogue are learned experts in relevant subjects, such as astronomy; others, like Sulla, are presented as having acquired their information almost by chance. At certain points in the dialogue, specialist expert knowledge is highly valued; at others, the reader is left wondering how they should judge the sources of information and explanations on offer.

We can now return to the questions posed earlier: Does the juxtaposition here of rational and mythological concepts suggest anything regarding the relative status of these two seemingly contrasting approaches to describing the moon? Are we meant to have a view regarding the status of the concepts discussed by experts, educated laymen, and Strangers?

To begin to situate Plutarch's *De facie* against the background of his predecessors, Plutarch's work had clear and deliberate resonances with Plato's dialogue *Timaeus*. Indeed, Plutarch's reliance on the form, content, and spirit of the *Timaeus* enabled him to emphasise his allegiance to Platonic ideas. Much of the content of Plato's dialogues can be described as an attempt by him to solve various problems in a rational and analytical manner. However, in a number of Platonic dialogues, myth seems to take over, offering, as it were, another way of describing the world – an alternative to analytic discourse.¹⁷ But the status of the myth is not always made clear, and is sometimes ambiguous. Both Plato's *Timaeus* and Plutarch's *De facie* are concerned with “scientific” cosmology, and concepts regarding the order and character of astronomical bodies – including the moon – as well as the place of humans in the cosmos. Furthermore, both the *Timaeus* and the *De facie* incorporate myth

14 Some of the participants here play a role in other of Plutarch's dialogues, and there may be the expectation that readers will be familiar with these. For example, Plutarch identifies Lamprias as his brother in *The Obsolescence of Oracles*; Plutarch himself does not appear in *De facie*.

15 Carthage, on the coast of what is today Tunisia, was originally a Phoenician colony, later a powerful rival to Rome, and eventually a provincial centre within the Roman Empire.

16 As suggested by RHILL, 1999, p. 77.

17 LAMBERTON, 2001, p. 150. On Plutarch's use of Plato's *Timaeus*, see HAMILTON, 1934, pp. 24-30; DEMULDER, 2015, pp. 199-214.

as part of their conceptual toolkit, used to explicate their cosmological explanations. In other words, “scientific” (including mathematical) accounts do not displace the mythological. As in the *Timaeus*, Plutarch’s dialogue juxtaposes the concepts and arguments of natural philosophers and mathematicians with mythological explanations. Plutarch was certainly familiar with Plato’s dialogues; the inclusion of the myth in the *De facie* very likely was inspired by Plato’s own incorporation of myth, particularly in his cosmological dialogue, the *Timaeus*; at certain points in Plutarch’s dialogue, the *Timaeus* is glimpsed in the background.

Let’s recall that as Timaeus begins his account of the cosmos and its origin (29 C 7-D 3), he addresses Socrates and warns that:

ἀλλ’ ἔάν ἄρα μηδενὸς ἦττον παρεχώμεθα εἰκότας, ἀγαπᾶν χρή, μεμνημένους ὡς ὁ λέγων ἐγὼ ὑμεῖς τε οἱ κριταὶ φύσιν ἀνθρωπίνην ἔχομεν, ὥστε περὶ τούτων τὸν εἰκότα μῦθον ἀποδεχομένους πρέπει τούτου μηδὲν ἔτι πέρα ζητεῖν.

If we can furnish accounts no less likely than any other, we must be content, remembering that I who speak and you my judges are only human, and consequently it is fitting that we should, in these matters, accept the likely story and look for nothing further.¹⁸

Timaeus presents an account of the origin of the cosmos as a “likely story”, with many mythic elements. Timaeus rejects the possibility of arriving at the truth. To attempt to search for a completely true account of the world would be futile, for human beings can only hope to offer an explanation that is plausible. The *Timaeus* has the form of only an “*eikos mythos*”, because Timaeus (through Plato) is describing an object of the phenomenal world: the whole cosmos. Such phenomenal objects cannot be described in terms of absolute truth, because they do not have the absolute truth and stability which exists only in ideas. Strictly speaking, for Plato there are no scientific accounts about the phenomenal world, only myths which approach truth (29 A 2-D 3). At 29 B 3-D 3, Timaeus explains that:

ὁδε οὖν περὶ τε εἰκόνοσ καὶ περὶ τοῦ παραδείγματος αὐτῆς διοριστέον, ὡς ἄρα τοὺς λόγους, ὧν πέρ εἰσιν ἐξηγηταί, τούτων αὐτῶν καὶ συγγενεῖς ὄντας· τοῦ μὲν οὖν μονίμου καὶ βεβαίου καὶ μετὰ νοῦ καταφανοῦσ μονίμουσ καὶ ἀμεταπτώτουσ – καθ’ ὅσων οἶδον τε

18 Translation: CORNFORD, 1937, p. 23.

καὶ ἀνελέγκτοις προσήκει λόγοις εἶναι καὶ ἀνικῆτοις, τούτου δεῖ μηδὲν ἐλλείπειν – τοὺς δὲ τοῦ πρὸς μὲν ἐκεῖνο ἀπεικασθέντος, ὄντος δὲ εἰκόνας εἰκότας ἀνά λόγον τε ἐκείνων ὄντας· ὅτι περὶ πρὸς γένεσιν οὐσία, τοῦτο πρὸς πίστιν ἀλήθεια. ἐὰν οὖν, ὃ Σώκρατες, πολλὰ πολλῶν πέρι, θεῶν καὶ τῆς τοῦ παντὸς γενέσεως, μὴ δυνατοὶ γιγνώμεθα πάντη πάντως αὐτοὺς ἑαυτοῖς ὁμολογουμένους λόγους καὶ ἀπικριβωμένους ἀποδοῦναι, μὴ θαυμάσης· ἀλλ' ἐὰν ἄρα μηδενὸς ἤττον παρεχόμεθα εἰκότας, ἀγαπᾶν χρὴ, μεμνημένους ὡς ὁ λέγων ἐγὼ ὑμεῖς τε οἱ κριταὶ φύσιν ἀνθρωπίνην ἔχομεν, ὥστε περὶ τούτων τὸν εἰκότα μῦθον ἀποδεχομένους πρέπει τούτου μηδὲν ἔτι πέρα ζητεῖν.

Concerning a likeness, then, and its model we must make this distinction: an account is of the same order as the things which it sets forth—an account of that which is abiding and stable and discoverable by the aid of reason will itself be abiding and unchangeable (so far as it is possible and it lies in the nature of an account to be incontrovertible and irrefutable, there must be no falling short of that); while an account of what is made in the image of that other, but is only a likeness, will itself be but likely, standing to accounts of the former kind in a proportion: as reality is to becoming, so is truth to belief. If then, Socrates, in many respects concerning many things—the gods and the generation of the universe—we prove unable to render an account at all points entirely consistent with itself and exact, you must not be surprised. If we can furnish accounts no less likely than any other, we must be content, remembering that I who speak and you my judges are only human, and consequently it is fitting that we should, in these matters, accept the likely story and look for nothing further.¹⁹

Timaeus' speech can be read as a creation myth, in which the *Demiurgos*, the craftsman, fashions the world, its contents and inhabitants. Yet, in the development of that mythic account, mathematical concepts and details underpin the structure of the cosmos and, necessarily, the account of its creation. In other words, the creation myth is closely bound to a scientific account, even if it is only “likely”.

Plutarch seems to have developed these ideas further, in that he does not accept scientific accounts of the moon as impossible; however, they are supplemented by mythological accounts.²⁰ In the *De facie*, the science and the myth play important but separate roles. Furthermore, the perception that the two approaches – of science and myth – are completely separate has been reflected in the way the work has been studied by modern scholars. For us it is

19 Translation: CORNFORD, 1937, p. 23.

20 Cf. ERLER, 2007, pp. 89-92.

crucial to recognise that the work is a dialogue, in which both myth and science play significant roles, offering alternative ways to encounter differing concepts used to explicate the nature of the moon.

In the surviving version of Plutarch's dialogue, the discussion of the various scientific concepts and explanations of the nature of the moon is framed by a reference by Sulla to the myth that he recounts in the closing portion of the text. In the opening lines, he is quoted by Lamprias as having said (920 B): "For it concerns my story and that is its source; but I think that I should first like to learn whether there is any need to put back for a fresh start to those opinions concerning the face of the moon which are current and on the lips of everyone." We've seen these lines before, but now let's consider Lamprias' own response (920 Bf.):

τί δ' οὐκ ἐμέλλομεν [...] ὑπὸ τῆς ἐν ταύταις ἀπορίας ἐπ' ἐκείνας ἀποσθέντες; ὡς γὰρ οἱ ἐν νοσήμασι χρονίους πρὸς τὰ κοινὰ βοηθήματα καὶ τὰς συνήθεις διαίτας ἀπειπόντες ἐπὶ καθαρισμῶν καὶ περιπάτων καὶ ὄνειρους τρέπονται, οὕτως ἀναγκαῖον ἐν δυσθεωρήτοις καὶ ἀπόροις σκέψεσιν, ὅταν οἱ κοῖνοι καὶ ἔνδοξοι καὶ συνήθεις λόγοι μὴ πείθωσι, πειρᾶσθαι τῶν ἀτοπωτέρων καὶ μὴ καταφρονεῖν ἀλλ' ἐπάδειν ἀτεχνῶς ἑαυτοῖς τὰ τῶν παλαιῶν καὶ διὰ πάντων τάληθές ἐξελέγειν.

What else would you expect us to have done, [...], since it was the difficulty in these opinions that drove us from our course upon those others? As people with chronic diseases when they have despaired of ordinary remedies and customary regimens turn to expiations and amulets and dreams, just so in obscure and perplexing speculations, when the ordinary and reputable and customary accounts are not persuasive, it is necessary to try those that are more out of the way and not scorn them but literally to chant over ourselves the charms of the ancients and use every means to bring the truth to test.²¹

Suggesting that a frustration with the "usual" accounts of the face of the moon spurred him on, Lamprias offered a detailed report of a discussion of various scientific explanations of the figure seen in the moon, including a weakness of our vision (920 C).

Not only is the scientific discussion juxtaposed with myth, but, by one reading, the scientific discussion is *completed* by the myth that closes the dialogue, for it is the concept that the moon is inhabited by human souls that

21 Translation: CHERNISS, 1984, p. 35.

establishes the purpose of the moon in the cosmos. Indeed, it is this concept that allows a teleological message to underpin the dialogue: the moon is earthy in its constitution and thus, in principle, habitable; it therefore can serve a purpose as the home of souls without bodies. Recall that we are told (at 944 F) that after death “the substance of the soul is left upon the Moon and retains certain vestiges and dreams of life as it were”. Furthermore, “the Moon is the element [of souls], for they are resolved into it as the bodies of the dead are resolved into earth” (945 A). Just as our bodies have a place after death, so do our souls. Once again we glimpse Timaeus’ account of the Demiurgos, who (41 D 4-E 1)

[...] καὶ πάλιν ἐπὶ τὸν πρότερον κρατῆρα, ἐν ᾧ τὴν τοῦ παντὸς ψυχὴν κεραυνῶς ἔμισγεν, τὰ τῶν πρόσθεν ὑπόλοιπα κατεχεῖτο μίσγων τρόπον μὲν τινα τὸν αὐτόν, ἀκήρατα δὲ οὐκέτι κατὰ ταῦτα ὡσαύτως, ἀλλὰ δεύτερα καὶ τρίτα. συστήσας δὲ τὸ πᾶν διεῖλεν ψυχὰς ἰσαριθμούς τοῖς ἄστροις, ἐνειμέν θ’ ἐκάστην πρὸς ἕκαστον.

turned once more to the same mixing bowl wherein he had mixed and blended the soul of the universe, and poured into it what was left of the former ingredients, blending them this time in somewhat the same way, only no longer so pure as before, but second or third in degree of purity. And when he had compounded the whole, he divided it into souls equal in number with the stars, and distributed them, each soul to its several star.²²

The number of souls equals the number of stars; each individual soul is assigned to a particular star. And, once the souls were divided, they were shown the nature of the universe, after which each was implanted in a human body. After completing their life after this first incarnation, those souls that lived well on earth return to their own original star, to reside there happily (42 B 3-5). Sulla’s account of the Stranger’s myth reminds us of Plato’s version of Timaeus’ “likely story”: instead of the stars, the moon now has special significance as the home of human souls. The Stranger’s myth is grounded – as it were – in Timaeus’ own, and Plutarch’s valorisation of myth is built upon Plato’s.

In *De facie*, scientific enquiry and mythological explanation are not set up as rivals; rather, they are presented as two complementary approaches to a full consideration of the nature of the moon. While expert knowledge is recognised and plays an important role in the discussion, the significance of a myth trans-

22 Translation: CORNFORD, 1937, p. 142.

mitted over distances of time, space and cultures is not derided. Furthermore, as is emphasised, we have not heard the full explanation until we have heard the recounting of the ancient myth. Plutarch intends that we should not only consider the accounts of the nature of the moon, but also the sources and avenues through which we encounter different concepts.

For this reason, it seems particularly appropriate to further consider the “finding, inheriting, or borrowing” that is hinted at by Sulla’s report of the Stranger’s account of the moon, which he, in turn, had heard from the chamberlains of Kronos. There are several intriguing features of the account, which lend layers of ambiguity to how the myth might be interpreted and judged, including the status of Sulla as a Carthaginian, as well as Kronos himself.

Sulla the Carthaginian plays a key role in *De facie*; his name is featured at the beginning of the mutilated version which survives, and his report of the Stranger’s account of the moon closes the work. That he was a Carthaginian is emphasised at various points (e.g., 942 C); he is a “foreigner”, who has a story to report, a story so important that the other participants in the dialogue are asked to make room for his delivery.

Sulla the Carthaginian in *De facie* may be the same as the Sextius Sulla, “a man who lacks neither learning nor charm” (Σέξτιος δὲ Σύλλας ὁ Καρχηδόσιος, οὔτε μουσῶν οὔτε χαρίτων ἐπιδειχῆς ἀνὴρ), mentioned by Plutarch in *Romulus* (chapter 15).²³ He may also be the Carthaginian Sulla who organised a welcome-back dinner for Plutarch when he returned to Rome (mentioned in *Quaestiones Convivales* 727 B).²⁴ Christopher Pelling regards Sulla as “clearly a very Romanised Carthaginian”, but notes that “this too is eloquent of the texture of this international society” in which both Sulla and Plutarch reside.²⁵

Indeed, elsewhere in his writings, namely his *Roman Questions* (76, 282 Af.), Plutarch displays his own cosmopolitanism, citing a Greek author, Castor of Rhodes, to whom he ascribes a similar view regarding the role of the moon as

23 In the context of a discussion of the etymologies of words relating to matrimony, rape, and spinning.

24 MINAR, 1961, p. 165, note d to 727 B: “Sextius Sulla is a frequent speaker, on a variety of topics, in the *Table-Talk*, and has an important role in the *De Facie*.” CHERNISS, 1984, p. 3 suggests that he “is probably the Sulla who appears as the interlocutor of Fundanus in the *De Cohibenda Ira* (note b, 453 A) but probably not the same as the Sulla of *Quaest. Conviv.* 636 A (ὁ ἐταῖρος) and 650 A (one of τῶν συνήθων)”.

25 PELLING, 2011, p. 210.

the resting place of souls. There, the question is asked: “Why do they that are reputed to be of distinguished lineage wear crescents on their shoes?” Plutarch wonders “Is this, as Castor says, an emblem of the fabled residence in the moon, and an indication that after death their souls will again have the moon beneath their feet; or was this the special privilege of the most ancient families?”²⁶ Here, Plutarch appears to be referring to Castor of Rhodes, the first century BCE author of a six-book *Chronological Tables* treating oriental, Greek, and Roman history;²⁷ he may also have been called “Philorōmaios”.²⁸ Following on from his reference to the “most ancient families”, Plutarch notes that “[t]hese were Arcadians of Evander’s following, the so-called Pre-Lunar people”, perhaps referring to the minor god, Evander, attested to mainly in Roman sources, who was said to have fled Arcadia and landed in Rome, transporting elements of Greek culture, and perhaps introducing the alphabet to Rome.²⁹ Whether Plutarch thought that this concept describing the role of the moon as a resting place for human souls was originally Greek, or Roman, or something else, is ambiguous.

And, what is the significance of Sulla, the purveyor of the myth about the moon, being described as being “from Carthage”? Historically, Carthage, with its Phoenician origins, was an important power and significant rival to Rome, until it was destroyed by the Romans during the Third Punic War, in 146 BCE (Plutarch, in his *Life of Cato the Elder* 27, recounts how Cato the Elder had declared that Carthage “must be destroyed”, to save Rome from its threat). In the end, the city of Carthage was destroyed, while Rome annexed the remaining territory; in the process, many Carthaginians died, or became slaves. Carthage was eventually re-founded by Julius Caesar and Augustus; it once again became a major urban centre, now the capital of the province of Africa, a crucial “breadbasket” for the Roman Empire. Plutarch himself, in *On the Fortune of the Romans* (*De Fortuna Romanorum*) 317 F-318 A, describes how Fortuna once looked as if she would favour Carthage, only to decide instead to abide in Rome:

26 COLE BABBITT, 1936a, p. 115.

27 TRAPP, 2012, p. 290. See also Plutarch *De Iside et Osiride* 31, where he cites Castor as a source regarding the Egyptian sacrificial customs.

28 SMITH, 1867, p. 628.

29 DRUMMOND, 2012, p. 558.

Τῆς δὲ Τύχης ὄξυ μὲν τὸ κίνημα καὶ θρασὺ τὸ φρόνημα καὶ μέγαν ἄλκιμον ἢ ἐλπίς, φθάνουσα δὲ τὴν Ἀρετὴν ἐγγύς ἐστιν, οὐ περὶ ἑλαφρῶς κούφοις ἑαυτὴν οὐδ' ἀκρόνυχον ὑπὲρ σφαίρας τινὸς ἴχνος καθεῖσα περισφαλῆς καὶ ἀμφίβολος πρόσεισιν, εἴτ' ἄπεισιν ἀδῆς· [...] οὕτως ἡ Τύχη καταλιπούσα Πέρσας καὶ Ἀσσυρίους Μακεδονίαν μὲν ἐλαφρὰ διέπτη καὶ ἀπεσεύσατο ταχέως Ἀλέξανδρον, καὶ δι' Αἰγύπτου καὶ Συρίας περιφέρουσα βασιλείας διώδευσε, καὶ Καρχηδονίους στρεφομένη πολλάκις ἐβάστασε· τῷ δὲ Παλατίῳ προσερχομένη καὶ διαβαίνουσα τὸν Θύμβριν ὡς ἔοικεν ἔθηκε τὰς πτέρυγας, ἐξέβη τῶν πεδίων, ἀπέλιπε τὴν ἄπιστον καὶ παλίμβολον σφαῖραν. οὕτως εἰσῆλθεν εἰς Ῥώμην ὡς μενοῦσα καὶ τοιαύτη πάρεστιν ὡς ἐπὶ τὴν δίκην.

But swift is the pace of Fortune, bold is her spirit, and most vaunting her hopes; she outstrips Virtue and is close at hand. She does not raise herself in the air on light pinions, nor advance “poised on tip-toe above a globe,” in precarious and hesitant posture, and then depart from sight. [...], when she had deserted the Persians and Assyrians, had flitted lightly over Macedonia, and had quickly shaken off Alexander, made her way through Egypt and Syria, conveying kingships here and there; and turning about, she would often exalt the Carthaginians. But when she was approaching the Palatine and crossing the Tiber, it appears that she took off her wings, stepped out of her sandals, and abandoned her untrustworthy and unstable globe. Thus did she enter Rome, as with intent to abide, and in such guise is she present today, as though ready to meet her trial.³⁰

Plutarch Underscores the Ultimate Superiority of Rome over Carthage

Indeed, by Plutarch’s time of writing, Latin had become the official language of Carthage, then a provincial capital of the Roman Empire. Nevertheless, it seems likely that some Punic religious and linguistic traditions survived in and around the city. There remains a question of how “African” Sulla might have been: his name seems to be Roman, and not especially indicative of Punic origin.³¹ But, it is not even clear exactly what “Carthaginian” (or “Punic”) might signal; Sandro Filippo Bondi has cautioned that we cannot understand

30 Translation: COLE BABBITT, 1936, p. 331.

31 I thank John Patterson for his suggestions here.

“Punic” as referring to something that was culturally homogeneous.³² In the context of *De facie*, Andrew Wallace-Hadrill’s point about the “foreignness” of Carthaginians is apt: “if the Phoenicians play a persistent part in Greek history, their role in Roman history, through the Carthaginians, is even more central. Yet though Greek and Roman historians will not let us forget the Phoenicians of the east and west, they are always treated as ‘the Other.’”³³

Certainly, elsewhere in his writings Plutarch distinguishes between the abhorrent customs of the Carthaginians and the judiciousness of ancient Greeks. In *De superstitione* 13, he criticises the repugnant sacrificial practices of the Carthaginians, specifically related to the god Kronos (171 C):

Καρχηδονίοις οὐκ ἐλυσιτέλει Κριτίαν λαβοῦσιν ἢ Διαγόραν νομοθέτην ἀπ’ ἀρχῆς μήτε τινα δαιμόνων μήτε θεῶν νομίζειν ἢ τοιαῦτα θύειν οἷα τῷ Κρόνῳ ἔθουον; οὐχ ὡσπερ Ἐμπεδοκλῆς φησι τῶν τὰ ζῶα θυόντων καθαπτόμενος μορφῆν δ’ ἀλλάξαντα πατήρ φίλον υἰὸν ἀείρας σφάζει ἐπευχόμενος μέγα νήπιος, ἀλλ’ εἰδότες καὶ γινώσκοντες αὐτοὶ τὰ αὐτῶν τέκνα καθιέρουον, οἱ δ’ ἄτεκνοι παρὰ τῶν πενήτων ὀνούμενοι παιδιά κατέσφαζον [...].

[...], would it not have been far better for the Carthaginians to have taken Critias or Diagoras to draw up their law-code at the very beginning, and so not to believe in any divine power or god, rather than to offer such sacrifices as they used to offer to Cronos [Kronos]? These were not in the manner that Empedocles describes in his attack on those who sacrifice living creatures:

“Changed in form is the son beloved of his father so pious, who on the altar lays him and slays him. What folly!”

No, but with full knowledge and understanding they themselves offered up their own children, and those who had no children would buy little ones from poor people and cut their throats [...].³⁴

32 BONDÌ, 2014, pp. 58-67.

33 WALLACE-HADRILL, 2014, pp. 299f.

34 Translation: COLE BABBITT, 1928, p. 493. There are other ancient Greek and Roman texts which report child sacrifices to Kronos by the Carthaginians; for example, that credited to Kleitarchos in the *Scholia Platonica* 337 A, ALLEN et al., 1938; *Bibliotheca Historica (The Library of History)* by Diodorus Siculus in OLDFATHER, 13.86 and 20.14; Quintus Curtius, *Historiarum Alexandri Magni Macedonis, (Histories of Alexander the Great)* 4.3, ROLFE, 1946, pp. 194-199. See also the discussion (with references) in XELLA et al., 2013, pp. 1202f.

Who was this Kronos to whom the Carthaginians sacrificed their children? And what are we to make of the references to Kronos in *De Facie*? Is this the same Kronos who was confined to an island by his son, Zeus? And, while Sulla – to some extent – may represent “Otherness” or even the foreign Carthaginian culture, in *De Facie* he also reports a myth he heard from a Stranger. The role assigned to this Stranger may intentionally signal a backward glance at Plato’s dialogues, for strangers appear in a number of his writings.³⁵ What are we to make of Sulla’s story, reported by a Stranger, who in turn had heard it from the “chamberlains and servitors” of Kronos? How are we meant to judge the value of different types of knowledge, based on such different (and ambiguously defined) sources?

Ambiguity in the Identification and Status of Kronos

Kronos first appears in the *De facie* at 941 A, where we are told by Sulla that there are a number of islands which lie five days sailing westward of Britain:

ὅν ἐν μιᾷ τὸν Κρόνον οἱ βάρβαροι καθεῖρχθαι μυθολογοῦσιν ὑπὸ τοῦ Διός, τὸν δ’ ὀγύγιον <Βριάρεων> ἔχοντα φρουρὰν τῶν τε νήσων ἐκείνων καὶ τῆς θαλάττης, ἣν Κρόνιον πέλαγος ὀνομάζουσι, παρακατακίσθαι.

In one of these, according to the tale told by the natives, Cronus [Kronos] is confined by Zeus, and the antique <Briareos>, holding watch and ward over those islands and the sea that they call the Cronian main, has been settled close beside him.

Plutarch also wrote about Kronos, under guard by Briareos, in *De Defectu Oraculorum* 419 E-420 A, where Demetrius explained that there is an island near Britain, of which the inhabitants “said that in this part of the world there is one island where Cronus [Kronos] is confined, guarded while he sleeps by Briareus; for his sleep has been devised as a bondage for him, and round about him are many demigods as attendants and servants”.³⁶ A number of scholars

35 See note 3 and, for example, HALVERSON, 1997, pp. 75-102.

36 Translation: COLE BABBITT, 1936, p. 405. See note 11 above.

have suggested that the source of this story is a lost dialogue by Aristotle,³⁷ this is intriguing, because (as has already been noted), Plutarch's dialogues, with their long speeches, are in some ways stylistically more like those of Aristotle than those of Plato; it is, of course, possible that Plutarch was familiar with an Aristotelian work lost to us. In any case, Plutarch would have known Briareos acting as a guard over Kronos from Hesiod's *Theogony* (729-735). According to Hesiod, Kronos was the youngest son of Uranus (Heaven) and Gaia (Earth) (*Theogony* 137-138). He was notorious as a god who swallowed his own children, except for his son Zeus (and this omission was due to a trick: *Theogony* 453-491). Was this the same Kronos to whom the Carthaginians were alleged to have sacrificed children?

But, Kronos was also a celebrated king, representative of a previous Golden Age, described, for example, again by Hesiod but this time in the *Works and Days* (111). Plato also wrote about Kronos. In *The Statesman* (269 A 7-274 E 3), it is the Stranger who recalls the tale of Kronos' reign, and notes that: "We have often heard the tale of the reign of Kronos [...]. And how about the story that the ancient folk were earthborn and not begotten of one another?" The younger Socrates affirms, "That is one of the old tales, too [...]." The Stranger then recounts that how pleasant and easy life was under the reign of Kronos. In *The Statesman*, the age of Kronos is but a mere memory – a legend to be re-told – for those humans alive in the reign of Zeus, who must live their lives reliant on their own skills, benefited by the gifts and tuition of other, more practically-minded gods. Plato provides information about the good life under Kronos, but even as a Platonist, Plutarch draws upon other sources and other images of the god.

In *De Facie*, Sulla mentions that Kronos receives great honour in Carthage (942 C). Elsewhere, in *De Superstitione* 171 C, Plutarch disparagingly alludes to the sacrifices made to Kronos by the Carthaginians;³⁸ in *On the Delays of Divine Vengeance* (*De sera numinis vindicta*) 552 A, Plutarch notes that

37 WASZINK, 1947, pp. 137-149; WASZINK, 1950, pp. 639-651, and Bos, 1989.

38 See also COLE BABBITT, 1928, p. 493, note d, explaining that "Plutarch says (*Moralia*, 175 a and 522 a) that the practice was stopped by Gelon, tyrant of Syracuse, after his victory over the Carthaginians in 480 b.c. But see Diodorus, 20. 14 [mentioned above, note 34] which suggests that the practice was later revived. Cronos here is, of course, the Greek equivalent of Phoenician El (Hebrew Moloch or Baal). Cf. MOORE, 1897, p. 161". See also PALMER, 1997, pp. 63-65, on the identification of the Punic Saturn (thought of by the Greeks as a Punic Kronos, and Ba'al Hammon.

“Gelon was furthermore a stout champion of his country, and after defeating the Carthaginians in a great battle refused their suit for peace until he had added to the treaty the provision that they should no longer sacrifice their children to Cronus [Kronos].” There are several clear claims in Plutarch’s writings that the Carthaginians sacrificed to Kronos. Whether or not this was historically accurate (and the accuracy of Roman claims about Carthaginian sacrificial practices is debated),³⁹ does this complicate our view of Kronos, and that of the account of the purpose of the moon, attributed to his servants?

The mythological accounts of Kronos are “marked by paradoxes”, as noted by H. S. Versnel. He argues that “the stark contradiction between the extreme cruelty manifested in the first version [in the *Theogony*] and the utopian blessings in the second [in the *Works and Days*, echoed by the Stranger in Plato’s *Statesman*] has fostered conjectures concerning different origins”.⁴⁰ The Kronos-King-of-the-Golden-Age has been read by some as an “authentic Greek (or at least Indo-European) contribution”, with Kronos-the-horrible-child-eater taken to be the product of a different culture, perhaps that depicted in the Hittite version of the Hurrian Kumarbi (father of the gods) myths, argued by Hans Gustav Güterbock as being a forerunner to Hesiod.⁴¹ However, this “borrowing” of an “oriental” or Near Eastern myth by Hesiod (however indirect the transmission may have been) does not, as Versnel points out, explain the seemingly contradictory depictions of Kronos by this epic poet, one of the earliest Greek authors. Given the complications, paradoxes, and ambiguities inherent in the oldest Greek accounts of Kronos, we should not be surprised by the difficulties in tracing the precedents of Kronos’ servants’ myth about the moon in *De facie*.

A rather different possible reading of Plutarch’s Kronos has been suggested by A. P. Bos, who argues that *De Facie* provides information about Aristotle’s theology. Basing his argument on a consideration of Aristotle’s lost dialogues, Bos suggests that, in Aristotle’s theology, Kronos (in contrast with Zeus) had responsibility for the practical aspects of life. Significantly, Bos emphasises that Aristotle’s theology would have been a reaction against that of Plato;⁴² his interpretation of *De Facie* provides another, complicating, reading of the work,

39 See, for example, XELLA et al. cited in note 34 above, as well as SMITH et al., 2011, pp. 853-874; SMITH et al., 2013, pp. 1191-1199; SCHWARTZ et al., 2012, pp. 738-745.

40 VERSNEL, 2012, p. 395.

41 GÜTERBOCK, 1948, pp. 123-134.

42 BOS, 1989, p. 86.

serving to emphasise the inherent ambiguity contained therein. Whether or not Aristotle may be regarded as an important source for Plutarch's depiction of Kronos in *De Facie* is debatable; nevertheless, Bos hits upon a crucial point when he emphasises what he refers to as the "multiformity of the mythical tradition about Kronos".⁴³ Clearly, there are many layers of possible interpretation embedded in the reference to Kronos by Plutarch,⁴⁴ via Sulla.

With these ambiguities and layers of complication in mind, let's return to the questions posed earlier. How are we meant to judge the value of different types of knowledge, based on such different (and ambiguously defined) sources? Are there special types of knowledge that are linked to certain societies (Greek, Roman, Carthaginian, or Hurrian) or social groups (philosophers, mathematicians, members of the non-specialist educated cosmopolitan elite)?

Ambiguity permeates the discussion of various concepts related to the moon, its composition, and role in the cosmos within Plutarch's *De facie*. In terms of finding, inheriting, or borrowing, there is a great ambiguity about the sources themselves: even our answers to the question of what is Greek, what is Roman, and what is Carthaginian are blurred. This ambiguity is emphasised by the closing words of the dialogue: "You [...] may make what you will of the tale", an ambiguity – or even a particular form of scepticism – that Plutarch (apparently) deliberately emphasised.⁴⁵

Yet, the Stranger's myth, as recounted by Sulla, has clear and presumably deliberate links to Platonic myth. Furthermore, Kronos was very likely chosen because he represents very ancient time, and this lends more credibility and authority to the myth. This grounding of myth in distant antiquity – even incorporating elements of other, foreign cultures, such as Carthage – is, as G. R. Boys-Stones has argued, a characteristic of post-Hellenistic Platonism, of which Plutarch is one of the key witnesses. Plutarch believed that the "traditional theology of the Greek and ancient barbarian nations have their roots in an authoritative philosophy which derives as such from the earliest

43 BOS, 1989, p. 5.

44 See, for example, BALDRY, 1952, esp. pp. 84-86 on the reign of Kronos. Baldry suggests that Kronos was associated with the "good old days", first in Hesiod's *Works and Days* 111 and "later evidence shows that the association with Kronos was taken for granted both by writers and the common people". I thank Jochen Althoff for this reference.

45 KARAMANOLIS, 2016.

generations of men". This valorisation of ancient wisdom is crucial for post-Hellenistic Platonists, who

believed that the unique philosophical tradition of Greece had been established on the basis of the achievement of a series of brilliant thinkers in the Classical and pre-Classical period who had succeeded in reconstructing the primitive truth in its entirety, and that, in consequence, the shortest road to truth would be the one that led back there through them.⁴⁶

Of course, some of this wisdom would have been conveyed in myth. Seemingly in direct contradiction to Plato, Plutarch thinks scientific accounts of nature and the cosmos possible. However, in his view, mythic accounts supplement the scientific. It may be that, for Plutarch, myths contain a higher truth than science. This view itself may have been a rather Platonic view, situated historically in Plutarch's time and place. The philosophical milieu in which Plutarch wrote the *De Facie*, and shared the various ideas contained therein, strongly valued the knowledge to be gained by finding, inheriting and borrowing concepts from other – and more ancient – cultures.

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46 BOYS-STONES, 2001, pp. 111f. and 122.

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CONCLUSION – OF MOON AND MEN: OBSERVATIONS ABOUT THE KNOWLEDGE OF THE MOON IN ANTIQUITY

VICTORIA ALTMANN-WENDLING (MUNICH)

In all epochs, the moon and its changing appearance, its temporary disappearance at new moon or the exceptional event of a lunar eclipse have had a deep impact on humankind. Every culture has created myths, legends or philosophical theories to explain these phenomena.¹ Besides the “man in the moon” other creatures were thought to constitute the dark and light zones visible on its surface. The earthly satellite as a divine entity can be found universally as well, be it the Norse god Máni, the Egyptian Iah, the Sumerian Sin, the Akkadian Nanna, the Greek goddess Selene or Luna of the Romans, the Hindu gods Chandra and Lona or Ma-Hina in Polynesia. Even in Christian belief, Mary, who stands on a lunar crescent, is a figure described in the *Book of Revelations* (or *Apocalypse of John*) and becomes as the “Mother of the Apocalypse” (or: “Woman clothed in the sun”) a popular motif in the fourteenth century CE. In many Asian countries, however, even until today a special Moon Festival (called “Moon-Viewing” in Japan, “Mid-Autumn Festival” or “Harvest Moon Festival” in China and Vietnam) is celebrated every full moon in the eighth month of the traditional Chinese lunar calendar, accompanied by the baking and sharing of special Mooncakes. From Plutarch’s *De facie in orbe lunae* from the first century CE up to *De la terre à la lune* by Jules Verne (1865), from William Shakespeare’s plays to the poem “An den Mond” by Johann Wolfgang Goethe, the fascination the moon exerted

1 See, e.g., BLUNCK, 2003; NILSSON, 1920 pp. 15f., 147-239.

on men remained unbroken. The journey “From the earth to the moon” became reality in the *Mare Tranquillitatis* almost 50 years ago and led to the most recent peak of excitement over the earth’s satellite. Despite this physical appropriation by the “giant leap for mankind”, the moon has never lost its mysterious attraction and probably never will. Furthermore, as a regular and widely visible chronological marker, the moon structured everyday life, and thus was fundamental for developing calendars, defining religious festivals, and casting horoscopes. The close connection with time division is already apparent in the etymology of the words “moon” and “month” or their equivalents in many languages that seem to stem from Proto-Indo-European **mē-* “to measure”.²

By focusing on the temporally and spatially related cultures of the Mediterranean, ancient Egypt and the Near East, the contributions of this chapter aim at an overview of the manifold interpretations and concepts of the moon in different cultures. They all are specifically interested in comparing these concepts and revealing differences or similarities with a wider perspective as to how they can be explained. The time span ranges from the second millennium BCE to the second century CE, the sources include religious hymns, philosophical treatises, mathematical calculations and astronomical/astrological handbooks. Thus, a broad spectrum of the knowledge about the moon in Antiquity is presented and possible ways and mechanisms of transfer and adoption of concepts of the moon are discussed.

Tim Brandes in his contribution presents the knowledge of the moon in the Mesopotamian sources of the late second to the first millennium BCE, relying on a rich collection of cuneiform tablets from palace archives. The regular and diligent celestial observations carried out by Babylonian scholars led to a comprehensive documentation of heavenly phenomena, including those of the moon. The earthly satellite was not only understood as a measurable astronomical body, but also as a highly worshiped deity, both qualities being inseparably intertwined. Brandes focuses both on the moon as an indicator of time and on its relevance for celestial divination. Regarding the measurement of time, the moon was of importance in the luni-solar calendar that had been in use since 2000 BCE. The early astronomers had skilfully observed that twelve lunar months were eleven days short with respect to the earth’s yearly rotation

2 Cf. FRISK, 1960, p. 228; BEEKES, 2010 p. 945. Designations like Greek *σελήνη* or Latin *luna* are derived from stems meaning “shiny, bright, gleaming”, cf. BEEKES, 2010, pp. 1318f.; DE VAAN 2008, p. 235.

around the sun. Therefore, a leap month had to be inserted periodically. Furthermore, the moon's importance for chronology becomes apparent in religious contexts, as some hymnal and mythological texts indicate, which include information about lunar phases and the moon's orbit in the course of the month. It becomes clear that an idealised regularity in the passage of time was desired, since deviations were feared as menacing portents.

Celestial divination, the second topic of Brandes' paper, can generally be considered as the main reason for astronomical observation in Babylonia, the natural environment being understood as divine and its phenomena as signs sent from gods to men. The omens were always seen as applying not to private persons but to king and country, which turned knowledge about the heavenly bodies into a national and political matter. Among the omens that were described in veritable diviner's handbooks lunar phenomena like the new crescent or its outer appearance received special attention. Lunar eclipses were of particular interest, and different meanings were attributed to their positions and dates of appearance – all these signs being regarded as portentous.

Finally, Brandes pursues the question in which ways the knowledge of the moon that he finds in his texts was transferred. He considers it unlikely that knowledge from a foreign culture was adopted (or "borrowed" in terms of this volume's title). In his view it is more reasonable to assume that an internal transfer (or "inheriting") took place, e.g. from older Sumerian texts (third millennium BCE), as it is sometimes stated in colophons of transmitted texts. But also external knowledge could have been transferred by soldiers during military action or in peaceful exchange by traders and visiting scholars. The clear dominance of the Standard Mesopotamian Calendar and its month names is documented by the removal of local calendrical systems like that of the Assyrians, which was a lunar calendar without leap months. Together with the Standard Calendar the concept of the moon being responsible for chronology in general was adopted by other cultures. A direct proof of such an adoption features in some cuneiform tablets with lunar omens from Hattuša, the capital of the Hittites, which are written in Akkadian. Nevertheless, adjustments to the local needs were made like the replacement of the region Akkad by Hatti. The same mechanism can be found in an Egyptian omen text with clear Mesopotamian predecessors, as is shown in Altmann-Wendling's contribution about the knowledge of the moon in Egypt, especially in the Graeco-Roman period.

This article illustrates the topic with regard to two fields of knowledge: On the one hand the practical use of the lunar phases for chronology, cult life and astrology, and our knowledge about the underlying astronomical observations and computations; on the other hand, the relevance of lunar phenomena in the religious sphere, their description, symbolism and perception. It is not only a wide-spread assumption but proven by several facts that knowledge about the moon was gained by the Egyptians themselves (and therefore “found” and afterwards internally “inherited” when being handed down from one generation to the next). The traditional month-length of thirty days clearly refers to the synodic month with an average of 29.53 days. Yet, different from Mesopotamia, no luni-solar, but a purely solar calendar of 365 days dominated. Nevertheless, lunar dates (especially certain phases like new moon and full moon) appeared in historical inscriptions, were crucial for the fixation of many religious festivals and were taken into account in conducting rituals. Furthermore, the beginning of the priestly services (*phylai*) was determined by the new crescent. For all these reasons, the moon had to be closely watched, an action carried out by special priests, who were mainly entrusted with the measuring of time. Thus, the observation of celestial phenomena was, like in Mesopotamia, not a scientific end in itself, but served a particular purpose.

While divination was the main reason in Mesopotamia, in the case of Egypt the regulation of religious services, including the punctual offering for the gods, can be seen as the central motive for watching the moon. But the moon’s movements were not only observed, but also calculated, as Demotic or Greek papyri from the Roman period attest. The computations show the knowledge of an elaborate theory of lunar movement and were done by means of the “Standard Lunar Scheme”, which seems to be no direct adoption from the Greek or Mesopotamian culture but an independent way of computation. Mostly the beginning of the lunar month, i.e. new moon, was calculated, but there also exist lists of full moons, lunar eclipses or the positions of the moon in the sky or in zodiac signs.

The latter leads to a topic that was central in Mesopotamia, but also became increasingly important in Graeco-Roman Egypt. Concerning the zodiacal system and birth horoscopes, a Babylonian origin is not in question, although a mixture with and incorporation of more traditional concepts can be observed. However, the ways of transfer require further discussion, since often only the Ptolemaic and Roman dominion over Egypt was regarded as the phase of the acquisition of astrological knowledge. But firstly, divination is already

documented from the New Kingdom on, and secondly, latest papyrus finds show that the transmission of astrological lore from Mesopotamia to the Graeco-Roman world is more plausible with Egypt as an intermediary step, which is in addition stated by the Greek sources themselves. The best preserved and for a long time only known example of an Egyptian omen handbook, which besides the sun essentially deals with the moon, shows on the one hand clearly a Mesopotamian handbook as a template. On the other hand, the text was already adopted into a more Egyptian scheme with respect to content, language and structure, the addition of depictions being the most evident alteration. In addition, several facts point towards a date of the text as such in the seventh to fifth century BCE. The exchange of knowledge, therefore, seems most probably to have taken place during the Assyrian and Persian dominion over Egypt, but the process presumably started as early as the major Egyptian expansions during the New Kingdom.

These astronomical-astrological sources are complemented by the far more abundant religious texts and representations, which were particularly extensive and rich in detail during the Graeco-Roman period. These texts also provide knowledge about the moon: First, in terms of the religious interpretation and assessment of the celestial body, referring predominantly to concepts of rejuvenation and cyclicity, describing the moon as a source of night-time light and a surrogate of the sun, secondly, with quite accurate descriptions of the time sequences and phenomena during the course of lunation, like new moon, first crescent and especially full moon. Again, these are basic astronomical facts which could be observed by the priests, and there is no need to ascribe this knowledge to external influence during foreign dominion.

The contribution by Liba Taub deals with concepts of the moon not in iconographical or archaeological sources, but in a Greek text from the Roman imperial epoch: Plutarch's *De facie in orbe lunae* (*On the Face on the Moon*). This book from the first century CE, written in dialogue form, can be seen as a comprehensive collection of various ideas about the moon circulating during that time, but also refers to questions about the legitimisation of knowledge and its association with certain (social or ethnic) groups. Furthermore, Taub raises the question whether rational and mythological concepts were strictly juxtaposed, and whether ideas from experts and those from laymen (in this case even foreigners) were clearly distinguished, and which value was attributed to them.

On the “scientific” side, theories about the nature of the moon from natural philosophers with differing or rivalling opinions are presented, concerning the source of its light, its place within the cosmos and its material constitution. For example, the light and dark forms visible on the surface of the moon are explained as a mirror image of structures on the earth or simply optical illusions. By referring to these learned theories, the fictitious speakers also demonstrate their own education.

In contrast to these “scientific” explanations, a myth is told which considers the moon as the place to which human souls migrate after death and from whence they return into new-born babies. This account is clearly separated from the “scientific” theories by the fact that the speaker Sulla stresses that he only retells a story he has heard. This separation is underlined by a second myth a stranger has told him, which portrays the moon as being closely connected to the human soul. The fact that these myths are reported only at third or even fourth hand makes them somewhat unreliable. Yet, in the end the reader is requested to choose for himself which explanation he accepts as the most convincing. Hence myth is not dismissed but rather seen as a complementary explanation providing, moreover, a teleological dimension. But other than in Plato’s *Timaeus*, for Plutarch a scientific explanation of the world is conceivable. The narrator of the myths is portrayed as a stranger from Carthage. The North-African empire, conquered and made a province by the Romans in the second century BCE, was definitively seen as alien and inferior to the Roman and Greek culture, an attitude which is expressed in several passages of Plutarch’s writings.

Another train of thought is introduced by the fact that the second account of the stranger was supposedly told “by the chamberlains of Kronos”. Kronos was regarded as an ancient god to whom the Carthaginians allegedly sacrificed children, but he was also portrayed as a king of a bygone Golden Age. Naming him as the ultimate source probably highlights the profound age of the myth and tries to increase its credibility. Taub concludes that although scientific approaches are presented in Plutarch’s *De Facie* as sensible, myths still appear in a Platonic way as an important source that could even contain a higher truth about nature, and that the inheriting and borrowing of concepts from foreign and ancient cultures was conceived as valuable.

Interestingly enough, the dark spots on the moon’s surface (which are in reality caused by darker volcanic lava) that are treated in Plutarch’s *De Facie* are never mentioned in the preserved texts from Egypt and Mesopotamia.

However, the affiliation of certain animals (like the Sacred Ibis and the Oryx, which both show black and white areas on their coats) to the moon in Egypt was sometimes thought to reflect this lunar feature. But this is not convincing.³ A possible explanation for the lack of clear references to the dark spots is that their irregular shapes, which disturb the otherwise flawless, almost white surface of the moon, were not seen as appropriate for occurring in religious texts. These texts – especially in Egypt – always strove to reflect the desirable perfect and stable state of the cosmos, leaving out all negative elements or describing them in a euphemistic way.

To conclude: Knowledge about the moon in Antiquity was diverse and multi-layered. It ranges from a purely religious personification of the heavenly body in mythology and theology to complex mathematical-astronomical calculations about its phases and appearances. It was used in calendars, historiography and – most predominantly in Mesopotamia – in astrology. Depictions of the lunar crescent appear not only in connection with central moon gods, but different deities who show certain common features like fertility and power over the heavens. Lunar phases were observed, days of the lunar month were counted, and eclipses were feared. Explanations about the moon's physical nature and the appearance of its surface were treated in philosophical discourse, and a teleological meaning was attributed to the earth's only satellite. Some pieces of this knowledge were transferred from one culture to the next, with alterations, adoptions and through intermediate steps. Especially in the field of astrology, the ways of transmission went most probably from Mesopotamia via Egypt to Greece and Rome, with its tradition persisting until today. The transfer might have happened in times of peace via trading contacts and an exchange of scholars but was certainly enhanced by military campaigns and conquests that led to an amalgamation of different peoples and ideas. Many concepts are, in contrast, specific to their culture, as, e.g., the thought of some Greeks that the moon houses the souls of humans, or the Egyptian myth that the lunar cycle is an eye which is periodically injured and healed. Regarding the computation of the lunar phases and the calendar, most of the cultures examined in this volume developed their own system. This

3 A connection between the colour of the Ibis's feathers and the moon is described not in Egyptian sources, but by Plutarch (*De Iside et Osiride* 75) and Clement of Alexandria (*Stromateis* V.43, 2). However, they only refer to the dark and the light side of the moon, i.e. its phases, and not its spots. For the Oryx there are no ancient sources at all that mention a connection whatsoever.

was probably due to the significant length of time this system had already been passed down, and because it was held in high esteem on account of its originality. Some cultures shared the idea of attributing different qualities to time, so that some lunar phases or days were emphasised and valued higher than others. Moreover, time cycles were idealised by attributing to them a regularity that did and does not correspond with reality.⁴

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**SECTION 3:
THE END OF THE WORLD IN FIRE –
IMAGINATIONS FROM ANTIQUITY
TO THE MIDDLE AGES**

KNOW YOUR SOURCES BEFORE YOU ARGUE – MINUCIUS FELIX AND AUGUSTINE OF HIPPO ON THE CONFLAGRATION

DOMINIC BÄRSCH (MAINZ/EICHSTÄTT)

Introduction

The idea that fire shall eventually consume the whole world appears frequently in the corpus of surviving Greek and Roman texts.¹ However, in most of these cases, the specific concept is integrated into a superordinate context. An example of this would be the appearance of the theme in ethical or theological discourses. Hence, there is hardly ever a discussion merely about the physical processes involved in the world's destruction in and of itself, without being connected to another topic. Although this finding could be a result of the fragmentary nature of the surviving evidence, especially when it comes to the writings of Hellenistic philosophers, it is at least important to stress that the idea of a global conflagration is not treated by natural philosophers exclusively. It is rather the case that variations of this concept can be found equally in different types of texts with diverse narrative and argumentative settings; for example, in didactic or epic poetry, dialogues, or treatises. Depending on the specific type of text and discourse, the exact details and depiction of the end of the world by fire can thus be highlighted or changed to different degrees. In one tradition, the global fire catastrophe emerges at great

1 This article will expand upon some of the basic ideas about the authorizing techniques of Christian apologists that have arisen in the work on my forthcoming dissertation about concepts of the end of the world in Greek and Latin literature.

length as a dreadful event in the future connected to fear and loss. In another, it is described as a natural occurrence that one should expect with a calm mind and without worry.

As the ancient doxographical tradition witnesses, the Stoics – prominently known for their doctrines about cosmology and ethics – and especially their early school leaders Zeno, Cleanthes, and Chrysipp, are the prototypical representatives of such ideas. They developed slightly diverging conceptions of a cosmic cycle that included, in the words of Jaap Mansfeld, “the periodical destruction of the ordered universe by ‘total conflagration’ (which is how I prefer to translate *ekpyrosis*) and its periodical rebirth out of the liquid mass into which the fire – though remaining present with it – converts itself when all fuel has burnt”.² Apparently, in these teachings, the recurrent dissolution of all complex structures is closely connected to their reconfiguration.³

Due to the fact that Stoicism was very popular from the Hellenistic period up until the fall of the Roman Empire,⁴ many of its concepts have been broadly received and transformed in ancient literature, including the idea of an *ekpyrosis*.⁵ Nevertheless, I do not mean to suggest that the idea of a global conflagration could be traced back to these philosophers exclusively, but merely that the popularity of their ethics and cosmology contributed a great deal to the widespread adoption of this concept.

However, the purpose of the present contribution is not to reconstruct pagan concepts of the *ekpyrosis*, but rather to focus on two Latin Christian writers of Late Antiquity, namely Minucius Felix and Augustine of Hippo, and their method to validate their knowledge about the end of the world. Of particular interest will be how they classified the various already existing concepts about the end of the world, even if they dismissed or ignored them. How they tried to stage Christian knowledge as superior, and, in close connection to the last aspect, if they used pagan and/or specific Christian elements of knowledge to authorize their concepts.

2 MANSFELD, 1979, pp. 136f.

3 See HAHM, 1977, pp. 185-199, as well as the newer contributions of SALLES, 2005; 2009.

4 On this, see, for example, SALLES, 2014.

5 See HARRILL, 2010, p. 122: “Evidence for the widespread treatment of Stoic cosmological motifs appears across the board, in genres as diverse as philosophy, rhetoric, and poetry to biography, satire, scientific handbook compendia, and tragedy.”

As a matter of fact, from at least as early as the *Second Epistle of Peter*, many early Christians associated the expected return of Christ with a subsequent conflagration which shall ultimately destroy the earthly world.⁶ The relevant passage of the Epistle runs as follows:

δι' ὃν ὁ τότε κόσμος ὕδατι κατακλυσθεὶς ἀπώλετο· οἱ δὲ νῦν οὐρανοὶ καὶ ἡ γῆ τῶ αὐτῷ λόγῳ τεθησαυρισμένοι εἰσὶν πυρὶ τηρούμενοι εἰς ἡμέραν κρίσεως καὶ ἀπολείας τῶν ἀσεβῶν ἀνθρώπων. [...] ἤξει δὲ ἡμέρα κυρίου ὡς κλέπτης ἐν ἧ' οἱ οὐρανοὶ ῥοιζηδὸν παρελεύσονται, στοιχεῖα δὲ καυσούμενα λυθήσεται, καὶ γῆ καὶ τὰ ἐν αὐτῇ ἔργα εὐρεθήσεται.⁷

By these waters also the world of that time was deluged and destroyed. By the same word the present heavens and earth are reserved for fire, being kept for the day of judgement and destruction of the ungodly. [...] But the day of the Lord will come like a thief. The heavens will disappear with a roar; the elements will be destroyed by fire, and the earth and everything done in it will be laid bare.⁸

Even if the vivid description does not use the term *ekpyrosis*, it is quite obvious that it has much in common with the Stoic imagery of world-destruction.⁹ However, biblical scholars often deny the Stoic influence on the *Second Epistle of Peter* in particular, while postulating a specific uniqueness for early Christianity.¹⁰ Such anachronistic approaches are rightly criticized by J. Albert Harrill who describes them as “unhelpful [...] because [their] totalizing interpretative framework sets up ‘Judaism’ and ‘Hellenism’ as code words masquerading as fixed historical entities, which are then said to be capable of ‘interacting’ with each other”.¹¹ Indeed, it would be more appropriate not to construe clean cultural blocks, but rather to emphasize the mutual exchange

6 See RUF, 2011, p. 516.

7 *Second Epistle of Peter* 3.6f.; 10.

8 The translation follows the *New International Version*.

9 For the connection between Stoicism and the *Second Epistle of Peter* see HARRILL, 2010, especially p. 122, who argues that “Stoic cosmology fed the Roman cultural imagination in many and creative ways, in part because the Stoics reformulated popular religious myths into a rational, scientific framework” and, therefore, that Roman readers of the Epistle “have been familiar with the (Chrysippean) imagery of Stoic ἐκπύρωσις, if not the details of the theory that underlay it”.

10 See THIEDE, 1986, and the critical reflection on this view in VAN DER HORST, 1998, p. 278, note 28.

11 HARRILL, 2010, p. 118.

between the different individuals making up cultural groups, especially when it comes to early Christianity and its position in a pagan environment.

Compared to the common Stoic conceptions of the *ekpyrosis*, however, the key difference in the *Second Epistle of Peter* is that the concept of conflagration as formulated in the text is not something cyclically occurring but rather a unique and final event.¹² Additionally, in accordance with the Christian image of god, i.e., that the creator is not identical with nature or the world created, but stands outside of it, he – as an external force, not a natural law – will bring the destruction. Because of those and similar early transformation processes, I argue that such methods had already found validity and acceptance in early Christianity in order to convert pagan ideas into specific Christian concepts.¹³

As it can be seen from these paradigmatic transformations, the early Christian apologists faced the challenge of dealing with various pre-existing concepts of nature and god, especially those of the Stoics. Their doctrines are often used as points of comparison in order to articulate what distinguishes the Christian conception of the world's conflagration from the pagan ones.¹⁴ In this context, the apologists emphasize which specific features of the pagan concept can be assimilated and which must be rejected.

Turning now to the dialogue of Minucius Felix, particular attention shall be given to whether he addresses these significant differences between Christian and pagan knowledge about the end of the world, and how he eventually resolves them.

12 Although the conflagration could have been sometimes imagined as a singly occurring event in a pagan context; see, for example, Lucan's *Bellum civile* (especially 1.67-81), which does not imply a subsequent renewal.

13 GNILKA, 2012 has dealt in detail with the methods involved in the reception and adaptation of pagan culture by Christian authors, which he calls *Chrêsis*. On the broader topic of the Christianization of the Roman Empire, see, for example, LEPPIN, 2012.

14 See, for example, Justin Martyr, *Apologia* 1.20.2 and Origen of Alexandria, *Contra Celsum* 4.14.

Minucius Felix – An Archaeology of Truth

Unlike many other early Christian writers, little is known about the life of Minucius Felix, except that he wrote the apologetic dialogue *Octavius*,¹⁵ probably around the first decades of the third century CE.¹⁶ This piece takes on a special position within Christian apologetics in that it bases its entire argument on Greek philosophy and, starting from this, seeks to prove the superiority of the Christian religion while establishing it as the *true* philosophy. The initial scene of the dialogue is displayed as follows: During a walk on the beach, three friends start a dispute about Christianity, whereby the pagan Caecilius and the Christian Octavius debate, and a third figure, Minucius Felix, also a Christian, is appointed as the arbiter. In the course of Caecilius' speech, he raises various topical accusations against the Christians,¹⁷ such as subliminal atheism, cannibalism, and moral transgressions,¹⁸ all of which are easily refuted by Octavius.¹⁹ In addition to the typical *topoi*, Caecilius also polemicizes against the Christian conceptualization of the end of the world:

*quid? quod toto orbi et ipsi mundo cum sideribus suis minantur incendium, ruinam moliuntur, quasi aut naturae divinis legibus constitutus aeternus orbo turbetur, aut rupto elementorum omnium foedere et caelesti conpage divisa moles ista, qua continemur et cingimur, subruatur.*²⁰

What else? That they threaten conflagration to the whole world, and to the universe itself, with all its stars, they meditate on their downfall as if either the eternal order constituted by the divine laws of nature could be disturbed, or the bond of all the elements could be broken up, and the heavenly structure dissolved, and that fabric through which we are contained and bound together could be overthrown.

Strikingly, this accusation draws on a terminology that figures strongly in Stoic philosophy, and is often connected to the idea that the world will be

15 Hereafter, I will refer to this work as “Min. Fel.”.

16 See FREUND, 2000, p. 425.

17 See ALAND, 1985, p. 11.

18 Min. Fel. 5-13.

19 Min. Fel. 16-38.

20 Min. Fel. 11.1.

destroyed by fire.²¹ In that instance, the term *compages* refers to the ancient *pneuma*-theory, prominent in ancient Greek medicine, which postulates a physical substance that exists as a link between all living beings.²² Based on the idea that the cosmos is a living entity, the prominent Stoic Chrysipp has transferred this function of *pneuma* by analogy to the world and postulated the thesis “that the universe was held together by the coherent force and tensional movements of the all-pervasive cosmic πνεῦμα [*pneuma*]”.²³ The idea of such a pneumatic tension pervading and holding everything together also appears in the *Astronomica* of Manilius, who likewise describes it as “eternal frameworks” (*aeternae compages*).²⁴ Thus, the figure of Caecilius takes a philosophical standpoint that postulates that the world will continue to exist forever. If, however, it can be assumed that the group of intended recipients was also familiar with the terminology of Stoicism, as argued above, it appears that the formulation of this accusation already provides the grounds for an answer that uses the same vocabulary.

The response of the Christian Octavius accordingly builds on the fact that the concept of a global conflagration is anything but specifically Christian:

*ceterum de incendio mundi aut improvisum ignem cadere aut diffindi caelum non credere vulgaris erroris est.*²⁵

As for the conflagration of the world, it is an error common among the masses to refuse to believe that sudden fire falls or that the heaven dissolves.²⁶

First of all, any opinion that denies an end of the world in fire is labelled as *vulgaris error*, which in philosophical arguments is often used for those who interpret reality by means of myths.²⁷ This would, for example, also affect the Aristotelian doctrine of the infinity of the world, which, however, is not dealt

21 The accusation could possibly come from a Platonic or Peripatetic milieu. Equally possible, however, would be a Stoic source that distances itself from the concept of the conflagration, as attested by Cicero in *De natura deorum* (2.118) for Panaetius of Rhodes; see also HARRILL, 2010, p. 122.

22 See WHITE, 2003, p. 136.

23 LAPIDGE, 1979, p. 347.

24 Manilius, *Astronomica* 2.803.

25 Min. Fel. 34.1.

26 Translation: CLARKE, 1974, p. 114 with adaptations.

27 See SCHUBERT, 2014, p. 613.

with directly and which is not affected by the following basic assumption since Aristotelians claimed that the world has always existed and has, therefore, no beginning: *quis enim sapientium dubitat, quis ignorat, omnia quae orta sunt occidere, quae facta sunt interire?*²⁸ The term *sapientes* does not necessarily refer to pagan philosophers exclusively, but also to those Christians who believe in the concept of the conflagration of the world. Furthermore, and this is especially instructive for the examination of authorizing strategies, Octavius alludes to philosophical schools that (allegedly) supported the doctrine of a global conflagration. Therefore, he begins most prominently with the Stoics:

*caelum quoque cum omnibus quae caelo continentur, ita ut coepisse desinere fontium dulcis aqua maria nutrire, in vim ignis abiturum Stoicis constans opinio est, quod consumpto umore mundus hic omnis ignescat.*²⁹

It is an established opinion among the Stoics that the heavens, along with everything enclosed by the heavens, just as they had a beginning, will resolve into the substance of fire once the fountains of sweet water and the seas have ceased to nourish the firmament. They consider that when the supplies of moisture have been exhausted, this entire universe will catch fire.³⁰

This description of the Stoic conflagration refers closely – partly literally³¹ – to a description in Cicero’s philosophical dialogue *De natura deorum*, in which the Stoic Balbus elaborates the doctrine.³² It is noteworthy that the figure of

28 Min. Fel. 34.2: “What philosopher has a moment’s doubt or is unaware that what has a beginning must have an end, what has been made must perish?” This basic premise, that all created things must pass away due to the nature of the material, is a recurrent theme in Greek philosophy. On this, see SCHUBERT, 2014, p. 614, who also points out that the statement is not tautological.

29 Min. Fel. 34.2.

30 Translation: CLARKE, 1974, pp. 114f. with adaptations.

31 SCHUBERT, 2014, pp. 615f.

32 Cicero, *De natura deorum* 2.118: *sunt autem stellae natura flammae; quocirca terrae maris aquarumque reliquarum vaporibus aluntur is qui a sole ex agris tepefactis et ex aquis excitantur; quibus altae renovataeque stellae atque omnis aether effundunt eadem et rursus trahunt indidem, nihil ut fere intereat aut admodum paululum, quod astrorum ignis et aetheris flamma consumat, ex quo eventurum nostri putant id de quo Panaetium addubitare dicebant, ut ad extremum omnis mundus ignesceret, cum umore consumpto neque terra ali posset nec remearet aer, cuius ortus aqua omni exhausta esse non posset: ita relinqui nihil*

Balbus indicates in this passage that there were certain Stoics, such as Panaetius of Rhodes, who doubted this doctrine. However, the figure of Octavius entirely ignored this, enabling him to rely on his argument of an established opinion (*opinio constans*).

In this context, he also does not mention that, according to Stoic doctrine the differentiated world will be built up again out of its best possible state of fire, and that Stoics usually do not postulate an absolute end of the world, but rather a cyclical model. By doing so, Octavius intends to authorize the Christian concept through these philosophical teachings, whereby specific differences would not have been helpful, which is why they are not mentioned at all.

Regarding the end of the world, Octavius refers to Epicureanism as a second authority: *et Epicureis de elementorum conflagratione et mundi ruina eadem ipsa sententia est.*³³ This reference is brief and rather incidental, which is probably due to the fact that the intended readership did not primarily associate the concept of an *ekpyrosis* with the teaching of Epicurus. Rather obvious would have been a connection to atomic theory, which describes a destruction of the world through a process of dissolution.³⁴ However, in its brevity the attribution is not wrong either, since the Epicurean Lucretius in his *De rerum natura* certainly takes into account the possibility that the collapse of too many fire-conglomerates could lead to the downfall of the world through a

praeter ignem, a quo rursus animante ac deo renovado mundi fieret atque idem ornatus oreretur.

“The stars are made of fire, and they are accordingly fed by moisture from the earth and sea and the other waters; the sun extracts it from the fields and when they grow warm, and from waters. When the stars and the aether generally have been nourished and refreshed by the moisture, they disgorge it, and then they take it up again from the same sources. Virtually none of the moisture is lost, or at any rate only a minute fraction is consumed by the stars and the flaming aether. Our Stoic spokesmen (they used to concede that Panaetius registered doubts about this) believe that the ultimate outcome will be that the entire universe will go up in flames; for once the moisture has evaporated, the earth cannot obtain nourishment, and the air cannot circulate, since it cannot rise when all the water has dried up, with the result that nothing is left but fire. Then the universe will be restored from this living and divine element of fire; it will come into being established as before.” (translation: WALSH, 1997, pp. 89f.).

33 Min. Fel. 34.3: “What the Epicureans believe about the conflagration of the elements and the collapse of the universe is identical.”

34 The figure of Vellius, who is a prototypical Epicurean and the main speaker of the first book, presents this theory in Cicero, *De natura deorum* 1.20.

global fire.³⁵ Whether this was accepted and received by later Epicureans as an alternative model of cosmic dissolution is uncertain. Minucius Felix, who was obviously not concerned with portraying the complexity of the ancient philosophical schools, being more concerned with authorizing and defending the Christian concept, used a rhetorical strategy to quote or allude to decontextualized statements that were not necessarily wrong.

Additionally, as a third argument, Octavius refers to the teachings of Plato, and to his dialogue *Timaeus*, which he then introduces:

*loquitur Plato partes orbis nunc inundare, [dicit] nunc alternis vicibus ardescere et, cum ipsum mundum perpetuum et insolubilem diceret esse fabricatum, addit tamen ipsi artifici deo soli et solubilem et esse mortalem. ita nihil mirum est, si ista moles ab eo, quo exstructa est, destruitur.*³⁶

Plato mentions that parts of the world are, in turns, at one time under water, at another on fire; though he does say that the world itself was made everlasting and indestructible, he still adds that it is perishable and destructible but only for its maker, God Himself. It would not cause any surprise, then, should this vast structure be destroyed by the one who constructed it.³⁷

First of all, a theory of periodic, but local, destructions is cited that is mentioned by the figure of Critias in Plato's *Timaeus* when he talks about the cultural memory of the Greeks and that this commemoration shall always be destroyed by fire and water catastrophes.³⁸ Thus, the features "fire and water" and "destruction" are combined with each other and attributed to the teachings of Plato.

35 Lucretius, *De rerum natura* 5.407-410: *ignis enim superare potest ubi materiai/ex infinito sunt corpora plura coorta, et pereunt res exustae torrentibus auris. inde cadunt vires aliqua ratione revictae.*

"For fire can win when from the infinite of mass have risen many compounds and things perish burned by burning hot winds. And then its powers succumb, somehow subdued again."

36 Min. Fel. 34.4.

37 Translation: CLARKE, 1974, p. 115.

38 Plato, *Timaeus* 22c: *πολλὰ καὶ κατὰ πολλὰ φθοραὶ γεγόνασιν ἀνθρώπων καὶ ἔσονται, πῦρ μὲν καὶ ὕδατι μέγιστα, μυρίαὶ δὲ ἄλλοις ἕτεροι βραχύτεραι.*

"Many and manifold are the destructions of humans that have been and shall be, the greatest are by fire and by water, but there are lesser ones in countless other fashions." (translation: ARCHER-HIND, 1973, p. 71 with adaptations).

However, since Platonism is prominently known to postulate a potential eternity of the created world, it would probably have damaged the credibility of the figure of Octavius if he had eliminated this aspect completely. The fact that he introduces the demiurge (*artifex*) at this point and calls him *deus* allows him, in turn, to connect the demiurge to the destruction of the world, which is an essential feature of the Christian concept.³⁹ He achieves this by alluding to a later passage in the *Timaeus*,⁴⁰ which is, however, no longer presented by Critias, but by the figure of Timaeus, who talks about a different philosophical system. Therefore, the second section of the quote in the *Octavius* is originally not related to the theory of periodic disasters. Octavius construes such a link only by combining the initially separate statements to one fitting unit. In doing so, the figure of Octavius, again, deals rather loosely with the sources to which he refers. However, this approach allows him to connect his concept of the conflagration of the world with the authoritative name of Plato, even if the original writings of the philosopher did not stress a coming *ekpyrosis*.

Finally, in order to avoid giving the impression that it is not decisive whether one is an adherent of the Christian faith or of a particular philosophical doctrine, since they allegedly share the same doomsday concept, the Octavius persona adds an aspect that also reveals much about the complex objective of his approach:

*animadvertis philosophos eadem disputare quae dicimus, non quod nos simus eorum vestigia subsecuti, sed quod illi de divinis praedicationibus prophetarum umbram interpolatae veritatis imitati sint.*⁴¹

39 The connection between *artifex* and *deus* can also be found in Stoic testimonies; however, in this context, it is used with a Christian connotation. For the Stoic terminology, see WILDBERGER, 2006, pp. 15f.

40 Plato, *Timaeus* 32b-c: καὶ διὰ ταῦτα ἕκ τε δὴ τούτων τοιούτων καὶ τὸν ἀριθμὸν τεττάρων τὸ τοῦ κόσμου σῶμα ἐγγεγήθη δι' ἀναλογίας ὁμολογήσαν, φιλίαν τε ἔσχεν ἕκ τούτων, ὥστε εἰς ταῦτὸν αὐτῷ συνελθὸν ἄλυτον ὑπὸ τοῦ ἄλλου πλὴν ὑπὸ τοῦ συνδήσαντος γενέσθαι.

“For these reasons and out of the elements of this kind, four in number, the body of the universe was created, being brought into concord through proportion; and from these it derived friendship, so that coming to unity with itself it became indissoluble by any force save of him who joined it.” (translation: ARCHER-HIND, 1973, p. 99).

41 Min. Fel. 34,5.

You observe that the philosophers discuss the very ideas which we hold. The explanation is not that we have followed after their footsteps but that they have made a shadowy, though distorted, imitation of the truth found in the divine proclamations of the prophets.⁴²

At this point, Octavius uses a line of argument that Christian Gnilka describes as “historical basic idea” (“historischer Grundgedanke”).⁴³ The aim of this strategy is, first of all, to explain the overlapping of content between Christian and pagan concepts by claiming that Greek philosophy acquired all its wisdom from the biblical prophets and subsequently deformed it. In doing so, he places Christianity in direct succession to these prophets, thereby granting Christians unrestricted access to the unadulterated truth. Consequently, Christian concepts are thus given a priority by which they are characterized as superior despite their similarity to pagan concepts.

Additionally, Octavius provides this example to demonstrate how a Christian approach to the history of philosophy that does not entirely reject pagan philosophy but evaluates its teachings through Christian reflection could operate.⁴⁴ For this purpose, a philosophical archaeology can be applied, as pursued by Octavius, to extract – according to Christian interpretation – essential components of the “deformed” teachings and thereby to reconstruct the “original truth”. Such a rhetorical method can also be used to legitimize Christian doctrines, not through the intrinsic citation of concrete Biblical quotations, but from an apparently extrinsic point of view based on independent sources that are, in fact, decontextualized fragments.

As a point of comparison to this extrinsic technique, the relevant remarks of a prominent Christian apologist of intellectual history in Late Antiquity, namely of Augustine of Hippo, will be examined below. In doing so, the focus will lie on his work *De civitate Dei*⁴⁵ whereby it will in particular be necessary to examine in what ways, in the context of the two-state doctrine,⁴⁶ he authorizes his knowledge of the coming demise of the world.

42 Translation by CLARKE, 1974, p. 115 with adaptations.

43 See GNILKA, 2012, p. 25. For the so-called “proof of age” (“Altersbeweis”) see PILHOFER, 1990, p. 281.

44 See also FREUND, 2010, pp. 428f.

45 Hereafter, I will refer to this work as “Aug. civ.”.

46 See, in detail, the study of SCHMIDT, 1956.

Augustine of Hippo – The Truth of Divine Revelation

Augustine of Hippo, to whom the later tradition refers to as one of the great Church Fathers of the Christian West, wrote a monumental apologetic work (*De civitate Dei*) as part of his extensive oeuvre in which he formulates a Christian theory of history.⁴⁷ Therefore, he claims the existence of two citizenries (*civitates*), one of God (*civitas Dei*) and one of the Devil (*civitas diaboli*), which he also calls the earthly citizenry (*civitas terrena*), in opposition to the heavenly (*civitas caelestis*). According to this doctrine, every human being belongs to either one or the other citizenry. Both communities exist at the same time, and while they are strictly separated from each other in the beyond, in this world the members of both citizenries live side by side. However, Augustine claims that being part of the Christian Church is not enough to bring about eventual redemption. Rather, it lies in the decision of God as to which people will finally be included in the eternal *civitas Dei* that follows the mundane history of the world.

Thereby, Augustine entirely deconstructs the concept of history as a sequence of events. In his understanding, it is not certain occurrences that are crucial for the history of humanity, but only the awareness of the two co-existing communities who are essentially different.⁴⁸ Consequently, a central purpose of *De civitate Dei* is to present world's history in terms of this distinction. To achieve this, Augustine formulates the concept of the 'Six Ages of the World' (*aetates*), which he had already developed in his work *De Genesi adversus Manichaeos* (1.35-41).⁴⁹ For that reason, he relies on a historical classification, which was also used in Roman historiography to construe an analogy between historical periods and the stages of a human life.⁵⁰ According to this correlation, history goes through several stages of aging, just as a human being does, that is, following the Roman conception: infancy (*infantia*), childhood (*pueritia*), youth (*adolescentia*), adulthood (*iuventus*), senior age

47 FUHRER, 2004, pp. 137-149 provides a learned introduction to the subject.

48 See IBID., p. 140, and especially p. 143.

49 See SCHWARTE, 1966, pp. 17-61. For earlier Christian (chiliastic) models, see pp. 119-176.

50 See SCHMIDT, 1956 and, in particular, FUHRER, 2012 for a detailed analysis with a comparison to Florus, Ammianus Marcellinus, the late antique *Historia Augusta*, and Seneca the Elder.

(*aetas senior/gravitas*), and senility (*senectus*). In addition to this analogy based on the human lifecycle, he also parallels the stages of history with the days of creation in *Genesis*: the six ages of the world correspond to the six days of creation, and God's seventh day of rest prefigures the eternal *civitas caelestis*.⁵¹ Unlike proponents of chiliastic models, however, Augustine does not attribute a duration of one thousand years to the several ages of the world. He divides them according to his own conception, as Therese Fuhrer summarizes:

The seventh age of the world, the seventh day, the day of Sabbath rest, the new Aion, initiated by the return of Christ, the judgment of the world, and the end of the world, follow according to Augustine indefinitely. [...] The six ages before the seventh day correspond to the stations that the people of Israel pass on their salvation-historical path of development.⁵²

In what follows, I want to examine how Augustine depicts the end of the world within the framework of the previously presented conceptualization of the world's history. Focusing on the primary question of this paper, I shall demonstrate which authorizing strategies Augustine uses to legitimize his knowledge about the future demise. In view of this purpose, the twentieth book of *De civitate Dei* is significant, as he predicts the final destinies (*debiti fines*) of the two *civitates* in this book.

As an introduction to his eschatological composition, in which he speaks about the Last Judgment, the end of the world, and the resurrection of the dead, Augustine initially presents several epistemological considerations. Since his subsequent argumentation addresses a realm that lies beyond current human cognition, the matter of which sources can be used to provide sound information about this realm needs to be clarified. In his opinion, the only reliable way to address this subject would be to use divine testimonies (*testimonia divina*), as they are superior in every respect to human theories.⁵³ By divine testimonies, he refers to quotes from the sacred Scriptures, which he calls God's

51 See FUHRER, 2012, pp. 269f.

52 IBID., p. 271: "Das siebte Weltalter, der siebte Tag, der Tag der Sabbatruhe, der neue Aion, der durch Christi Wiederkehr, Weltgericht und Weltuntergang eingeleitet wird, folgt gemäß Augustin in unbestimmter Zeit. [...] Die sechs Lebensalter vor dem siebten Tag entsprechen den Stationen, die das Volk Israel auf seinem heilsgeschichtlichen Entwicklungsweg durchschreitet."

53 Aug. civ. 20.1.1-7.

words mediated through holy souls (*a summo ac vero Deo per animas sanctas dicta*). He also claims that the fact that these testimonies are divine words makes their truth unquestionable, so that every person who hears them is internally convinced, even if they refuse to admit it to the outside world.⁵⁴ By building up this line of argument, he uses a rhetorical strategy to refute his opponents' potential objections right from the start. Thus, he can refute any doubts about the legitimacy of the source of his knowledge by arguing that any resistance against the *testimonia divina* is only an external reaction of defiance contrary to an individual's inner conviction. Unlike Minucius Felix, he is at this point not interested in identifying valid elements of knowledge about the end of the world in pagan philosophy. This observation also corresponds to his statements in previous books where he denies pagan philosophers the possibility of being able to lead to the eternal *civitas Dei*, even if he conceded that the Platonists came close to Christian teachings.⁵⁵

In terms of his methodology, he stresses the superiority of the New Testament. While the Old Testament is earlier in date, its value consists – according to Augustine – in announcing the events of the New Testament.⁵⁶ However, he does not ignore passages from the Old Testament entirely. These are used in a second step to affirm New Testament's evidence.⁵⁷ Consequently, he begins his prediction of coming events by listing passages from the Gospels and the writings of the Apostles that support his arguments.

After some remarks on the Last Judgment and the resurrection of the dead, Augustine also addresses the question of what will happen to the earthly world. Nevertheless, it should be mentioned that, above all, he takes an anthropocentric perspective throughout, and his reasoning, therefore, is primarily concerned with how humanity will fare on Christ's return. What will ultimate-

54 Aug. civ. 20.1.7-14.

55 See FUHRER, 2004, pp. 147f.

56 Aug. civ. 20.4.3-5: *quamvis enim vetera priora sunt tempore, nova tamen anteponeunda sunt dignitate, quoniam illa vetera praeconia sunt novorum.*

“For although the Old Testament is prior in time, the New Testament is to be placed before the Old in terms of dignity, because the Old Testament is the herald of the New.” (translation: DYSON, 1998, p. 970).

57 Aug. civ. 20.4.5-7: *nova igitur ponentur prius, quae ut firmiter probemus, adsumuntur et vetera.*

“The New Testament evidence will be cited first, therefore, and we shall then confirm this by means of proofs derived from the Old.” (translation: DYSON, 1998, p. 970).

ly happen to the mundane world is of secondary importance. First, he thematizes at which point of the sequence of events the end of the world will occur:

*peracto quippe iudicio, tunc esse desinet hoc caelum et haec terra, quando incipiet esse caelum novum et terra nova. mutatione namque rerum, non omni modo interitu transibit hic mundus. unde apostolus dicit: praeterit enim figura huius mundi, volo vos sine sollicitudine esse. figura ergo praeterit, non natura.*⁵⁸

But when the judgment is accomplished, this heaven and this earth will pass away, and there will be a new heaven and a new earth. For when this world passes away, this will not come about by the utter destruction of things, but by their transformation. This is why the apostle says, ‘For the figure of this world passeth away. I would have you be without anxiety.’ It is, then, the figure, not the nature, that passeth away.⁵⁹

In addition to determining the event after the divine judgment, according to the *Book of Revelation*,⁶⁰ he also specifies what shall happen exactly. Thereby, it is essential for him to emphasize that this will not be a destruction of the world, but a complete transformation: The shape (*figura*) of the world may be destroyed, but its actual essence (*natura*) stays intact. To support this idea, he quotes from the *First Epistle of the Apostle Paul to the Corinthians*.⁶¹ Augustine himself, however, draws the conclusion that this affects only the external nature of the world and not its essence.

Two chapters later, he returns to the biblical prediction of a new heaven and a new earth, again referring to the *Book of Revelation*.⁶² In greater detail, he describes the transformation of the world as follows:

58 Aug. civ. 20.14.19-24.

59 Translation by DYSON, 1998, p. 998.

60 Rev. 20.11.

61 1 Cor. 7.31f.

62 Aug. civ. 20.16.7-12: *et vidi, inquit, caelum novum et terram novam. nam primum caelum et terra recesserunt, et mare iam non est. isto fiet ordine, quod superius praeoccupando iam dixit, vidisse se super thronum sedentem cuius facie fugit caelum et terra.*

“‘And I saw’, he says, ‘a new heaven and a new earth: for the first heaven and the first earth were passed away; and there was no more sea [Rev. 21.1].’ This will come to pass in the order which he has already specified in advance, when he said, ‘I saw Him that sat on a throne, from Whose face the heaven and the earth flee away.’” (by DYSON, 1998, p. 1002 with adaptations).

[...] *tunc figura huius mundi mundanorum ignium conflagratione praeteribit, sicut factum est mundanarum aquarum inundatione diluvium. illa itaque, ut dixi, conflagratione mundana elementorum corruptibilium qualitates, quae corporibus nostris corruptibilibus congruebat, ardendo penitus interibunt, atque ipsa substantia eas qualitates habebit, quae corporibus immortalibus mirabili mutatione convenient; ut scilicet mundus in melius innovatus apte adcommoetur hominibus etiam carne in melius innovatis.*⁶³

[...] [T]he figure of this world will pass away in a conflagration of all the fires of the universe, just as it was of old downed by the inundation of all waters of the universe. By that conflagration, as I call it, the qualities of the corruptible elements which were fitted to our corruptible bodies will wholly perish in the burning. Then, by a miraculous transformation, our very substance will take on the qualities which belong to immortal bodies; and the purpose of this will be to equip the world, now made new and better, with a fitting population of humans who are themselves renewed and made better even in their flesh.⁶⁴

Without direct reference to any scriptural testimony, Augustine adds the information that earthly fire will be the means of the transformation of the world. As a point of comparison, he uses the biblical Flood, which should have reminded his recipients directly of the *Second Epistle of Peter*, which employs the same parallel. Relying on this allusion, he apparently felt no need to justify his concept of the conflagration of the world, which might also indicate that he, as Minucius Felix, understood this idea as an established thought.

Equally significant, however, is that he gives a reason for the transformation of the world, namely that immortal humans will need an appropriate world. The world's present shape, which is subject to constant transience, must, therefore, be replaced by a similarly immortal world. This demonstrates the anthropocentric perspective that Augustine pursues in his argument(s).

In a later chapter, he finally cites an extensive section of the *Second Epistle of Peter*, in order to authorize his previously presented statements using the only unquestionable evidence from the New Testament.⁶⁵ In his subsequent interpretation of the quote, he attaches great importance to the parallelization between deluge and conflagration, as this is of particular relevance for his

63 Aug. civ. 20.16.16-25.

64 Translation: DYSON, 1998, p. 1002 with adaptations.

65 Aug. civ. 20.18.1-22.

following argumentation. He emphasizes that the upper layers of the heavens containing the stars were spared during the Flood, which means that they will also stay unscathed during the conflagration.⁶⁶ To this intact area, he assigns the function of receiving the saved saints during the conflagration and sparing them from the flames, which will change the *figura mundi*.⁶⁷ Here again, the concept of the conflagration is strictly connected to another anthropocentric topic.

When it comes to the evidence of the Old Testament, Augustine turns to the *Psalms of David*, which he claims as explicitly addressing the end of this world:

*hoc tamen quod de fine huius saeculi apertissime ibi dictum est, nequaquam silentio praeteribo. principio terram tu fundasti, Domine, et opera manuum tuarum sunt caeli. ipsi peribunt, tu autem permanes; et omnes sicut vestimentum veterescent, et sicut opertorium mutabis eos, et mutabuntur; tu autem idem ipse es, et anni tui non deficient.*⁶⁸

But I shall by no means pass over in silence what is most clearly said there concerning the end of this world. ‘In the beginning hast Thou laid the foundations of the earth, O Lord; and the heavens are the work of Thy hands. They shall perish, but Thou shalt endure; yea, all of them shall wax old like a garment; and as a vesture Thou shalt change them, and they shall be changed: but Thou art the same, and Thy years shall not fail’ [Ps. 101.26-28].⁶⁹

66 Aug. civ. 20.18.24-35.

67 Aug. civ. 20.18.43-50: *quaerat forsitan aliquis, si post factum iudicium iste mundus ardebit, antequam pro illo caelum novum et terra nova reponatur, eo ipso tempore conflagrationis eius ubi erunt sancti, cum eos habentes corpora in aliquo corporali loco esse necesse sit. possumus respondere futuros eos esse in superioribus partibus, quo ita non ascendet flamma illius incendii, quem ad modum nec unda diluvii.*

“Perhaps someone will now ask the following question. If, when the judgment is completed, this world is to burn up, where will the saints be during the time of this conflagration, before the world is replaced by the new heaven and the new earth? For they must be in some material place, since they have material bodies. We can reply that they will be in the higher regions to which the flames of that burning will not rise, just as the waters of the flood did not.” (by DYSON, 1998, p. 1006).

68 Aug. civ. 20.24.2-7.

69 Translation: DYSON, 1998, pp. 1024f.

Even though the cited passage from the psalms praises an eternal God rather than explicitly depicting the end of the world, it seems to provide enough legitimizing potential for Augustine's argument. According to his proposition that the older biblical writings are predictions of the newer ones, it is not necessary for his argumentation that the testimony explicitly addresses the end of the world. However, it is quite effective in this case that the image of the discarded clothes fits perfectly with the previously mentioned idea that the shape of the world is being changed.

This chapter is also significant because, while referring to the psalm, he deals with an opponent of Christian doctrine:

*quid est quod Porphyrius, cum pietatem laudet Hebraeorum, qua magnus et verus et ipsis numinibus terribilis ab eis colitur Deus, Christianos ob hoc arguit maximae stultitiae etiam ex oraculis deorum suorum, quod istum mundum dicunt esse periturum?*⁷⁰

Porphyry praises the Hebrews for their pity in worshipping a God who is great and true and terrible even to the gods themselves. Why, then does he follow oracles of those gods in charging the Christians with immense folly because they say that this world is to perish?⁷¹

Prominently known for his efforts against Christian belief, the Neoplatonist Porphyry of Tyre became a topical synonym for heresy among early Christian apologetics.⁷² Therefore, Mark Edwards strikingly points out that

when the Church remembered him by name it was as an antichrist, the arch-defender of polytheism, and plagiarist of demons; it became such a common pastime to refute him that we cannot be sure whether every title cited in the heat of controversy belonged to a different work, and whether every one of these works contained a frank assault on Christianity.⁷³

Like Minucius Felix, Augustine sees himself as having been challenged to defend the doctrine of the world's demise against philosophical opponents

70 Aug. civ. 20.24.8-12.

71 Translation: DYSON, 1998, p. 1025.

72 BECKER, 2016 provides a collection of fragments and testimonies of his work.

73 EDWARDS, 2007, p. 112.

convinced of an eternity of the world. The former created, therefore, the figure of the pagan philosopher Caecilius, arguing against the destructibility of the world. Augustine, conversely, invokes Porphyry of Tyre, someone known to the readers as a spokesperson of anti-Christian argumentation. Using these characters, both can work through arguments to support their own teachings and refute their opposition.

Although the initial circumstances of the two Christian authors are comparable, their actual lines of argument are quite different. When Minucius Felix begins with the counterargument that it is common philosophical thought to believe in the conflagration, Augustine aims at revealing the inner contradiction in the reasoning of his opponent. If Porphyry or the gods in his theological treatises compliment the scriptures of the Hebrews for their wisdom, he cannot refuse the concept of world's future end, which is – according to Augustine – already evident in the psalms.⁷⁴ After an extensive digression on how the statements of the psalm and the *Second Epistle of Peter* complement each other, Augustine draws a sarcastic conclusion: The only way that the gods of Porphyry can deny the world's end and still praise the wisdom of the Hebrews is that they had not read all of their scriptures.⁷⁵

Conclusion

To sum up the examinations of this contribution, I will finally compare the approaches of both apologists. In the dialogue, the pagan Caecilius blames Octavius for believing in the demise of the world against all reason. To answer the objection, he demonstrates that several philosophical schools allegedly supported the Christian doctrine of the world's conflagration. His rhetorical technique is based on decontextualizing certain elements of philosophical teachings and passing over details that do not match his reasoning. In principle, he acknowledges that the various philosophical schools can provide components of truth that can only be recognized through Christian interpreta-

74 Aug. civ. 20.24.15-26.

75 Aug. civ. 20.24.69-71: *restat ut dicant, quod propterea dii eorum Hebraeam sapientiam laudaverint, quia istum psalmum non legerant.*

“All that remains for them, therefore, is to say that their gods praised the wisdom of the Hebrews because they had not read this psalm.” (translation: DYSON, 1998, p. 1027).

tion, however. Thus, if one wants to study pagan philosophical writings, one should practice – following his example – the archaeology of truth. Therefore, I prefer to describe this approach as extrinsic.

Conversely, Augustine of Hippo, too, makes it a subject of discussion whether it is reasonable to believe in the world's conflagration. As sources for his argument, he uses biblical testimonies exclusively, as he attributes the highest epistemic value to them. Additionally, he categorizes evidence from the New Testament as superior to evidence from the Old Testament, because he understands the latter only as a prediction of the former. When he chooses to argue against his opponents, he rhetorically invalidates their reasoning by demonstrating contradictions of their argumentation. In contrast to Minucius Felix's approach, I understand Augustine's as essentially intrinsic.

However, both share the idea of god as the foundation of unadulterated truth. Their assumption is, therefore, that only his revelation leads to reliable knowledge. For Minucius Felix, this revelation has also influenced pagan philosophy, whereas Augustine acknowledges it as contained in biblical writings, exclusively.

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THE IDEA OF AN APOCALYPTIC FIRE ACCORDING TO THE OLD AND MIDDLE IRANIAN SOURCES

GÖTZ KÖNIG (BOCHUM)

Preliminary Remarks

The history of the religion of ancient Iran is mainly based on three primary sources. The first is the Avesta (first millennium BCE), for the most part ritual texts with a complicated structure and much debated genesis and transmission.¹ Because of the almost complete loss of the Western Iranian literary tradition, this (originally oral) text-corpus from Eastern Iran is our only literary, non-epigraphic witness of ancient Iran. The Pahlavi (Middle Persian) translation of these texts that was probably made in the Sasanian period (third to seventh centuries CE) provided the basis for the second religious text corpus: the theological treatises of Zoroastrian priests in the early Islamic period (ninth century CE). These treatises contain many conceptual elements that are unknown in the Avesta and its translation. An influence from the Aristotelian and Neo-Platonic traditions seems likely. The third text-corpus is the series of Iranian Manichaean texts. The oldest parts of the series are the writings of the founder Mani himself (third century CE). Manichaeism is in some parts closely related to Zoroastrianism, and it was considered, not without some reason, as a heresy by the Zoroastrian priests. However, one has to stress that Manichaeism is an “international” phenomenon that adopted many non-Iranian cultural and religious elements.

1 CANTERA, 2012.

These three text-corpora stand in a horizontal and vertical relation to each other. Vertical (i.e., sequential/diachronical and intra-religious) represents the relationship between the Avestan and the Pahlavi literature. Horizontal represents the relationship of the Pahlavi to the Manichaean literature: both corpora are corpora of Late Antiquity.

	Zoroastrianism		Manichaeism		
1st mill. BCE		Avesta (ritual, meta-ritual, exegetical texts)		*OIr./Mir. influences	Antiquity
		↓		↓	
3rd c. CE		Pahlavi translation of +	→	Mani's writings +	Late Antiquity
- 6th c. CE	Greek/Syriac influences	→ (?) commentaries to the Avesta (the "Zand")	↔ (?)	Manichaean literature	
		↓		↓	
9. c. CE		→ theological literature in Pahlavi	↔		

Table 1: Iranian religious literature in Antiquity and Late Antiquity

A reasonable method through which to approach the reconstruction of religious phenomena in Iran would be to view the phenomena involved from this double perspective involving vertical and horizontal relationships. Defining the perennial and the changing elements, kernels and agglomerations, etc., would surely be helpful in this respect. So too would the drawing up of chronologies related to the history of religious ideas in Iran. The idea of an apocalypse – and this idea is, as we shall see, essentially the idea of the end of the world in fire – is a good example upon which to base a historical analysis located in the aforementioned double bipolar field: Zoroastrianism and Manichaeism; Avesta and late antique religious text. The topic would also be a good case study with which to examine the participation of different, but closely related cultures (especially Iranian, Greek, and Judean) in one and the same phenomenon of religious and historical thinking, but it would be beyond the scope of this paper to analyze the tricky cultural interweavings in the detail they would require.

On the Relation of Zoroastrianism and Manichaeism

The relation of Zoroastrianism to Manichaeism differs according to the religious field under observation. The two religions match especially in their fundamental basic settings. Manichaean texts describe Manichaeism as “the religion of the ‘two principles’² (*dō bun/bunṽāh[īg]/buništ*)” or “of the ‘two principles and three times’”³. The two principles here are the light and the darkness (resp. matter), or the two divine leaders associated with these two antagonistic realms. The three times involved are the period when light and matter were separate; the period when the light was mingled with darkness; the period when the light is liberated from the matter.⁴ The designation “religion of the two principles and three times” could also be used to describe Zoroastrianism. The Zoroastrian structuring of the world time also follows a threefold scheme⁵ (slightly different to Manichaeism, the third Zoroastrian period is the period of a long process of salvation). In the same way as Manichaeism, Zoroastrianism (the Zoroastrianism a) as it appears in the Avesta and in the Pahlavi literature, b) according to the various “schools”⁶) is based on two antagonistic principles, whose varying relation to one another gives the rhythm of the world time: the creation of the two realms, the pollution of matter, and the expulsion of demonic forces. It is, as already stated, not an untenable assertion when Mani is accused of heresy (= deceit) by the

2 The title of Mani’s *Šābuhragān* was *dw bwn ‘g š’ bwhrġ’n* (see the fragments M 475, M 477, M482, M 472); on the title *dw bwn* in the Parthian translation, see SUNDERMANN, 1986, p. 84, note 182; see also the Old Turkic *Iki Yiltiz Nom*, and Chinese *Erh-tsung ching* “book of the two principles” (MIK III 198 [T II D 171]) (see HUTTER, 1992, p. 146; RECK, <http://www.iranicaonline.org/articles/sabuhra gan>). In Zoroastrianism, the *dō bun* terminology is prominent in *Dēnkard* 3 (early ninth century). This most important Pahlavi book is the attempt to define the *dō bun* concept (most of the chapters are structured according to this concept) and to demarcate it against the Manichaean concept.

3 On this formula, see HUTTER, 2015, pp. 478, 481.

4 On the variations of the scheme of the three times see STEIN, 2015.

5 This scheme is differently reworked (see Y 44.3-7; Y 37; Yt 13 [for these three texts see KELLENS, 2008; KELLENS, 2008-2009]; *Vīdēvdād*; Pahlavi sources), and in its latest stage a scheme of a world-time of 12,000 years of four times three millennia was established, a scheme that resembles the Manichaean three times four aeons, the hypostasises of the Father of Greatness.

6 See HAARBRÜCKER, 1850-1851 I, pp. 275-285.

Zoroastrians.⁷ Not only Zoroastrian key terms were borrowed by Mani, especially in the *Šābuhragān* fragments,⁸ but, as it seems, also the fundamental religious concepts, especially the concept of the *dō bun*. Among the twelve Manichaean dogmas (*handarz*) that are quoted and criticized in (the Zoroastrian text) Dk 3.200, the most important dogma is Mani's categorization of *gētīy* "material" as a *buništāg* "principle" (Dk 3.200.7; cf. the position of Ādurbād in Dk 3.199.7),⁹ and, *ipso facto*, its identification with evil. At least on the dogmatic surface, an opposite position is taken by Zoroastrians:¹⁰ only Ohrmazd and Ahreman, good and evil, are seen as principles. Notwithstanding this difference, *evil is a principle* in both religions. The consequence of this perspective is the denial of any possibility of communication and conciliation with evil. The concept of salvation necessarily implies a violent act, the apocalyptic end of the world.

For late antique Iran, these observations lead to two perspectives on, or explanations of, apocalyptic thinking:

- A more synchronic perspective would deal with the apocalyptic thinking of Manichaeism and later Zoroastrianism in the context of the body of thought surrounding the concept of redemption that is typical for Late Antiquity. Iranian apocalyptic thinking is ultimately a consequence of the negative world view of that period.
- A more diachronic perspective would (or at least could) describe Manichaeism and later Zoroastrianism as continuators of an Old Iranian, or even Indo-Iranian or Indo-European, apocalyptic concept (a concept that is not necessarily affiliated with the concept of the evil).

7 See (probably) Dd 71.9; ŠGW 10.58; Dk 3.200 (<*handarz* ī> *druz astag Mānī* [B 169.21-171.1]). See also the famous chapter ŠGW 16 (DE MENASCE, 1945; SUNDERMANN, 2001). On the three types of heretics, see AiW 257 (cf. PYt 1.10 [CANTERA, 2004, pp. 189-191]; ZA I, p. 91).

8 COLDITZ, 2005.

9 Cf. Dk 3.150 (B 115.19-116.10; DkM 152.11-17).

10 However, Zoroastrian texts tend to reconstruct a proximity of matter and the Evil (e.g., only matter is infested with Ahreman/demons [however, Ahreman has no material substance, see GNOLI, 1995; SCHMIDT, 1996; PANAINO, 2001]; the earthly [and also the hellish] being is "dangerous", only the "spiritual" being [the paradisiacal being] is "undangerous"), cf. V 7.52, HN 2.16 (= Vyt 62), V 19.31; AWN 11.5, AWN 10.3, MX 2.149), and to give a preference to the immaterial [i.e., the soul] over the material.

Neither perspective is exclusive. Quite the contrary, a blending of both perspectives can bring to light the trivial insight that “the same is not the same”. This insight is unfortunately not generally accepted in the field of Iranian Studies, which remains dominated by the same old “Ur-fixation” and the reconstructive method of the Indo European Studies, with the consequence that history appears as mythology: as a permanent handing over of “original” concepts and ideas.

On Apocalyptic Elements in the Avesta

General Structures

The Avesta preserves in full neither cosmogonic nor apocalyptic accounts, and it is a much-debated question whether such accounts ever existed and acted as the pretext for the cosmogonic and apocalyptic Pahlavi texts. An examination of those Avestan collections/books that have had correspondences in the completely lost so-called Sasanian or Great Avesta,¹¹ the *Nask Vīdēvdād* and the *Yašts* (which probably once formed the *Nask Bayān*) shows that both *Nasks* followed similar overarching structuring principles.

The *Vīdēvdād* was modeled according to the scheme of the three times (the creation; the situation of the world; the expulsion of the evil).¹² The sequence of the *Yašts*¹³ follows the order of the spheres.¹⁴ The collection begins with Ahura Mazda and ends with a praise of the earth (Yt 19). The greater part of Yt 19 is dedicated to the history of Iran whose vanishing point is the age of

11 KELLENS, 1989; 1998.

12 The text collection begins with cosmogonic/pre-historical texts (V1: creation of the 16 best lands; V 2: on Yima), and it ends with a text (V 19) that focusses on Zaraθuštra, the individual (V 19.29-30), and universal (V 19.31-42) eschatology and the expulsion of the demons from the world into the hell (V 19.43-47). Divine beings come down after their “being called down” (*ni-zbāia**) (V 19.35-42). V 19.40 points to a fiery sacrifice of the apotropaic deity Sraoša (cf. GrBd 34.29). The final chapters, V 20-22, are spells against the demons; V 22 is the account of a cure of the highest god Ahura Mazda.

**ni-zbā*- is used (more or less exclusively) in V 19 (see also Vyt 24; Vd 20). Cf. OI *ni-hū*- (inviting/calling a deity) (see RV 948.8, 691.4, 114.5).

13 The collection of the *Yašts* (the hymns) contained (in the Sasanian Avesta) sixteen texts, the last of them was the *Yašt* that is the nineteenth *Yašt* in the F1 tradition).

14 KÖNIG, 2013.

Zaraθuštra and Vištāspa. The last ten stanzas are concerned with the end of the world and the overcoming of the demons. Thus, the *Vīdēvdād* and the *Yašts* tell the story from a beginning (cosmogony; highest = first deity) to a historical situation (time of Zaraθuštra); both give the prospect of a salvation.

Details I: Younger Avesta

In the already mentioned Yt 19 in particular, but also in other YAv texts, in Ny 5, Yt 13, V 18, and in the already mentioned V 19, we find traces of an apocalyptic mode of thought that was closely related to scenarios of fire:

Yt 19 ¹⁵	The savior (<i>saošiiant</i>) Astuuat.ərəta (Yt 19.88-96; cf. Yt 13.129); born from a daughter of Zaraθuštra (cf. GrBd 33.36, 34.59; Dk 7.10.15, 7.8.55-57) → historical construction; references to the mythic times (Astuuat.ərəta ≈ Θraētaona) Companions of Astuuat.ərəta (Yt 19.89, 95) Extinction of the demons (Yt 19.88-96) Immortality (<i>a-marək-</i>) of the future world; <i>fraša</i> -being of the world; resurrection (Yt 19.93-95, 89)
Ny 5.9/Y 62.3 (<i>Ātaš</i> <i>Zōhr/Ātaš</i> <i>Niyāyišn</i> ¹⁶)	Burning (<i>saoc-</i>) of a “house”-fire “for the long time” ¹⁷ up to the strong <i>Frašō.kərəti</i> (“making <i>fraša</i> ”), by means of the strong good (deity?) ¹⁸ <i>Frašō.kərəti</i> . ¹⁹ (<i>darəyəmciṭ. aipi. zruuānəm. upa. sūrəm. frašō.kərətīm. haḍa. suraiiā. vaṅhuiiā. frašō.kərətōiṭ.</i>) → concept of an everlasting fire

15 According to Boyce, Yt 19 is a link between the *Gāθās* (which represent “Zoroaster’s own apocalyptic vision” around the year 1400 BCE [BOYCE, 1984, p. 74]) and the elaborated apocalyptic concepts in the Pahlavi literature (see BOYCE, 1984, pp. 58f., 66-69).

16 For a new perspective on these text(s), see CANTERA, 2016, p. 166.

17 The phrase *darəyəmciṭ. aipi. zruuānəm.* (cf. Yt 19.26 where the same phrase designates the time of the rulership of Haošiiānha) seems to refer to a time-period which differs from the (eternal) “period” called *zruuan- akarana- zruuan-darəyəd.x’adāta-* “the unlimited time, the time of long dominion” (V 19.9, 13; Ny 1.8; Y 72.10).

18 The epithets *sūra-* and *vohu-* are elsewhere the typical epithets of Arəduuī (see Yt 5) and of Aši (Yt 17.6 *ašiš vaṅuhi. sura.*).

19 This is may be an allusion to the stream of fire that will purify the world immediately before the *frašgird* (see GrBd 34.31-32).

V 18.51-52²⁰ Fiery human beings emerge from the earth at the end of time from sperm that was shed²¹ (these human beings have fire-names [*Ātrə.-*°])²² They are of importance in the final period (see Yt 13.17 [Yt 19.22, Y 24.5]: *narqm. azātanqm. frašō.carəθraqm. saošiiantqm.* “of the unborn men, the *fraša*-makers, the Saošiiants”). Cf. GrBd 1a13²³: men are made of *ātaxš-tōhmag* “fire-seed”²⁴; cf. also the men in the fiery stream in the apocalypse

Yt 13 is a special case. It includes a cosmogonic account that deviates from the accounts in the Pahlavi.²⁵ While Yt 13 gives a cosmogonic-historical sequence (movement?–)standstill²⁶–movement (+ a catalogue of the blessed ones), the Pahlavi sources draw a different picture of the world-history (structure: standstill–movement–standstill = spiritual existence–material existence–spiritual existence). After passages that stress the key position of Zarahuštra (see Yt 13.85-95) in and for history, the *Yašt* terminates in a necrology. The names in this catalogue are chronologically arranged. The catalogue starts with Zarahuštra and Maiđiiđi.māṅha (the first disciple of Zarahuštra), and ends with the savior Astuuat.ərəta. The cosmogonical-historical sequence consists of the following elements:

20 The passage is quoted in the *Nīrang-e parhīz kardan šeytān-bāzī* “charm to protect (oneself) against the (bad) consequences of an) ejaculation” (PāzT 178.9-179.5). For the connex of ejaculation and the final period of the world, see also WZ 35.57-58.

21 Cf. RV 1.31.12 (Agni protects the seeds).

22 To these men (text: “this man”) Ārmaiti should “give a name *Ātrə.dātəm.* or *Ātrə.ciθrəm.* or *Ātrə.zaṅtūm.* or *Ātrə.daxīiūm.* or any *Ātrə.-*name”. It is maybe not only by chance that the inscriptions DNa, DSe, XPh and the text V 18.51f. connect *dā*-words (“create” or “law”), the word for the “(ethnic/genealogical) provenience” (*ciθra* = *ciça*) and the word for “countrie(s)” (*dahyāva; daxīiu-*).

23 Cf. also GrBd 6f8-6f9.

24 Cf. WZ 30.23; SOHN, 1996, pp. 13f., 118.

25 This tricky problem is discussed in KREYENBROEK, 1992; 1993a; 1993b; 1994; KELLENS, 2008-2009.

26 See note 30.

A¹ maintenance (*vī-dāraīia-*) of the realms of nature; the first realm is the heaven that looks like “blazing²⁷ metal” (*aiiaṅhō. kəhrpa. x^vaēnahe.*) (Yt 13.2)

A² immobilization of the realms of nature caused by the devil²⁸

B re-mobilization of the realms of nature caused by Vohu Manah (≈ cow) and Ātar²⁹ (≈ Aša [see Y 37.1]) (Yt 13.77) and then by Zaraθuštra (Yt 13.93)

Despite the unusual sequence of the world “history” in Yt 13 – the text does not refer to a state of non-material being, nor to an act of creation³⁰ and only indirectly to a “time after” – Yt 13 contains an element that will also appear in the Pahlavi accounts. Fire is not only an element that seems to be distinct from the other realms of nature (it is behind the heaven/sky); it appears also as an apotropaic means and has a key position in the world-history: the completion of the demonic standstill.

Details II: Old Avesta

Yt 13 seems to be the oldest consistent Avestan cosmogonical account. It focuses on the elements and how they are connected, the natural powers, the world time. However, already the *Gāθās* give cosmogonical hints (Y 44.3-7) and mention a process of creation (*dā-*) and of “holding” (*dar-*). In particular the *Gāθic* songs Y 51 and Y 53 comprise eschatological/apocalyptic motifs:

27 OAv./YAv. *xvaēna-* < **hvaidna* (see HOFFMANN/FORSSMAN, 1996, p. 97), cf. YAv. *buna-* < **budna-* (OI *budhmá-*).

28 In contrast to Yt 13, standstill is regarded positively by the Pahlavi literature: according to WZ 1.9 time is only created because of the assault of Ahreman; in the final periods of the world the standstills of the sun (see PRDd 48.2, 23, 38; ZWY 9.1; Dk 7.8.58, 7.9.2; 7.9.21, 7.10.2; 7.10.19) anticipate the paradisaical time.

29 If Vohu Manah should be a mask for “cow”, then it seems likely that Yt 13.77 alludes to a cosmic sacrifice (cf. the sacrifice in the/at the end of the last 3000 years of world-history mentioned in the Pahlavi sources).

30 Yt 13 starts with the mentioning of the *vī-dāraīia-* of the elements. There is neither a previous non-material world mentioned nor an act of creation. Cf. Yt 13 *vī-dāraīia-* the verbs *dā̄t̄*. (Y 44.3c) (related to the course of the stars and the sun) and *də̄rə̄t̄*. (Y 44.4.2b-c) (related to the heaven and earth, water and plants) in the Old Avestan cosmogonical report (Y 44.3-7). It seems likely that the *dar-*verbs, especially causative *dāraīia-*, have a certain dynamic aspect.

a) The Stream of Metal

The *aiiah- x^vaēna-* “blazing metal” mentioned in Yt 13.2 has a parallel in the Old Avestan *Gāθās*. Unfortunately, the context of the parallels in Y 32.7 (*x^vaēnā. aiiāṇhā.*) and Y 30.7 (where only *aiiāṇhā.* is used) is unclear. Traditionally, the “blazing metal” or “molten metal” (*aiiah- xšusta-*) is understood as a “Bezeichnung des glühenden Metallstroms beim letzten Gericht”.³¹ At least Y 51.9 (*aiiah- xšusta-*) seems to point to eschatological events (for further eschatological motifs see Y 51.13; 53.8-9):

<p>Y 51.9</p>	<p><i>yqm. xšnūtəm. rānōibiīā. dā. θβā. āθrā. suxrā. mazdā./aiiāṇhā. xšustā. aibī. ahuuāhū. daxštəm. dāuuōi./rāšaiieḥhē. drəguuaṇtəm. sauuaiiō. ašauuanəm.</i></p>	<p>Which satisfaction did you give by/for the two <i>rana</i> through your red fire, o Mazda,/in order to associate through liquid metal the sign (?) in the modes of being (?³²),/in order to let in that way the deceitful waste away, to let prosper the truthful.</p>
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In the Pahlavi literature, the word *ayō(x)šust*, a loan from Avestan *aiiah- xšusta-*, is the *terminus technicus* for the apocalyptic stream of metal. While the formula in Y 51.9a points to the ritual fire (cf. Y 31.3; Y 31.19, 43.12, 47.6; Y 34.12a-b), the references to molten metal and the division of the beings hint to a juridical (in the sense of an ordeal) or/and to an apocalyptic-eschatological context.

b) The Three Times

Recent research on the Avesta has tried to demonstrate that the Old Avestan texts (Y 27.13-54.1= *Staota Yesniia*) are structured according to the scheme of

31 AiW 555. Cf. DUCHESNE-GUILLEMIN, 1962, p. 90. Cf. also HUMBACH, 1959 I, p. 152 (cf. HUMBACH, 1991 I, p. 188), who translates as “durch das Ordal mit dem flüssigen Erz”. The *aiiah- xšusta-* (> *ayōxšust*) is of importance in the Zoroastrian cosmogony/mythical anthropology, see GrBd 6F8 (*az ān čiyōn tan ī gayōmard az ayōxšust kard estād* “the body of Gayōmard was made of metal”); GrBd 6F8 (*az tan ī Gayōmard 6/7 ayōxšust ō paydāgīh mad* “six/seven metals came out of the body of Gayōmard”).

32 Differently, AiW 111f.

the three times.³³ These three times are concretized in the YAv “edition”³⁴ of the OAv texts as a sequence of sacrifices:³⁵

<i>Staota Yesniia</i> (= Y 27.13-54.1)		
Y 27.13	cosmic sacrifice (see the exegetical text Y 19)	
<i>Yasna Haptaṅhāiti</i> (Y 35-41)	Zaraθuštra’s historical sacrifice	
Y 53	(universal) final sacrifice	leads to Y 54.1: renovation

Table 2: *The Staota Yesniia and the three times*

This interpretation of the Old Avestan texts was developed in relationship to the analysis of the structure of the *Vīdēvdād* (see above), a text that is ritually intercalated in the *Staota Yesniia*.³⁶ The Old Avestan texts appear according to this analysis as a first sketch of a world-history, a history that has a sacrificial rhythm (a conception that we shall come across again later on).

On the Relation of the Avestan and Pahlavi Texts

We see that the OAv texts, the kernel of all long YAv liturgies, follow the same historical scheme (cosmogony, history, salvation) as those texts – especially the *Vīdēvdād* – which are intercalated in the celebration of the OAv texts, i.e., in the sacrifice.³⁷ In the Pahlavi texts – texts that are never used in the rituals – this historical scheme is explicitly mentioned (*bun-dahišn*, *gumēzišn*; *frašgird* (?)³⁸). This is probably a qualitative leap. While in the OAv interpretation of the three times (past, present, future), history and ritual are

33 For a milleniaristic interpretation of the *Gāθās*, see KELLENS, 2015.

34 See KELLENS, 2015.

35 CANTERA, 2013.

36 The concept of the three times (past, present, future) is visible in Y 31.14 and perhaps in Y 43.5. Y 31.14 was understood as a hint to the apocalypse by later commentators (see note 39). Y 43.16 uses the phrase “bones-provided *aša*” (*astuuat. ašəm. xiiā. uštānā. aojōnhuuat.*), which is the basis for the name of *the* (and in the later texts *the last*) *Saošiiant* *Astuuat.ərətā*.

37 This is clearly seen by CANTERA, 2013, especially pp. 106-108, 132-135.

38 The term *frašgird* is used by PANAINO, 2016, p. 93, as a designation of the third time.

inseparably mixed, and while this model still alludes to the exorcistic medical model (sickness → healing), the Pahlavi texts, especially the *Bundahišn*, project the time scheme onto a large scale and fix it by additional arrangements. With the transformation of a magical-ritual scheme into a fully elaborated world-history, the character of evil changes. Evil is now present in the world, and dominates the second period of the world (the *gumēzišn*), and to get rid of evil means nothing else than to change, perhaps even destroy, this world.

The Zoroastrian Apocalypse According to the Pahlavi Sources³⁹

Millenarianism and the Apocalypse

A good number of Pahlavi texts portray the Zoroastrian apocalypse (ZWY; JN; Dk 9.8; Dk 7.1, 7.8-7.11; GrBd 33; PRDd 48; GrBd 34 = IndBd 31; WZ 35). All of these texts are strongly based on *Zand* materials, which means on materials from the Sasanian or even Parthian periods. Nevertheless, it would not be justified – despite the fact that many Avestan texts are lost – to claim that the apocalyptic texts in Pahlavi are nothing else than Avestan texts in Pahlavi. The important step is the blending of a millenarian organized world-history⁴⁰ of 9000 or 12000 years with the scheme of the three times, and with a “material form”, the process of decay and healing.

The history of the salvation of the world starts with Zardušt (Zaraθuštra) in the beginning of the tenth millennium and lasts for the next 3000 years.⁴¹

39 See (in particular for the Pahlavi sources) recently RAEI, 2010. Boyce’s (BOYCE, 1984) attempt to demonstrate that Zaraθuštra was not only a moralistic, but also an apocalyptic “prophet”, is (for more than one reason) unconvincing. To support her assertion, she can only point to the verse line Y 31.14 (*tā. θβā. p̄arāsā. ahurā. yā. zī. āitī. jānghaticā.*), and she follows (for the interpretation of the passage see WEST, 1892, p. 181, note 1) its apocalyptic Pahlavi exegesis (see Dk 9.8 and its parallel in ZWY 1 [see with further literature CERETI, 1995, pp. 170f.]; it is, as far as I see, unclear whether ZWY 1 quotes Y 31.14 [perhaps ZWY 1.7 *awām ast ī rasēd*]).

40 See, e.g., GrBd 36. The concept of “1000 years” is precluded in the Younger Avesta (see Vyt 5 *hazaγrām. yārām.*).

41 The first of these three last millennia, the millennium of Zardušt, is rhythmicized by epochs (four or seven epochs, see CERETI, 1995, pp. 170-172, pp. 180-185;

These three millennia are uniformly organized. From Zarduštra on, the world struggles for a final redemption and renovation (i.e., a transcendent transformation, the *frašgird*). However, within this *crescendo* of salvation there are three collapses (two pre-apocalypses and the final apocalypse), always before the coming of a new savior (a son of Zardušt) at the end of a millennium.

In all these apocalypses, fire and/or light play(s) a decisive role. For example, at the end of the millennium of Zardušt, the everlasting fire will be reinstated (see ZWY 7.22-26, 37; 8.4). This reinstatement refers, on the one hand, to the installation of these fires in the early history of mankind, and, on the other hand, to the sacrificial fires before the *frašgird*.⁴² The millennium of Zardušt is especially interesting because of its internal structure, being divided into four or seven eras. The similarity of this teaching to the narratives of Hesiod (*Ἔργα καὶ ἡμέραι*, *Works and Days*, 106-201) and to the *Book of Daniel* has led to many speculations on intercultural borrowings and on a timetable of the conceptual development of the Zoroastrian apocalypse.

The aforementioned internal structuring of the millennium of Zardušt in the ZWY shows that the composer-editors of the apocalyptic texts tried to structure the abstract millenarian quantification of the world-history in a meaningful way. Single events become meaningful because they have parallels at striking points of the world-history. A system of reflections and correspon-

BOYCE, 1984). These epochs terminate in the Islamic period (see ZWY 1 + 3, Dk 9; cf. the milleniaristic scheme in GrBd 36).

- 42 ZWY 7 (cf. GrBd 33.28) is with the mentioned assembly and the sacrifice (see ZWY 7.22, 24), the apocalypse: at the end of Zardušt's millennium Pišōtan (on this figure, see exhaustive discussion in BOYCE, 1984), the son of Wištāsp, will celebrate sacrifices (see ZWY 7.22 *ud <pad> ātaxš +ud ābān frāz yazēnd hādōxt ud bayān yasn* "and they celebrated <with> the <praises/xšnūman (?) for> fire and water the *Hādōxt* and the *Bayān-Yasn*") with his "150 men with black sabres". Together with the three great fires, he will destroy a "great idol-temple" (*uzdēsžār ī wuzurg*), where he then performs Zoroastrian ceremonies (see ZWY 7.22-26, 37; on the question of a Zoroastrian iconoclasm see [positively] BOYCE, 1975a, and [skeptically] SHENKAR, 2015).

According to ZWY 8.4, the three great fires (*ādur ī farrbay*, *ādur ī gušnasp*, *ādur ī burzēnmīhr*) will be re-established (it seems that the report was written in the Islamic period, when the three fires had fallen into ruin), which leads (see ZWY 8; cf. PRDd 48.95; WZ 35.35) to a powerlessness of Ahreman and the demons (they become *stard ud abē-ōš*). This powerlessness corresponds to Ahreman's *stardh* in the cosmogony (GrBd 1.32, 1A1, 4.1; WZ 1.4; Dk 6.258; *Māh ī Frawardīn Rōz ī Hordad* 36; MX 56.29; Dk 7.4.38).

dences emerges, a system, by the way, that is well known from the structuring of the ritual texts. This system of correspondences is worked out on a large scale (history; world-history), on a small scale (biography), and between the small and the large scale.

We see the same mirror-structuring when we examine the story of the procreation of Zardušt (see Dk 7.2; cf. Šahrastānī’s report on the Zarāduštīya⁴³) – a story that is told according to the scheme of the sacrificial procedure. A transcendent light (the *xwarrah*) goes into the womb of Zardušt’s mother; when the *mard ī rāyōmand* “bright man” (= Zardušt) appears (Dk 7.2.56-58; cf. WZ 5.1-3), the village (*wis*) of Zardušt’s father is full of light. In correspondence to the birth legend of Zardušt, in the classical and NP sources, his death is also portrayed as a fire scenario.⁴⁴

This biographical ring-composition (light/fire of birth and death) corresponds to similar ring-compositions of larger historical scale:

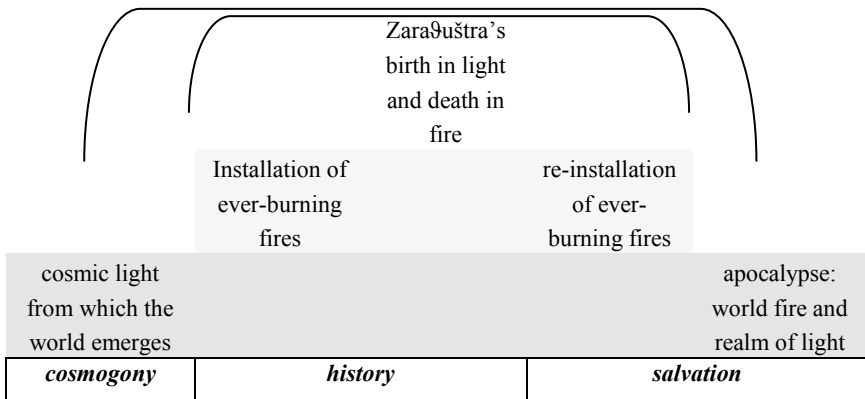


Figure 1: Ring-composition of world-time

43 HAARBRÜCKER, 1850-1851 I, pp. 281f.

44 See JACKSON, 1898. See also CLEMEN, 1920, p. 191; in the *Dabestān*, the Tūr (the murderer of Zardušt according to B 256.10f.; 341.11; GrBd 33.30 [TD 2 218.13f.]; *Šad dar* 9.5) has died in a fire.

The Events of the Last Days (GrBd 34 and its Parallels)

Probably the most important account of the Zoroastrian apocalypse is GrBd 34 (= IndBd 31), a text with parallels in WZ 35 and PRDd 48. However, spatial considerations mean that the text cannot be discussed in detail here. The essential components of the apocalypse in all three texts are the following:

- The appearance of a final (third) savior and his comrades (male and female)
- The final sacrifice of the savior
- The appearance of a stream of molten metal that divides mankind
- The annihilation of demons in a world-fire
- The closing of hell by the molten metal
- The unification of both the *modi* of the world (*mēnōy* “spiritual” and *gētīy* “material”) (earth becomes plane; extension of the paradise; gods are in the world)

Similar apocalyptic images can be found in the description of the end of the millennia after Zardušt, in the pre-apocalypses of the tenth (Pišōtan; Ušēdar) and eleventh (Ušēdarmāh) millennium. Fire represents the key element in all these visions of the last days. Well-known functions of fire are in the background of the apocalyptic images: its ordeal function (for separation of the truthful from the deceitful); its apotropaic function (annihilation/expulsion of the demons); its ritual function and its analogic-transcending force (the transcending/immortalizing of the good).

The Manichaean Apocalypse

Just as in the Zoroastrian cosmology, the Manichaean cosmology is, as has already been stated, based on the idea of two principles that are irreducible to each other: light and darkness.⁴⁵ “History” is the process of the fall of light into

45 Extensive accounts on the Manichaean cosmogony, cosmology and eschatology are contained in: BEESON, 1906, pp. 9-22 (a German translation is to be found in BÖHLIG, 1997 III, pp. 123-130); Theodor bar Kōnī (ed. SCHER), 1981-1982, pp. 313,10-318, 4¹; cf. BÖHLIG, 1997 III, pp. 101-108; an-Nadīm, *Fihrist* (FLÜGEL 1870-1871, pp. 329,1-331, 2) (a translation in BÖHLIG, 1997 III, pp. 144-149); Aš-

darkness and the complicated process of the re-separation of light and darkness. This process leads to a final world fire, the building of a paradise, and an enclosing of matter in a *bolos*.

What is the relationship between the Zoroastrian and the Manichaean apocalypse? We have seen that the Zoroastrian apocalypse is the end, not only of the earth, but of the entire material world. Nevertheless, the focus of the apocalypse is on mankind. The reason for this accentuation of mankind is the particular importance of the human beings and human history for the progress of the world. In contrast, the Manichaean history of mankind is non-vivid and mechanical. It is not the human being (which is in the Manichaean perspective part of the *hyle*) that is of special interest for Mani, but only the fate of the light (i.e., the history of nature).

And just as in the Zoroastrian cosmogonic myth, the Manichaean cosmogony tells about (partially successful) attacks by the darkness on the realm of light.⁴⁶ Several times (with a certain inversion of the Zoroastrian model) we hear of the enclosing of particles of light in the *hyle*, the darkness. For this reason, the *Kephalaia* call the world-history “the first death”. This death “lasts from the time when the light has fallen into the dark and was mixed with the archons of the dark, up to the time when the light will be dissolved and separated from the dark by means of the great fire”.⁴⁷ After the fall, the Manichaean “history” is a history of (an arduous) salvation. While the Zoroastrians have to expulse the Ahremanic intrusions out of the world, the Manichaeans have to separate the five elements of the light (Ohrmizd’s armor, the *Amāhraspandān*) from their evil counterparts of the *hyle*. The Manichaean process of salvation consists of the liberation of the light and the

Šahrastānī’s account on the Manichaeans (ed. CURETON, 1842, I, pp. 188,11-192,18; German translation HAARBRÜCKER, 1850-1851 I, pp. 285-291 [cf. BÖHLIG, 1997 III, pp. 149-156]).

46 Firstly: the attack of the darkness against the realm of light (BEESON, 1906; cf. BÖHLIG, 1997 III, p. 123; *A Manichaean Psalm-Book* [ALLBERRY, 1938, pp. 9,2-11,32; cf. BÖHLIG, 1997 III, pp. 118-121, 118]; *Auszüge aus einer manichäischen Schrift bei Severus von Antiochia, Kathedralhomilie CXXIII* [BRIÈRE, 1960, pp. 164,10-167,15; cf. BÖHLIG, 1997 III, pp. 135-137, p. 136] (cf. Ahreman’s attack against the heaven and his piercing into the world (IndBd 3.13, 27; GrBd 4.10, 28); secondly: the devouring of the primordial and of his armor of light, the elements (cf. the intrusion of the Evil into the creation in Zoroastrianism).

47 BÖHLIG, 1997 III, p. 166 (translation GK).

prevention of a historical repetition of the fall.⁴⁸ The various Manichaean texts give (more or less consistently) the following information: When the Third messenger appears, the world loses its fixation, and a great fire runs out of control.⁴⁹ This fire burns for 1468 years.⁵⁰ It is perhaps the fire of the hells (see *AcAr* ch. XI⁵¹), or it is the consequence of a problem in the mechanism of the purification of the light (see the *Fihrist*⁵²). This fire represents the means to release the last particles of light from the matter. A “stature” of light appears (the [gr.] *andriás*), and the dark, (nearly) lightless matter is enclosed in/as a *bolos*.⁵³ While the present aeon comes to an end – the so-called *Frašēgird*⁵⁴ – a new aeon emerges. The paradise is construed around the final fire.⁵⁵

48 Both Zoroastrianism and Manichaeism have a teleological concept of world-history; the theory of the *eternal recurrence*, which Nietzsche presents as a teaching of “Zarathustra”, is probably inspired by Theopompus’ assertion that the Mag(o)i teach a circular eternity of the things of the universe (τὰ ὄντα ταῖς αὐτῶν ἐπικλήσεσι διαμενεῖν [Diogenes Laertius, *Vitae Philosophorum*, Prooemium 9]).

49 See BEESON, 1906, pp. 9-22; cf. BÖHLIG, 1997 III, p. 129; cf. the *Fihrist* (see BÖHLIG, 1997 III, p. 149). The text points to the holding and carrying of the world by the Light-Adamas and the Atlas.

50 See *Šābuhragān* M 470a (MÜLLER, 1904 II, pp. 19-22; MACKENZIE, 1979, pp. 516f.; BOYCE, 1975b, p. 80; HUTTER, 1992, p. 121; BÖHLIG, 1997 III, p. 239); *Fihrist* (FLÜGEL, 1870-71, pp. 329,1-331,2); *Aš-Šahrastānī* (ed. CURETON, 1842 I, pp. 188,11-192,18; HAARBRÜCKER, 1850-1851 I, pp. 285-291, p. 290; BÖHLIG, 1997 III, pp. 154f.).

51 *Acta Archelai* VII-XIII (ed. BEESON, 1906, pp. 9-22 [cf. BÖHLIG, 1997 III, pp. 123-130]), XI (BÖHLIG, 1997 III, pp. 128f.).

52 The motif of changes of the heavenly lights is also known from Zoroastrian texts. In the millennium of Hušēdar, the sun is in the zenith for ten days/nights (GrBd 33.29), in the millennium of Hušēdarmāh for twenty days/nights (GrBd 33.32), in the time of Sōšāns for thirty days/nights (GrBd 33.33).

53 Cf. BÖHLIG, 1997 III, p. 35.

54 *Frašēgird* is used as a Zoroastrian loan-word in Middle Iranian Manichaean texts.

55 *Šābuhragān* M 470a (MÜLLER, 1904 II, pp. 19-22; MACKENZIE, 1980, pp. 308f.; BOYCE, 1975b, p. 80; BÖHLIG, 1997 III, p. 239).

Similarities between the Zoroastrian and Manichaean Apocalypses

It is, as said in the beginning, my overarching methodical thesis that Iranian religious history is constituted by a diachronic field (Zoroastrian literature) *and* by a synchronic field (Iranian literature of Late Antiquity). A principal characteristic of the second field is its “historical turn”. The conception of an apocalyptic end of the world is a central feature of this turn, and maybe even its productive kernel.

The following general statements on the end-in-fire apocalypses as they occur in late antique Iranian religion can be made: In both religions, Zoroastrianism and Manichaeism, the final burning of the world is between two “eras” (between time and eternity), and the transformation of the world is made by fire. In both religions, the realm of light and the (in the end powerless) realm of darkness are sharply separated after the “great fire” (*ātaxš wuzurg*). While Manichaeism interprets this separation as a separation of light and matter, according to the Zoroastrian point of view, matter no longer exists.⁵⁶ And finally, in both religions, the apocalyptic fire is related to cosmogony. As the final act of the purification of light, fire is the reversion of a key element in the Manichaean world-view: the cosmogonic fall of light. In Zoroastrianism, the apocalyptic fire is connected with the final sacrifice (the apocalyptic fire is probably the fire of the sacrifice), a sacrifice that is in correspondence with Ohrmazd’s cosmogonic sacrifice and with the great fires at the beginning of the history of mankind.

The Manichaean texts provide only very few details of the apocalypse. A comparison of these details with the Zoroastrian end-in-fire motif affirms what we have seen in general: both apocalypses are closely related to each other.

56 However, WZ 35.50 takes the position that the elements are purified in the end. Yt 13.11 claims a resurrection of the body.

Manichaeism	Zoroastrianism
arrival of the light “statue” (the <i>andriás</i>)	PRDd 48.99 ⁵⁷ : after the unification of the earth and paradise, a man made of light/fire emerges (probably as a correlate of the sunny first man Gayōmard [see GrBd 7.8f. ⁵⁸]) ⁵⁹
the two holders of the world terminate their service → mixing of the upper with the lower sphere ⁶⁰	Rise of the earth, lowering of the <i>garōdman</i> (see PRDd 48.98; GrBd 34.33 ⁶¹)
<i>Kephalaia</i> 57: decrease of the human lifespan ⁶²	cf. (the inversion of) the motif in GrBd 33.31 ⁶³
world time of 12,000 years ⁶⁴	world time of 9,000 or 12,000 years

57 PRDd 48.99 *pas ohrmazd ud amahraspandān ud hamāg yazd ud mardōmān pad ēw gyāg bawēnd ud star-iz ud māh ud xwaršēd ud ātaxš ī wahrām harw-ēk mard-kirb ān ī tagīg ud hamāg mard-ēw kirb be bawēnd ud be ō zamīg āyēnd*
 “Then Ohrmazd and the *amahraspands* and all the *yazads* and mankind will be in one place, and the star too and the moon and the sun and the Victorious Fire will all be in the form of a man who is strong, and they will come to the earth.” (translation: WILLIAMS, 1990 II, p. 87).

58 Cf. the cosmogony of GrBd 4.22, where the creation of Gayōmard’s sleep is described as being in the form of “a fifteen-year-old, light, tall man” (*mard kirb ī 15 sālag ī rōšn ī buland*).

59 Cf. also the designation in Dk 7.2.56-58 of Zardušt as *mard ī rāyōmand*.

60 See the *Fihrist* (see BÖHLIG, 1997 III, p. 149); Šahrastāni (see BÖHLIG, 1997 III, p. 154).

61 On the motif of the cosmogonical growing of the mountains, see GrBd 9.

62 *Kephalaia* (ed. BÖHLIG, 1966, pp. 144,13-147,20 [ch. 57]; cf. BÖHLIG, 1997 III, pp. 176-186, 178).

63 This inversion is a consequence of the central conceptual difference between Zoroastrianism and Manichaeism. While Zoroastrianism seeks to eternalize human beings, Manichaeism wants to dissolve them. The motif of the shortening of the lifespan and of the shrinking of the bodies (according to WZ 35.6 Garšāsp is 500 times taller than Zardušt) is in Zoroastrianism part of the early history of men (see GrBd 36).

64 See *Aš-Šahrastānī* (ed. CURETON, 1842 I, pp. 188,11-192,18; HAARBRÜCKER, 1850-1851 I, pp. 285-291, p. 290f.; BÖHLIG, 1997 III, pp. 149-156, 155f.).

standstill of the sun and moon after the final defeat of the Āz and the demons ⁶⁵	millennium of Hušēdar: sun is for 10 days/night in zenith (GrBd 33.29); millennium of Hušēdarmāh: sun for 20 days/night in zenith (GrBd 33.29); (GrBd 33.32); time of Sōšāns: sun for 30 days/night in zenith (GrBd 33.33)
connection of Āz and Ahrmēn; Āz ⁶⁶ and <i>frašēgird</i> ⁶⁷	struggling of Āz and Ahreman in the time of the <i>frašgird</i>
<i>Šābuhragān</i> : apocalyptic fire does not harm the righteous people ⁶⁸	GrBd 34: the molten metal does not burn the righteous people
emergence of a <i>bolos</i> of dark matter	closing of hell

Table 3: *Apocalypse in Manichaeism and Zoroastrism*

It is likely that Mani, who lived in the third century CE and belonged to the entourage of the Sasanian king (Šābuhr I),⁶⁹ was very familiar with the Zoroastrian texts. The conformity of the apocalyptic details of the Manichaean apocalypse with the Zoroastrian apocalypse demonstrates that the formation of the Zoroastrian apocalypse must have been completed to a large extent before the third century CE. However, Zoroastrian re loans from Manichaeism cannot be excluded.⁷⁰ The chronology of the emergence of the Zoroastrian apocalypse cannot be determined in all its details. It was argued that the centuries after the Macedonian conquest were of crucial importance.⁷¹ However, I am skeptical concerning the validity of one of the core elements on which the argumenta-

65 See M 7984 (= T III 260e I) + M 7982 (= T III 260c) (*MirMan* I, pp. 191-198; BOYCE, 1975b, pp. 71-73; ASMUSSEN, 1975, pp. 127-129; HUTTER, 1992, pp. 81-104; BÖHLIG, 1997 III, p. 113).

66 On the Manichaean and Zoroastrian Āz, see SUNDERMANN, 2003.

67 See M 7984 II (= T III 260e I) + M 7982 (= T III 260c) (*MirMan* I, pp. 191-198; BOYCE, 1975b, pp. 71-73; ASMUSSEN, 1975, pp. 127-129; HUTTER, 1992, pp. 81-104; BÖHLIG, 1997 III, p. 113); M 472 I (MÜLLER, 1904 II, pp. 17-19; MACKENZIE, 1980, pp. 193-213, 217-229; BOYCE, 1975b, p. 80; BÖHLIG, 1997 III, pp. 238f.).

68 See M 470a (MÜLLER, 1904 II, pp. 19-22; MACKENZIE, 1979, pp. 516f.; BOYCE, 1975b, p. 80; BÖHLIG, 1997 III, p. 239).

69 See now GARDNER, 2015.

70 See SUNDERMANN, 2003.

71 See BOYCE, 1984.

tion for such an early date is built on, the concept of a golden era. The idea of a golden era and of three (or more) following (metal) eras does not fit to the historical conception of the Avesta. I think that, not only Hesiod, but also Daniel is older than the Iranian version of the golden era.

The following point seems to be undisputable: Manichaeism and post-Avestan Zoroastrianism focus on one and the same problem: How is it possible to defeat evil forever? The answer in both religions is the apocalypse. We cannot exclude that this crucial question and answer pairing was then the basis for other important questions: Where does evil come from? Why does it exist? And what does the “existence of the evil” mean? There is at least one striking observation. Just as with the apocalypse, the Zoroastrian cosmogony (Bd 1/WZ 1) has no equivalent in the Avestan texts. This means that the apocalypse and the cosmogony are probably both products of the Hellenistic era, if not of the later Parthian era.⁷² Finally, we can also assume that the Zoroastrian interest in a well-shaped world-history – the interest in the historical knowledge of “where we are” and “how long we still have to suffer and to struggle” – was not independent from the new apocalyptic orientation of the post-Avestan Zoroastrianism.

The Three World-Periods and the Sacrifice

I have argued that one of the striking differences between the antique Graeco-Roman religion and the religion(s) of the Iranian Late Antiquity is the “historical turn”, a turn towards a historical mode of thought and a systemized history that is in particular understood as a history of redemption. Nevertheless, the *Bundahišn*, the Zoroastrian world-history, points back to inherited ritualistic thinking. Historical points of articulation are marked by great sacrifices:

72 An early witness is Plutarch, *De Iside et Osiride* 47, 369 F–370 C; whether Aristotle’s δύο ἀρχαί (see Diogenes Laertius, *Vitae Philosophorum*, Prooemium 6.8) can be taken as a proof for a fully elaborated cosmogony is doubtful.

GrBd 3.23	GrBd 18.9 (IndBd 17.4)	GrBd 34.22-23
cosmogony	history	eschatology/apocalypse
Ohrmazd's cosmogonic sacrifice (Yasna Rapiθβin) ⁷³	installation of ever-burning fires ⁷⁴	Sōšān's final sacrifice(s) (of cattle), ⁷⁵ the "great fire" of the ritual (WZ 35.15) = the "great fire" (from the Endless Lights) of the apocalypse (WZ 35.40) ⁷⁶

73 GrBd 3.23 *Ohrmazd abāg Amahrspandān pad Rapiθwin mēnōy (ī) yazišn frāz sāxt andar yazišn kunišn dām hamāg be dād*

"Ohrmazd performed the spiritual Yazishn ceremony with the Beneficent Immortals in the Rapiθwin Gah. He produced [all the creations] during [the performance of] the Yazishn, [...]" (translation: ANKLESARIA, 1956).

74 The installation of the ever-burning fires (which are manifestations of the *xwarrah*) is a consequence of the fall of the fire into the water during the migration of early mankind on the Srisōg. GrBd 24.22 points to a connection between these prehistorical events and the apocalyptic period: *gāw Hadayās kē Srisōg-iz xwānēnd rāy gōwēd kū pad bundahišn mardōm az kišwar ō kišwar widārd ud pad frašgird anōšagih aziš wirāyēnd.*

"[As regards] the 'Gav Hadhayas,' which they also call Srisok, one says, 'In the beginning of creation (*pad bundahišn*) it transported men from region to region, and at the renovation of the universe (*frašgird*) they will arrange immortality out of it.'" (translation: ANKLESARIA, 1956).

Cf. GrBd 26.27 *ēdōn-iz gāw ī Hadayānš ī Hadaiiqs kē pad frašgird anōš aziš wirāyēnd u-š parwardārth ī dāmān kardan xwēškārth.*

"So too is the Hatayans, that is, 'Hadhayash gav', from whom they prepare the immortal beverage at the renovation (*frašgird*) of the universe. Her allotted work is the nourishment of the creatures." (translation: ANKLESARIA, 1956).

75 GrBd 34.22-23: *Ohrmazd pad ān gāh hangerdēnīd-dām bawēd [kū kār-ēw abar nē abāyēd kardan andar ān ka-šān rist wirāyēd]. yazišn ī pad rist-wirāyēh Sōšāns abāg ayārān kunēnd. gāw ī Hadayānš pad ān yazišn kušēnd az pīh ī ān gāw ud hōm ī spēd anōš wirāyēnd <ud> ō harwisp mardōm dahēnd. mardōm ahōš bawēnd ī tā hamē ud hamē-rawišnīh.*

"Ohrmazd will at that time be the perfecter of the creatures, that is, He need not do any superior work, during the while that they restored the dead. And Soshyant with his associates will perform the rite for the restoration of the dead; and they will slay the 'Hadhayas gav' for that rite; out of the fat of that 'gav' and the white whom they will prepare the immortal beverage, and give it to all men; and all men will become immortal up to eternity and eternal progress." (translation: ANKLESARIA, 1956).

76 WZ 35 gives a detailed description of the sacrifice. The mentioning of seven priests in WZ 35.16+17 refers to the installation of the priests in the *Vīsparad*-ceremonies (Vr 3.1). The number seven and the 1+6 structure are references to a cosmic harmony (see WZ 35.4-7, 14-17; cf. WZ 23). The WZ transcend the sacrifice at the *frašgird*, it

Sacrifice on <i>Rapihwin</i> (noon): time begins		WZ 35: five sacrifices on the five times of the day, the last sacrifice on <i>Rapihwin</i> (noon): time ends ⁷⁷
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Table 4: Zoroastrian world-history and historical sacrifices

becomes a cosmic spectacle (see WZ 35.15). It is strongly connected with the term *rōšn* “light” (WZ 35.19-59). WZ 35.40 says: *pas ān gāh ātaxš ī wuzurg az ān ī asar rōšnīh xfrōd* (TD4 plwn) *āyēd pad hamāg zamīg payrōg be abganēd tāg-ēw pad dast dārēd pad homānāgīh ī draxt-ēw kē-š tāgān azabar rēšag ō frōd*.

“Then on each *Gāh* the Great Fire will come down from the Endless Lights and will cast light all over the earth. It has a twig in its hand, it resembles a tree that has twigs upwards, roots downwards.”

This “Great Fire” is probably the *ātaxš wuzurg*, which burns during the cosmic sacrifice described in WZ 35.15. (PRDd 48 refers to a number of sacrifices during the period of the saviors, but only indirectly to the cosmic sacrifice of the *gāw ī Hadayōš*. PRDd 48.103-105 reports on the reunification of the animals in/as the *gāw ī ēkdād* [which is the cosmogonical cow/ox], which immaterially “is mixed into the body of the human being” [*andar ō tan ī mardōmān gumēxtēd*] [PRDd 48.104] where then the taste of meat remains for eternity [see PRDd 48.104-105]). It is not clear whether this cosmic ritual fire is identical with the apocalyptic fire (according to WZ 35.40 its “twigs” – its flames [?] – are distributed among the truthful and the deceitful ones).

- 77 The picture shows the correspondence between cosmogonical and eschatological/apocalyptic fire. The cosmogonical sacrifice is celebrated on *Rapihwin* (noon). According to the description of the apocalyptic sacrificial events in WZ 35, sacrifices for the purpose of the resurrection are celebrated on the five *Gāhs* of the last five days of the year (of the world time), i.e., on the so-called *Gāḡā*-days (cf. PRDd 48.56, according to which five *Yašts* celebrated by the *Sōšāns* will cause a resurrection of all human beings that have ever lived in the world). These sacrifices start on the time (*gāh*) *Uzērīn* and end on the time (*gāh*) *Rapihwin*. They provoke the immortalization of all *rōšn-tōhmagān* “semen of light” (cf. above the fire-names in V 18) and finally, at the time of the *Rapihwin* sacrifice, their belated unification (WZ 35.30 *hamīh ī hanjaman* “unification of <their> assembly”) at the time (*gāh*) *Hāwan*, when “they enjoy each other” (*ēk ōy did rāmēnēd* [WZ 35.29]). The final sacrifice on *Rapihwin* is related to the standstill of the sun in the time of *Sōšāns* and to the fire, a connection that is known from the cosmogony (see the connection of *Rapihwin* and *Ardwahišt* in GrBd 3.22). In GrBd 3.21-22 it is said that the five periods of the day (i.e., the division of time = time) are a consequence of Ahreman’s break-in into the world. Before that event, it is said, it was eternal noon (GrBd 3.22 *tā pēš ka ēbgad mad hamēšag nēmrvōz būd [ast Rabiḡwin]* “up to the coming of the fiend it was eternal noon [i.e., *Rabiḡwin*]”). Thus, the sacrifices on the last five days of the year/the world are a kind of final revocation of the creation process in the beginning of the world.

The sacrifices are a kind of stimuli and represent the points of articulation of the world-transformation. They pave the way from timelessness to history and back to timelessness. They transform the Endless Light into fire and finally the fire into the Endless Light.

Over the last three decades, Avestan studies have been undergoing their “ritualistic turn”. Today, the structure of the liturgies is much clearer than it was formerly, and we have begun to understand the content and purposes of the rituals. We have learned, for example, that the scheme of the three times (which is ultimately, I would say, a combination of the magical process of healing and the division of time into past–present–future) or the use of the ring-composition or thinking in correspondences is essential for the structure of the ritual texts. On this basis, I dare say that the whole historical thinking of the *Bundahišn* is a reformulation of older ritualistic thinking. All liturgies start and end with a praise of fire. In the so-called *Long Liturgies*, i.e., the liturgies in which meat/fat is (or was) offered, the central parts of the sacrificial performance (Y 36-58) point to a special consecration/deconsecration of the fire. The fire changes its status. A comparison of this ritual process with the historical scheme in the Pahlavi literature (especially the *Bundahišn*) shows structural similarities:

	creation/past	history/presence	eschatology/future
Time	creation from Endless Lights (GrBd 1 etc.)	world/humanhistory; installation of ever-burning fires (GrBd 18; cf. WZ 3)	end of time; great fire < Endless Lights (GrBd 34; cf. WZ 35)
sacrifices	Ohrmazd’s sacrifice (GrBd 3)		Sōšān’s sacrifice(s) (GrBd 34; WZ 35; cf. ZWY 8)
structure of the sacrifice (Yasna)	Yasna 0 praise to/kindling of the fire	Yasna 36-58 (the sacrifice proper) process of consecration/deconsecration of the fire	Yasna 72 praise to the fire

Table 5: Zoroastrian world-history and the structure of the Zoroastrian sacrifice

The sacrificial ritual and the world-history are built on the same structural basis. In other words, history (= human history) is a replacement of the sacrifice. The construction of history goes together with an interiorization of the sacrifice, with a “victimization” of the good human beings. However, in one point the historical model differs from the sacrificial one. While the transformation process of the sacrifice is circular (the fire in Y 72 has the same sacrificial level as the fire in Y 0), the historical process includes not only teleological elements; the “spiritual” state of the world after the end of the material world seems to differ – the difference lies in the existence of a paradise – from the first “spiritual” state of the world.

Abbreviations

OAv	Old Avestan
YAv	Younger Avestan
OI	Old Indian
AWN	Ardā Wīrāz Nāmag
AiW	Altiranisches Wörterbuch (BARTHOLOMAE, 1904)
Bd	Bundahišn
Dd	Dādestān ī dēnīg
Dk	Dēnkard
GrBd	Greater Bundahišn
HN	Hadōxt Nask
IndBd	Indian Bundahišn
JN	Jāmāsp Nāmag
M	Manichäisch (Turfān Texts)
MX	Mēnōg ī Xrad
Ny	Nīyāyišn
PāzT	Pāzand Texts
PRDd	Pahlawi Rewāyat Dādestān ī dēnīg
RV	Rig Veda
V	Vīdēvdād
Vd	Wizirgard ī dēnīg (Vajarkard Dini)
Vyt	Vištāsp Yašt
WZ	Wizīdagihā ī Zādspram
Y	Yasna

Yt	Yašt
ZA	Zend-Avesta
ZWY	Zand ī Wahman Yasn

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POETS, PROPHETS, AND PHILOSOPHERS – THE END OF THE WORLD ACCORDING TO OTTO VON FREISING

DOMINIC BÄRSCH (MAINZ/EICHSTÄTT)

Introduction

The end of the world, immanent or otherwise, has been a much-discussed topic throughout human history, especially in the recent decades, where the topic has received broad media attention.¹ The scientific and public debates related to climate change and natural disasters are telling in this respect. This interest is also indicated by the high volume of eschatological popular culture, as evidenced in, for example, the large number of books, films, and songs about the “doomsday” predicted for the end of 2012. Such ideas about the destruction of the world seem to form a rather consistent theme in the history of humanity, as Michael Witzel points out in his comparative analysis of the world’s mythologies:

It may take place as a final worldwide conflagration – the *Götterdämmerung* or *Ragnarök* in the Edda, *Śiva*’s destructive dance and fire in India; by molten metal in Zoroastrian myth or by devouring the world; or by fire and water in Maya and other Mesoamerican myths; or as in the Old Egyptian tale of *Atum*’s destruction of the earth.

1 Rather innovative is the thought of a continued existence of the world after the great disaster but without humanity, as pointed out by HORN, 2014.

However, the end also takes other forms, such as ice and long-lasting winter, for example, in the Edda, or in Iran with Yima's underground world, or again, a flood.²

Focussing on ancient cultures in particular, it is possible to identify several imagined scenarios related to the end of the world that remain popular in the present day. For instance, several groups of philosophers in Greek and Roman antiquity developed theories about the end of the world. Such as several of the pre-Socratics (e.g., Anaximander and Empedocles), as well as adherents of Stoicism and Epicureanism.³ For example, Anaximander, who lived in the sixth century BCE, claimed that all actual things would finally fall back into an undifferentiated mass, called the *Apeiron*.⁴ Empedocles,⁵ conversely, taught that every existing structure consists of a combination of the four "roots" (*rhizōmata*) – water, fire, air, and earth. Through the two cosmic forces – love (*philōtēs*) and strife (*neikos*) – those "roots" are locked in an eternal cycle of mixture and separation. In a phase of consolidation, they aggregate to form a structured world with living beings. But this is just a temporary status on the way to a perfect combination of all of the four "roots" under the absolute domination of the cosmic love. This mixture without synthesis is called the *Sphairos*. Under the increasing influence of cosmic strife, this *Sphairos* begins to dissolve, first into the differentiated world, again with living beings, and eventually into the absolute separation of the four "roots". When the cosmic love ultimately strengthens again, the never-ending cycle begins anew.

Among other ideas about the dissolution of the world – e.g., a global flood or the aging and decay of the world⁶ – is the imagination of a global flame catastrophe that transfers everything into pure fire. In Stoic thought, this destruction was most probably understood to be a cyclic event that had to occur due to natural necessity or law.⁷ Following the phase of pure fire is a phase involving a reconsolidation of the former state of the world, so that everything occurs again in everlasting periods.

The image of the end of the world featured prominently in early Christian literature, not least due to the expectation that Christ's return was immanent,

2 WITZEL, 2014, p. 181.

3 See SCHWABL, 1978, pp. 840-850; BURKERT, 1989, pp. 240-243.

4 See GREGORY, 2007, pp. 30-44.

5 See IBID., pp. 78-101.

6 Global flood: Seneca, *Naturales quaestiones* 3.27-29; Aging and decay: Lucretius, *De rerum natura* 2.1105-1174.

7 See LONG, 1985.

which would initiate a chain of events leading to doomsday. In contrast to the pagan ideas, that of the Christian is not a cyclic model of eternal recurrence, but the definitive end of time. For most early Christian authors, the almost prototypical idea how the world is going to end is a catastrophe involving a global fire, which – following pagan terminology for the cyclic destruction of the world – is called in Greek ἐκπύρωσις (*ekpyrōsis*) or Latin *conflagratio*.⁸ A statement by Augustine of Hippo, one of the great Western Church Fathers, can serve as an example. He claims in his work *De civitate Dei* that, on the day of the return of Christ, the world would be destroyed by a global conflagration (see the first contribution by Dominic Bärsch).⁹

This mention of Augustine leads us to the actual theme of this paper: how the final destruction of the world is described in the *Chronica sive Historia de duabus civitatibus* of Otto von Freising. This world chronicle is used to provide an insight into how the end of the world was imagined in twelfth-century central Europe. Although its title reveals that Otto's account of the world's history depends heavily on *De civitate Dei*,¹⁰ the present paper will determine which other literary sources Otto uses as authorities in his conceptualization of the end of the world. First, though, a few notes will follow on the life and work of the author in focus.

Nobleman and Churchman – The Life and Work of Otto von Freising

Born about 1112 CE as the fifth son of the Babenberger Margrave Leopold III and Agnes, daughter of Emperor Henry IV, as the half-brother of the later king Conrad III, Otto was *ab initio* provided with a commanding position within the social structure of the Holy Roman Empire. He received his first education with the chapter of canons in Klosterneuburg, which his father had founded in 1114.¹¹ In 1126, he was appointed to be the provost of the collegiate chapter

8 See for instance, DOWNING, 1995, pp. 107-109.

9 Augustine, *De civitate Dei* 20.16: [...] *tunc figura huius mundi mundanorum ignium conflagratione praeteribit* [...].
“[...] the figure of this world will pass away in a conflagration of all the fires of the universe [...]” (translation: DYSON, 1998, p. 1002).

10 See GOETZ, 1998.

11 See KIRCHNER-FEYERABEND, 1990, pp. 10-16.

there. In the same, or possibly the following year, Otto decided to study the new scholasticism in Paris, where he spent about six years and encountered the teachings of Peter Abelard, Hugo of St. Viktor, and Gilbert de la Porrée.¹² In 1132, he entered the Order of the Cistercians together with fifteen highborn German students, and went as a novice to the Morimond Monastery in Champagne. Six years later, in 1138 at the age of 26, he became the abbot of the same monastery.¹³ However, the day after, he was nominated by King Conrad III as bishop of Freising.¹⁴

That Otto was not just deeply involved in ecclesiastical and theological matters, but also in secular issues is indicated by his serving as a Prince of the Holy Roman Empire in the Second Crusade 1147-1149.¹⁵ The combination of both the history of salvation and the history of events is also part of his literary work, especially of his universal chronicle *Chronica sive historia de duabus civitatibus*.¹⁶ As the central literary device in this opus, Otto assumes two different communities (*societates*), the *civitas Dei* – the divine realm – and the *civitas terrena* – the earthly realm –, which have existed since the origin of the world (*exortus*) and progress until the end of time (*finis*).¹⁷ Thereby, he uses the concept of *civitas* with a double meaning. On the one hand, it refers to an actual state or a group of people. On the other hand, it alludes to an abstract symbol of eternity.¹⁸ Additionally, those societies are consistently affected by the mutability of all things (*mutabilitas rerum*), which results in the constant rise and decline of cultures and nations.¹⁹

Therefore, in the *Chronica*, Otto pursues the intention, on the one hand, to describe the most critical stages of the mundane history of humanity and the world, and on the other hand, to interpret these historical events using theological-philosophical tools. Furthermore, he focusses not only on past

12 See *IBID.*, pp. 17-23.

13 See *IBID.*, pp. 31-34.

14 See *IBID.*, pp. 39-46.

15 See SCHWARZBAUER, 2005, p. 48. ROACH, 2013, p. 76 stresses that, in the High Middle Ages there existed a “dynamic contribution of eschatology to movements as diverse as church reform, the crusades and the missionary efforts of the mendicant orders”.

16 Hereafter, I will refer to this work as “Chron.,” while indicating book and chapter according to the standard edition by HOFMEISTER, 1912.

17 See GOETZ, 1998, p. 135.

18 See *IBID.*, p. 162.

19 See KIRCHNER-FEYERABEND, 1990, p. 49.

happenings but also on the prospective end of the world, which he extensively describes in the eighth book of the chronicle:

The eighth book that describes the still absent final event, is therefore history-prophecy [...]. According to Otto's concept of history, the described events will occur with absolute certainty because history follows the divine plan of salvation. The course of the world's previous history and the recent critical developments and events that caused Otto to write a world chronicle, suggest in his view the imminent occurrence of the end times.²⁰

Consequently, the political crisis between the secular and ecclesiastical potentates of Otto's time – the so-called Investiture Controversy – serves as a reliable indication that the end of the world was seen as imminent at the time.²¹ This presupposition becomes apparent as early as the preface of the *Chronica*, when he discusses the value of his sources and considers himself and his generation as the “ones who live at the end of time” (*Nos autem, tanquam in fine temporum constituti*).²² In medieval thought, this kind of self-perception is relatively common, due to the fact that “Augustine of Hippo taught that the world had entered its sixth and final age upon the incarnation of Christ and authorities such as Gregory the Great expressed the expectation that little if any time remained before this.”²³ Therefore, the awareness of living in a time close to the end of the world fits perfectly in the visibility of this theme in different contexts of the Middle Ages.

20 IBID., pp. 49f.: “Das achte Buch, das das noch ausgebliebene Endgeschehen schildert, ist demnach Geschichtsprophetie [...]. Dem Geschichtsbild Ottos nach werden die geschilderten Ereignisse mit absoluter Gewissheit eintreten, verläuft doch die Geschichte nach dem göttlichen Heilsplan. Der Verlauf der bisherigen Weltgeschichte und die jüngsten krisenhaften Entwicklungen und Ereignisse, die Otto zum Abfassen einer Weltchronik veranlassten, deuten seiner Sicht nach auf ein baldiges Eintreten der Endzeit”.

21 IBID., pp. 175f.

22 Chron. 1 prologus. See also 2.13; 5 prologus; 7.9.

23 ROACH, 2013, p. 76.

The Middle Ages and the Apocalypse – Discourses about the End of the World

As stated above, Greek and Roman authors frequently discussed ideas about the end of the current world, and Christian apologists took a keen interest in evaluating and adapting these theories (see the first contribution by Dominic Bärsch). However, it seems – according to the evidence of the written sources – that the literate classes of medieval Europe were intrigued with eschatological issues. Additionally, the firm belief in an impending *Day of the Lord* as a day of divine judgment formed a basic framework for their perception of reality.²⁴

In religious contexts, as represented, for example, in homilies or theological treatises, ideas related to the return of Christ and the subsequent judgment feature strongly. At the Last Judgement, all people are divided into either those blessed with eternal life in happiness or those suffering penalties of hell, which represent the final states of the *civitas Dei* and the *civitas terrena* in Otto's model.²⁵ The imagining of such a division of humanity into redeemed and doomed people is already most relevant in the first Christian writings and underlies the primary focus of the ancient Christian doctrines of sin and redemption.²⁶ It is evident that the development of these central concepts of Christian identity cannot be treated at length in this article, but one has to stress that fear of being members of a doomed group of humanity led to social coping strategies aimed at evading an ultimate punishment. Therefore, “a whole system of resources for salvation with faith and sacraments, free will, virtues, good works and knowledge”²⁷ was established, which promised to grant personal redemption.

However, not only theological discourses considered various aspects of the coming end of the world. Even scientific and philosophical discussions about natural phenomena were intimately related to speculations about the end of the world. As Johannes Fried points out in his study of the correlation between

24 *The Day of the Lord* was already an important concept in early Judaism, but without the sense of its meaning of a final destruction of the world; see HOFFMANN, 1981.

25 Chron. 8 prologus.

26 See, for instance, LYONNET/SABOURIN, 1970.

27 GOETZ, 1988, p. 310: “[...] ein ganzes System von Heilmitteln mit Glaube und Sakramenten, freiem Willen, Tugenden, guten Werken und Wissen [...].”

medieval apocalyptic thinking and the development of modern sciences, contemporaneous intellectuals wanted to gain more precise interpretations of catastrophic events like floods, hurricanes, volcanic eruptions, plagues, etc. In the process, their aim was to separate frequent devastating natural occurrences from the predicted, and therefore expected, end-time catastrophes that would announce the return of Christ. For this purpose, they required elaborate, especially astrological-astronomical, approaches.²⁸ Particularly popular was the attempt to calculate a fixed date for doomsday based on stellar constellations.²⁹

Apocalypticism could also have had significant influence within political contexts, particularly on the self-perception and self-presentation of medieval potentates, and the description of their opponents. For example, in the case of King Otto III, Levi Roach stresses the importance of apocalyptic belief in understanding individual decisions and acts in Otto's reign around the year 1000:

[H]is Lenten pilgrimages and penitential acts; the extraordinary sanctions and *arengae* in his charters; his love of Aachen and interest in empire; and, of course, his devotion to the memory (and possibly cult) of Charlemagne. Although not all of the evidence surveyed suggests acute apocalyptic angst, it certainly is indicative of a heightened interest in (and probably also expectation of) the end.³⁰

The “extraordinary sanctions” mentioned refer to the treatment of Otto's opponents in Italy: John Philagathos and Crescentius, who led a rebellion against him, beginning in 996. The contemporaneous pro-Ottonian sources – e.g., the *Annals of Quedlinburg*³¹ – portray them as the “servants of Satan” (*sathanae ministri*) and John Philagathos especially was – as a Greek – identified as the Antichrist, who was predicted to rise in the East.³² Additionally, in the *Book of Revelation*, it was foretold that a “falling away” (*discessio*) from the empire would happen, which would precede the reign of the Antichrist, so that the Roman revolt granted an appropriate occurrence reminiscent of that prediction.³³ Roach argues, therefore, that one needs to

28 See in detail FRIED, 2001, pp. 42-169.

29 See *IBID.*, pp. 58-68.

30 ROACH, 2013, p. 99.

31 *Annales Quedlinburgenses*, p. 998.

32 See ROACH, 2013, pp. 81f.

33 See *IBID.*, p. 81.

consider this connection between Otto's two enemies and apocalyptic ideas to understand why he punished both of them without any mercy. Such treatment of the enemies was uncommon in Ottonian politics; however, in this instance, Otto thought that "he was not dealing with men, but 'heresiarchs' and 'ministers of Satan'".³⁴ Conversely, Otto himself also believed in the concept of the Last Emperor, one brave hero who appears at the end of time to defeat the Antichrist and his servants. As a great admirer of Charlemagne, who in various narrations was believed to be that returning emperor, Otto could have connected himself with this savior-figure, just as other medieval rulers, e.g., Frederick II,³⁵ also apparently did.

Based on this evidence, it is possible to conclude that apocalypticism was a dominant aspect of medieval thought in central Europe. Therefore, it is not surprising that Otto of Freising made the question about the modalities of the end-time a subject of discussion in his eighth book of the *Chronica*. As a result of his study, Hans-Werner Goetz states that it was rather the chronograph's purpose to show his contemporaries the impact of the Investiture Controversy, that is, that the end of time would occur sooner, rather than later, with a view to restoring the peace on earth.³⁶

In my following close analysis of chapters eight and nine of the eighth book of the *Chronica*, where Otto argues that fire will destroy the world, I will focus mainly on the mechanics Otto uses to construct the knowledge of such matters as cannot be acquired by empirical observations. Regarding the overall questions of how different ideas and concepts are stated in various contexts, I am going to examine the authorities through whom Otto confirmed his conception of the world-destructing fire.

The Authorization of the End of the World

At the beginning of the eighth book, Otto initially reflects on the content-related structure of his universal history and, again, the theory about the two different communities within the world, the already mentioned *civitas Dei*, and the *civitas terrena*.³⁷ Additionally, he defends his formal approach of combin-

34 *IBID.*, p. 83.

35 See SCHALLER, 1972.

36 See GOETZ, 1988, pp. 450-452.

37 Chron. 8 prologus.

ing historical – and therefore partly depressing – events with elements of salvation history by means of a procatalepsis: several biblical narrations would be based on the same scheme; for instance, the history of creation in Genesis explains that before God made a well-arranged cosmos, he created an undifferentiated amount of matter.³⁸ Consequently, Otto has the purpose of adding the narration of the expected completion of the *civitas Dei* as the “light” of his work, after the chronograph presents the “darkness” in the form of the world’s history.³⁹ To describe the coming events, he confesses his reliance on God’s benevolence (*quantum Deus permiserit*), whereby he substantiates his subsequent statements with elements of divine revelation that he had received from biblical scriptures. As a result, according to Otto, biblical evidence represents the first and foremost authority regarding the knowledge of the coming end of the world.

In chapter seven of the book, he once again invokes divine assistance for his argument when he begins the precise examination of the end of the world in fire. Thus, he inserts the claim for divine inspiration as an almost poetical *topos*. He does so firstly through the image of the salvific trumpet (*tuba salutaris*) to awaken him from the sleep of lethargy (*somnum pigrificiae*).⁴⁰ Secondly, as the primary source of inspiration for speaking about the still-hidden secrets of the end-time, he fervently evokes (*obnixè invocans*) Christ, whom he calls the one “who died for our trespasses and raised for our justification” (*qui propter delicta nostra mortuus est et resurrexit propter iustificaciones nostras*).⁴¹ This is a direct quote from the Latin Vulgate version of the *Epistle to the Romans* 4.25. Thus, Otto stages himself somewhat as a

38 Chron. 8 prologus: *Dominus quoque in principio caelum et terram creans invisibilem primo et incompositam materiem edidit ac postmodum in ordinem eam et lucem redegit.*

“Also the Lord who created heaven and earth in the beginning produced an initially invisible and disorganized matter and, soon after, put it in order and light.”

39 Chron. 8 prologus.

40 Chron. 8.7: *longo me iam otio torpentem et diversas ob occupationes quasi dormitantem ultimo de tempore locuturum tuba salutaris excitet. quis enim hac audita somno pigrificiae depressus non evigilet, per quam etiam exurgunt mortui?*

“The trumpet of salvation has aroused me, who remained in idleness and was almost asleep because of various activities, to talk about the end times. Since who could not wake up even if he immersed in the sleep of lethargy after he heard this [trumpet] through which also the dead rise up.”

The *tuba salutaris* most probably refers to the seventh trumpet in the *Book of Revelation* (11.15-17).

41 Chron. 8.7.

prophet for the ongoing divine plan rather than just a human author. Such an approach conspicuously reminds one of an ancient *topos* in Greek and Roman poetry, where at the beginning of his opus, the poet asks for divine inspiration from the Muses as the goddesses of the arts or invites them to sing directly through his mouth.⁴² This method of authorization is, in Otto's case, apparently necessary if one presumes to report the future course of history – something that is only known to the divine entity.

The factual treatise about the question of how the world will end starts in chapter eight. Otto begins this paragraph with a direct quote from the Latin Vulgate translation of the Pauline *First Epistle to the Thessalonians*, which states: “After they have said ‘there are peace and security’ the sudden demise will come.”⁴³ The bishop of Freising attributes this only to an unnamed apostle, whom his intended readers would have been able to identify as Paul due to their familiarity with biblical scripture. Therefore, an explicit naming is not necessary, and by the recognition that the allusion refers to the Apostle Paul, Otto provides a kind of common bond for his readers: those who understand the reference are part of the same intellectual group. In direct connection to this quote, he adds in the same sentence that “everything will burn through the vast force of the fire”,⁴⁴ which does appear in the biblical wording. As a result, he combines the biblical concept of the end of time with the specific image of a catastrophic conflagration leading to the destruction of the world.

Following this guiding principle, Otto ascribes the idea that fire shall be the force of the world's future destruction to two different groups: First, to the so-called *nostri* (which means “ours”), who have predicted the truth (*veridice*) using the prophetic spirit.⁴⁵ In my opinion, *nostri* in this context does not only include Christians because there is no part of the New Testament that deals with the idea of a cosmic conflagration – except the *Second Epistle of Peter* to which I shall turn later. However, this one writing would hardly justify the plural *nostri*. Rather, it seems to me that this also addresses the prophets of the

42 See, for example, SÖFFNER, 2008.

43 *First Epistle to the Thessalonians* 5.3: *cum enim dixerint pax et securitas tunc repentinus eis superveniet interitus*. Otto's word order is slightly different, but that can possibly be due to the wording of the biblical manuscript he used as an exemplar. Another possibility is that he cited the passage as from memory.

44 Chron. 8.8: [...] *terribilique ignis virtute cuncta cremabuntur*.

45 Chron. 8.8. Jochen Walter (Johannes Gutenberg-Universität Mainz) kindly pointed me to a similar passage in the *Divinae institutiones* (5.3.19) of the popular early Christian author Lactantius, who could be Otto's model for this rhetorical strategy.

Old Testament. For example, the prophetic book *Zephaniah* – or as called by its Vulgate name *Sophonias* – mentions in a passage the original Jewish concept of the so-called “Day of the Lord” when God is going to pass his judgment on the people of Israel.⁴⁶ The wording of the description of this scenario runs as follows: “In the fire of his passion, all the earth will be consumed; for a full and sudden end he will make for all the inhabitants of the earth.”⁴⁷ Modern scholars mostly agree that this image of the punishing God is not meant to describe a world-destructive fire, and therefore a concept of the world being consumed by fire is not intended. Instead, they assume that this is rather an exaggeration intended to emphasize the excess of God’s jealousy and, also, the punishment for idolatry.⁴⁸ The reason for this statement is that, in the prophetic narration, the world would still exist after the divine judgment.

However, for Otto’s argument, it is easy to invoke such vivid depictions and use them as prophetic support for the idea of an end of the world through fire. Another possible idea is that *nostris* in fact refers to Christians; in particular, to authors who wrote about the end of the world as coming about through a cosmic conflagration as an original Christian thought. For instance, one could consider early apologists like Tertullian in his *De spectaculis*⁴⁹ or after him, Otto’s valued source, Augustine in his *De civitate Dei*.⁵⁰

The second group of Otto’s interest consists of the so-called Gentiles (*gentes*). In contrast to the *nostris*, who predicted (*predicere*) the end of the world, they just dreamed of it (*somniare*) by using their mind (*subnixi ratione*) through natural assumptions (*physicae opinioniones*).⁵¹ I think the dichotomy is obvious. On the one hand, God himself gives knowledge to the *nostris* through divine revelation. This given knowledge, of course, has the higher value. However, on the other hand, the pagan thinkers also could have gained a hint of the truth by the observation of nature, which was created by God. In Otto’s thought, this pagan access to the veiled truth might not deserve the same epistemic status as divine revelation, but it also grants the possibility of leading to the right conclusions, as the example of the world’s imminent destruction by fire shows.

46 For that concept as an imagination of a purifying judgement, see HOFFMANN, 1981.

47 In the Vulgate version of *Zephaniah* 1.18: [...] *in igne zeli eius devorabitur omnis terra quia consummationem cum festinatione faciet cunctis habitantibus terram.*

48 See COLLINS, 2015, pp. 38f.

49 Tertullian, *De spectaculis* 30.1-5.

50 Augustine, *De civitate Dei* 20.16.

51 Chron. 8.8.

As a first demonstration of these two different ways of receiving accurate insights, he names the ancient philosopher Plato and his dialogue *Timaeus* as a pagan authority. Plato stated – according to Otto – that the world has to be purged because of hidden natural laws (*abditae naturae rationes*), first by water, and later by fire.⁵² In the original context of Plato’s writing, the character Kritias reports a theory to the audience that allegedly derives from the Egyptians (see the first contribution by Dominic Bärsch). However, that reference seems to be just a rhetorical strategy of Plato to legitimize an innovative. In fact, this theory is about the cyclic, and also partial, destructions of territories that make it necessary for the affected countries – in particular for the Greeks – to start from scratch with cultural development after the recurring catastrophes. Therefore, the Platonian theory did not intend a global cataclysm like the biblical flood of Noah or a global conflagration. Additionally, such thoughts relating to the destruction of the world would contradict the Platonian idea of a created, but in principle never-ending, cosmos.⁵³ However, Otto’s argument relies on a method employed by several early Christian apologists to interpret Plato and his teachings – particularly, about the creation of the world and the demiurge – as proto-Christian with the intention of using him for their teaching. Therefore, it is no surprise that Otto, whose knowledge about Plato is most probably sourced from Latin Christian authors, uses him to support his idea. For instance, the early Christian apologist Minucius Felix wrote in his dialogue *Octavius* the following passage (see also the first contribution by Dominic Bärsch):

*loquitur Plato partes orbis nunc inundare, [dicit] nunc alternis vicibus ardescere et, cum ipsum mundum perpetuum et insolubilem diceret esse fabricatum, addit tamen ipsi artifici deo soli et solubilem et esse mortalem. ita nihil mirum est, si ista moles ab eo, quo exstructa est, destruitur.*⁵⁴

Plato mentions that parts of the world are, in turns, at one time under water, at another on fire; though he does say that the world itself was made everlasting and indestruc-

52 Chron. 8.8: *unde precipuus philosophorum Plato mundum abditis naturae rationibus, aqua prius, post igne purgandum in Tymeosuo asserit [...].*

53 Even though the *Timaeus* in 41a-b concedes that the demiurge, as the creator of the world, is able to dissolve it again, this is apparently not the demiurge’s principle intention. The ideas of cyclic devastations are also dealt with in Augustine, *De civitate Dei* 12.10.

54 Minucius Felix, *Octavius*. 34.4.

tible, he still adds that it is perishable and destructible but only for its maker, God Himself. It would not cause any surprise, then, should this vast structure be destroyed by the one who constructed it.⁵⁵

As a result, Otto can call on Plato due to his function as the oldest and most famous proto-Christian gentile and the greatest of all philosophers (*precipuus philosophorum Plato*).

As second piece of pagan evidence, the bishop of Freising adds an exact quote from the first book of Ovid's *Metamorphoses* without mentioning the name of the poet. Instead, he just calls him "a certain one of the poets" (*quidam poetarum*). Otto's citation runs as follows:

*reminiscitur affore tempus,
quo mare, quo tellus immensaue regia caeli
ardeat et mundi moles immensa laboret.*⁵⁶

He remembers that the time will come when the sea when the earth and the immense castle of heaven burns and the immense mass of the world declines.

Even though the quote fits perfectly in Otto's argument, looking at the original context of the passage, there is at least one major problem with using it in a Christian line of argument: The narrator who remembers the world's eventual fate is Jupiter, the highest god of the ancient Roman religion. However, this does not hinder Otto from using Ovid's words to prove his argument. As Klaus Krönert stresses in his study about the reception of classical poetry in Otto's universal chronicle, the bishop apparently quotes several passages from memory without checking their original context again or looking up the correct order of words.⁵⁷ The first piece of evidence, in this case, is that Otto does not identify the poet by name. Thereby, *quidam* indicates that he had the verses, but not the name of their writer, in his mind. Because the works of Ovid were traditional school readings in the twelfth century,⁵⁸ it is understandable that learning an enormous amount of Latin passages by several authors by heart sometimes led to memorizing only the poetic verses rather than names of their

55 Translation: CLARKE, 1974, p. 115.

56 Chron. 8,8. The quote refers to Ovid, *Metamorphoses* 1.256b-258.

57 See KRÖNERT, 2002.

58 See GINDHART, 2014.

authors. This assumption is also plausible if one additionally contrasts the original Ovidian verses with the cited passage: *quo mare, quo tellus correptaque regia caeli/ardeat et mundi moles operosa labore*. Instead of Otto's twice added adjective *immensa*, the Ovidian pretext uses the participle *correpta* firstly and another adjective *operosa* secondly. The comparison shows that Otto's verses are a simplified version of the original passage, which are, consequently, easier to memorize.⁵⁹

The authority that Otto attributes to the cited verses derives apparently not from the name of a famous author who is, in this case, Ovid. Such a method of authorization – similar to the previously treated allusion to Plato – would not be surprising, because Ovid had been in particular, in the tradition of encyclopedism and didactic poetry, a recognized ancient expert of knowledge about natural phenomena,⁶⁰ even though he had been a controversial one.⁶¹ But it seems rather that Otto has formulated the versified saying as a short decorative aphorism that properly epitomizes his argument. It is easily comprehensible why Otto chose this image because it starkly describes the idea of the collapsing cosmic order.⁶²

Third, Otto refers to the pagan prophet Sibyl: one of the ten pagan women with prophetic wisdom, who are most probably first mentioned in the writings of the Roman author Varro.⁶³ Those Sibyls had a long tradition in Christian apologetics as proto-Christian prophetesses who had allegedly foretold the birth of the Messiah.⁶⁴ Therefore, the reference to the Sibyl as a remarkable prophetic instance is an appropriate argument. Consequently, he can allude to the ascribed prophecy that “the Sibyl in her prediction of Christ explicitly

59 See KRÖNERT, 2002, p. 51.

60 See HAYE, 1997, pp. 49f.

61 See GINDHART, 2014.

62 Even the Ovidian verses are an intertextual reference to a passage in the fifth book of Lucretius' *De rerum natura* (92-96), which similarly describes the collapse of the cosmos: *principio maria ac terras caelumque tuere;/quorum naturam triplicem, tria corpora, Memmi,/tris species tam dissimilis, tria talia texta,/una dies dabit exitio, multosque per annos sustentata ruet moles et machina mundi.*

“First, look at the sea, the earth, and the heaven; to their threefold nature, threefold bodies, Memmius, three so different species, three such textures, shall one day bring an end, and that massive form and fabric of the world – sustained so many years – shall crash.”

63 HOLDENRIED, 2006, p. XIX.

64 *IBID.*, pp. 93-97.

remembers the last burn and the final judgment”.⁶⁵ Although Otto does not explicitly say it, he apparently refers to the so-called Erythraean Sibyl; because, in the second book of the *Chronica*, he had already cited a significant part of the Sibyl’s prophecy.⁶⁶ Furthermore, Otto’s source for this acrostic poem is apparently the frequently mentioned *De civitate Dei* by Augustine of Hippo, who ascribes this poetry in the eighteenth book to the Erythraean Sibyl. In Chapter twenty-three, he quotes all twenty-seven verses and asserts that they are a Latin translation of the original Greek version. Of those verses, the following are the most relevant to Otto’s argument:

*Iudicii signum tellus sudore madescet.
E caelo rex adueniet per saecula futurus,
scilicet ut carnem praesens, ut iudicet orbem.
Unde Deum cernent incredulus atque fidelis
celsum cum sanctis aevi iam termino in ipso.
Sic animae cum carne aderunt, quas iudicat ipse,
cum iacet incultus densis in vepribus orbis.
Reiciunt simulacra viri, cunctam quoque gazam,
exuret terras ignis pontumque polumque
inquirens, taetri portas effringet Auerni.*⁶⁷

In sign of the judgment, the earth shall be bathed in sweat,
ever more to reign, a king from heaven shall come,
Sitting in judgment here, upon all flesh and the world.
our God shall unbelievers and the faithful see
Uplifted with his saints on high when this age ends:
souls, clothed in flesh, shall come to Him for judgment.
Choked with dense thorns, all the world lies untended;
rejected are the idols and all the toys of men.
Every land, and all the sea and sky, shall burn with fire,
invading even the dreadful gates of hell.⁶⁸

65 Chon. 8.8: *sed et Sybilla in prophetia de Christo habita ultimi huius incendii extremique iudicii manifeste meminit.*

“But even the Sibyl strongly remembers this last fire and the Last Judgment in the prophecy she had about Christ.”

66 Chron. 2.4.

67 Augustine, *De civitate Dei* 18.23.

68 Translation: DYSON, 1998, p. 850.

Thereby, Augustine provided the first transmitted Latin translation of the verses 217-250 of the eighth book of the *Oracula Sybillina*: a collection of redacted pseudo-predictions that were transmitted under the names of the several Sibylline prophetesses.⁶⁹ The afterlife of the translated poetic prediction as part of the flourishing Sibylline tradition is stunning. Therefore, a factor of transmission has notably contributed to the prominence of the verses: the manuscripts of the story of the Tiburtine Sibyl, which was most common in the Middle Ages,⁷⁰ additionally passed on this poem as an appendix.⁷¹ As a result, the versified prediction of the Eritrean Sibyl was closely associated with the narrative of the Tiburtine Sibyl. However, the updating and adapting interpolations of medieval copyists show that this Sibylline tradition is fairly fluent in form and content.⁷²

For this reason, I shall briefly outline this complex narration, summarizing the plot, as provided by Anke Holdenried.⁷³ One night, one hundred senators in ancient pagan Rome have the same dream, which shows them nine suns in the sky above Rome. To interpret the meaning of the dream, they send for the Sibyl, who was considered to be a wandering prophetess. In her explanation of the vision, the nine suns represent nine generations. Subsequently, she foretells that the fourth of these generations will witness the birth of Christ, while she can also foresee an increasing amount of violence over the next four generations, which will culminate in the ninth generation. During this last period, great wars will devastate the earth, and, among other incidents, the Last Emperor will appear, whose name is Constans, to fight against the unbelievers, as well as to baptize them. Furthermore, the Antichrist will arrive, and gain dominion over the world after the fall of the Roman Empire. After a phase of general persecution, the Archangel Michael will kill the Antichrist and the Day of Judgment will arrive for humanity. It is evident that the late antique and medieval copyists added the following prediction of the Erythraean Sibyl as a

69 See GAUGER, 1998, pp. 437-459.

70 HOLDENRIED, 2006, p. XVII: “The large number of surviving manuscripts from the mid-eleventh to sixteenth centuries reflects the popularity of this prophecy in medieval western Europe. At present 112 manuscripts of the Latin Tiburtina have been identified, preserving at least four versions of the text.”

71 See IBID., p. XXI.

72 See IBID. It was especially popular to refer to actual Lombard and German rulers as well as contemporary events.

73 See IBID.

summarizing paragraph to illustrate the Last Judgment and the recreation of the new earth.

Hence, Otto's reference to the Sibylline tradition grants his argument a firm text-based authority. In particular, the implicit allusion to the two verses which say that "the claiming fire shall burn the lands, the sea, and the sky and shall break open the gates of the horrible Avernus" is uniquely compatible with the previous quotation of Ovid. As even the wording of the Sibylline verses is similar to Ovidian quote, the reference emphasizes Otto's argument notably.

The last non-Christian authority Otto cites is the Hellenistic-Jewish historiographer Josephus Flavius, who mentioned in the first book of his *Antiquitates Judaicae* that Adam, as the first human on earth, had predicted two destructive catastrophes, one by water and the other by fire.⁷⁴ The argument for the reliability of Adam's prediction is that he – as the first human being – was so close to the creation itself that he was able to recognize every part of it. In this case, again, Otto alludes to a previously mentioned topic because, in the first book of the *Chronica*, he already cited at great length the translation of Josephus Flavius in the context of the Deluge.⁷⁵

Thus, Otto's argument suddenly takes a step back from pagan authorities and establishes a new perspective when referring to Josephus and, therefore, to Adam as his source. Citing the Jewish historian seems rather to be a point of transition to lead over to the Christian authorities who he subsequently addresses as part of his argument.

As a climax, the chronograph enters the ground of biblical authorization and cites a passage from the *Second Epistle of Peter*, which is the only writing of the canonical New Testament that explicitly claims the final destruction of the earth by fire. To show that Josephus, or rather Adam and Peter, agreed in their teaching about the end of the world, Otto quotes the Vulgate translation of the (pseudo-)Petrian epistle:

74 The Latin translation of the Greek passage (Josephus Flavius, *Antiquitates Judaicae* 1.4) is cited as follows: [...] *cum predixisset Adam rerum omnium exterminationem unam ignis virtute, alteram vero aquarum multitudine fore venturam* [...].

"[...] because Adam had predicted that one destruction of all things shall come by virtue of fire, and another one through a huge amount of water [...]."

75 Chron. 1.2.

*caeli erant prius et terra de aqua et per aquam consistens verbo Dei, per quem ille tunc mundus aqua inundatus periit. caeli autem, qui nunc sunt, et terra eodem verbo repositi sunt, igni reservati in diem iudicii et perditionis impiorum hominum. [...]*⁷⁶

The heavens have been before, and the earth consists of and through the water, due to God's word, by which the world deluged by water perished. But the heavens that are now, and the earth, are reserved by the same word, being kept for the fire on the Day of Judgment and the elimination of the infidels.

After this quotation, Otto closes his argument with an exegetical interpretation of the passage, which can be summarized as follows: Due to the parallel position of flood and fire, the final destruction of the earth will have the same quality and quantity as it had when the flood destroyed the earth and humanity in the past. From this point on, he deals with additional eschatological questions and biblical contradictions, but for our present purpose, which is to examine several intercultural methods of the construction of knowledge and its authorization, I assume the analyzed example to be sufficient. Thus, I will now summarize my thoughts on the passage.

Conclusion

First of all, the study has shown that Otto uses different sources of knowledge, from pagan philosophy to biblical scripture, to authorize the concept of the end of the world by fire. On the one hand, there are the kind of sources that, in his opinion, hold the highest epistemic value, because they rely on the divine revelation that the so-called *nostris* have obtained. On the other hand, the so-called Gentiles use natural observations and thought experiments to reach the same conclusion, but the way towards gaining this knowledge does not have the same epistemic status as divine revelation. As a result, the latter is declared as always being the superior way to the truth.

For his actual argumentation, he builds up a climactic line: starting with Plato, he positions his thought on a solid base, as Plato serves as an expert on natural philosophy and is also popular for his conception about the demiurge and creation. Hereafter, the poetic quote illustrates the image of destruction as

76 *Second Epistle of Peter* 3.5-7.

a vivid spectacle, even though Otto did not mark the verses to be part of the Ovidian *Metamorphoses*; they gain their authority by virtue of the poetic form rather than by their author. The mentioning of the Sibyl in her function as a prophetess – even though she is a pagan one – opens the way to divine revelation. Constructed as an impartial instance, she grants a neutral perspective on the coming of Christ and also on the demise of the world. The argument becomes closer to the biblical sphere when Otto cites Flavius Josephus and his reference to the prediction of Adam. Because Flavius Josephus used Adam as an authoritative figure to whom Otto may refer as well, he takes an intermediary position between the *nostris* and the Gentiles. The line of argument finally reaches its climax with the quotation from the New Testament ascribed to Peter, who is Otto's best example of previously mentioned *nostris*.

Therefore, the method of direct and indirect quotation of or allusion to prominent authorities, with whom his intended readers are familiar, grants the possibility to take several elements of knowledge out of their original context and to rearrange them in a new framework.

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THE RAGNARÖK MYTH IN SCANDINAVIA – FINDING, INHERITING, AND BORROWING

JENS PETER SCHJØDT (AARHUS)

Introduction

This article will discuss the notions of the end of the world associated with pre-Christian Scandinavian religion. More specifically, the focus will be on a topic that has played a huge role in the history of research of this wider subject, namely, the existence of cross-cultural borrowing and influences. In this respect, the motif of ‘fire’ as a means of destruction in particular will be used to explore this topic. Much of this problematic concerning so-called borrowings is connected to the nature of the sources, and it will, therefore, be necessary to present and discuss the most important sources that are used for our reconstructions of this religion¹ in general, for those that are not specialists in this field. The source situation has important consequences for any sort of reconstruction we propose about the pre-Christian world view, including ideas about the eschatology. After a presentation of the sources, I shall deal (selectively) with the history of research of the eschatology, and the ways in which some important scholars have interpreted the historical roots of the

1 Perhaps we should rather speak of *religions* in the plural, since it is acknowledged by most present-day scholars that there never was a single religious system shared by all the Germanic speaking (i.e., we are not dealing here with the Saami groups living farther north) Scandinavians in the pre-Christian era. See, for instance, DUBOIS, 1999; GUNNELL, 2000; BRINK, 2007; ANDRÉN, 2007; SCHJØDT, 2009; PRICE, 2012. This will have some consequences for the viewpoints of this article, although, for the sake of convenience, the more traditional singular form will be used.

mythological complex surrounding *Ragnarøk*,² as the complex of ideas concerning the destruction of the world is often described. Then *Ragnarøk* will be discussed with a special focus on the provenience of the various motifs, most notably fire, in order to see whether these motifs should most likely be attributed to influences or if they should rather be seen as indigenous. Basically, this particular section will be more concerned with methodological matters relating to the possibility of reconstructing mythological borrowings.

The Sources

The sources for pre-Christian Scandinavian religion or religions can basically be divided into two categories, which for the sake of simplicity we will call insider sources (created by people practicing the pre-Christian religion) and outsider sources (created by people who did *not* belong to this religion).³ Since writing was only introduced with the coming of Christianity (tenth to twelfth centuries), we are dealing with an oral culture, where a few were able to read and write runes, but probably so few that we can in no way speak of a literate society.

We do not, therefore, have many insider sources in textual form. But there are some poems with mythological content, the so called “skaldic poems”, composed by *skalds* (poets), mostly in order to honor some king or earl or chieftain, and which were transmitted orally and written down much later in sagas, as we shall see below. They were metrically so complex that most modern scholars agree that the form in which we have them in the medieval Icelandic sources most likely closely resembles the original composition. They do not contain much about the end of the world, however, and there is no reason to discuss them further at this point. Another important group of insider sources is the archaeological record, including images on stones and jewelry, from the pre-Christian era. Again, however, there is little to be learned from such material in

2 In the Norse sources, we have two designations, namely *Ragnarøkkr*, meaning *Twilight of the gods* and *Ragnarøk*, *The fate of the gods*. Which one of the two is the *original* pagan designation has been debated, but will not be discussed in the following. For a discussion, we can refer to BERNHARDSSON, 2007.

3 More or less detailed accounts of the nature of the sources can be found in most works dealing with Old Norse religion, or pre-Christian Scandinavian religion (the two terms being mostly used synonymously). Of particular interest are CLUNIES ROSS, 1994, pp. 20-33; CLOVER/LINDOW, 1985; BECH et al., 1992. For my own views, see SCHJØDT, 2008, pp. 85-107.

relation to ideas about the end of the world, although archaeology is extremely relevant for the reconstruction of other aspects of pre-Christian religion.

As to the outsider sources, all of which are textual, it is obvious that speaking about reliability, their value is much smaller. However, they do tell us much more than any other sources about pre-Christian religion. They can be divided into two groups, namely, on the one hand, sources written by geographical outsiders (people from outside the North), and, on the other hand, historical outsiders (people from the North, but writing long after Christianization). The first group consists mostly of Christians and, to a much lesser extent, Muslims, who in some way or another came into contact with pagan Scandinavians throughout the early Middle Ages and the Viking Age⁴. As is to be expected, these texts are for the most part rather hostile towards the Scandinavians, since the Viking raids were to a high degree seen as pagan attacks on the Christian community. The second group, the historical outsiders also consists of Christians, and by far the largest group are Icelanders from the twelfth to the fifteenth centuries. Most accounts of pagan religion in the North are based on this group of sources. It comprises various kinds of sagas, in which many of the skaldic poems, mentioned above, are quoted, and some historical works of varying reliability. The most important work belonging to this group concerning *Ragnarøk*, however, was written by the Icelandic chieftain and historian, Snorri Sturluson (1179-1241). The work is called *Edda*⁵ and consists of four parts, among which the relevant part for information about Ragnarøk is called *Gylfaginning*.⁶ This is a long narrative, beginning with the creation of the world from chaos, before recounting important incidents in the mythological history of the gods, followed by a description of ‘the fate of the gods’ (and of humans and almost all other beings) – and the subsequent renewal, where a new world will rise from the sea, and some of the

4 The Viking Age is usually dated to c. 750-1050 followed by the Middle Ages up to c. 1500.

5 The etymology of the word *Edda* is not certain, see DE VRIES, 1962, p. 93.

6 The word means *the deceiving of Gylfi*, Gylfi being a human king who visits three beings (maybe incarnations of *Óðinn*) and asks them questions about the cosmos and cosmic history. The answers are formed in accordance with the pagan worldview (hence the name *Gylfaginning* – Gylfi is led to believe that the pagan cosmology is true, which is not so, according to the perspective of the Christian author). It should be mentioned that Snorri consistently use the form *ragnarøkkr*, whereas most of the older sources have *ragnarøk*. Apart from these words, there are also a few others that should probably be seen as semantically synonymous, such as *aldar rök* (the fate of the world) and *aldar rof* (the destruction of the world).

old gods' sons will rule, and even some humans will have survived the destruction of the world.

Snorri quotes extensively from a series of poems that are part of a collection called the *Poetic Edda*,⁷ usually divided into two groups, namely mythological poems and heroic poems. Most of them are transmitted in a manuscript known as the *Codex Regius* (stemming probably from around 1270), but since then, other poems similar in content and meter, have also been labelled “Eddic”. The discussion about the value of these poems as sources for pre-Christian mythology has been immense, among other things because of uncertainty about their dating (see above note 3), and there is not even agreement about whether they were from the pre-Christian period, and thus whether they are outsider or insider sources.⁸

The sources that are traditionally used for reconstructing the pagan conception of *Ragnarøk* are thus the following:

- The Eddic poems *Völuspá* (stanza 40-51)⁹ and *Vafþrúðnismál* (st. 44-53) provide a lot of information, portions of which are more comprehensible than others. Other Eddic poems, such as *Lokasenna*, *Hyndluljóð*, *Grímnismál*, and a few others hint at motifs, stemming from the ideas of *Ragnarøk*.
- In *Gylfaginning* (chapter 51-53),¹⁰ Snorri quotes many of the relevant stanzas from *Völuspá*, but also adds information that we do not know from other sources.

7 The word “Edda” was first applied to Snorri’s work, but when a manuscript was found later on containing some of the poems that were quoted by Snorri, they were seen as being much older. Therefore, Snorri’s *Edda* is sometimes called *The Younger Edda* and the poetic compilation *The Elder Edda*. Thus, the individual poems are called “Eddic poems”.

8 In dealing with *Ragnarøk*, the most important poem is definitely *Völuspá*. Most scholars have traditionally seen it as dating to the time of the conversion to Christianity, but this dating is far from certain. Recently, it has been argued convincingly that we should much rather see it as a poem that, in accordance with what we know about oral poetry, was transmitted and transformed for centuries prior to the written version in the *Codex Regius* (and other versions), to which we have access in the twenty-first century (cf. SIGURÐSSON, 2013).

9 The edition of the Eddic poems used here is NECKEL, 1962. *Völuspá* (*The Seeress’s Prophecy*), no doubt is the most famous of the Eddic poems (and the most important in relation to the discussion about *Ragnarøk*), and there has been a huge discussion of its value as a source for pagan religion. For a recent compilation of different views, see TERRY GUNNELL/LASSEN, 2013.

10 The edition of *Gylfaginning* used here is FAULKES, 2005.

- Also a few skaldic poems have minor hints to the incidents that will take place in the end of times.

There is no reason here to go through all the motifs involved, but it will be useful to mention the main aspects of the myth as it is related in the *Gylfaginning* and *Völuspá*. This is not to say that these two sources are seen as the most reliable in relation to any pre-Christian worldview, but they are certainly the most extensive, and have played the most crucial role in the history of research, to which we shall return below.

According to Snorri, there are some portents prior to the final destruction. These are natural phenomena, such as coldness, in that there will be three winters without summer in between; this is most likely connected to the fact that the sun and the moon will be swallowed by two wolves. Before that, it is said that there will be three other winters during which wars will be universal, and not just ordinary wars, but conflicts involving brothers who fight against each other, and, although more explicitly stated in *Völuspá*, there will be a general breakdown of the moral rules. We also read that the stars will disappear from the sky, and that earthquakes and floods will take place. The battle between the gods and the giants is initiated by the ship Naglfar (which belongs to the giants and is built by the uncut nails of dead men) getting loose, steered by the giant, Loki, who has been bound during the mythic present, but breaks loose in connection with the approaching of *Ragnarøk*. Furthermore, two monsters, both with their own mythic history, become involved: the World Serpent or Miðgarðsormr (a snake lying all around the inhabited world) and the Fenrisúlfr (the wolf Fenrir, who is so big that his upper jaw touches the sky and the lower jaw the earth). Then some giants, called the sons of Muspell, whom we do not know from other myths, will ride forward led by a fire giant called Surtr. On their way to the battlefield they cross the rainbow bridge, Bifröst, which will break a thunder. At that time the guardsman of the gods, Heimdallr, will blow his horn (the Gjallarhorn), and the leader of the gods, Óðinn, will take advice from the wise Mímir. The world tree, Yggdrasill, shudders, and none and nothing is without fear. Then the battles between the individual gods and their opponents follow, in which Óðinn is killed by Fenrir, and is immediately revenged by his son, who kills the wolf, and Þórr and the Miðgarðsormr will kill each other. Other individual clashes are mentioned and, finally, everybody dies. Snorri ends his description by recounting that Surtr will throw fire over the whole world and everything will burn.

Not all of these motifs can be found in *Völuspá*, which is rather allusive in its style, but it is not in direct opposition to Snorri's narrative, and it adds a couple of important incidents, namely that, as a kind of warning three roosters will crow, one among the gods, one among the giants, and one in the under-world, and that the earth will sink into the sea, but at the same time fire is all around. The focus here is on the motifs in the sources that have immediate significance for the discussion concerning loans and the transfer of motifs. Thus, there is no reason to be exhaustive here by treating all of the individual pieces of information in the various sources. However, it is worth briefly mentioning a conspicuous piece of information in the poem *Vafþrúðnismál*. In this text it seems that the coldness of *Fimbulvetr* (the mighty winter) is the most important motif in the destruction, connected with the swallowing of the sun, although "Surtr's fire" is also mentioned. As we shall see below, this fact has caused some scholars to believe that coldness and not fire was the direct cause of the final destruction of the earth.

After the destruction, however, we learn from *Gylfaginning*, as well as from *Völuspá*, and also indirectly in *Vafþrúðnismál*, that a new world will arise from the sea. Again, *Gylfaginning* is the most informative source in this respect. Snorri tells us that there will be various abodes in which people will live according to their moral standards.¹¹ Thus, the good will live in a place called Gimlé and another one called Sindri, whereas the *bad guys* will stay in a hall, placed at Náströnd (corpse shore). Here, Snorri quotes a stanza from *Völuspá*, although in the poem it is placed before the *Ragnarök*-sequence, and apparently has nothing to do with the 'new world'. Snorri then tells us, with reference to *Vafþrúðnismál* stanza 51 and other stanzas, that some of the old gods' sons and a few others, among them Baldr, the innocent god, who was killed because of Loki's trickery (which is why Loki was fettered) will be there. Also a human couple, Líf and Lífþrasir, will survive in a certain forest (*Hoddmímis holt*) and eventually populate the earth anew, and finally we are told that a new sun will be born. *Völuspá* (stanza 65) then adds that, after the new world has risen from the sea, a powerful being will come from above,¹²

11 Who these people are, we are not told. Thus, we cannot say whether they are the 'survivors' of *Ragnarök* or if they are some new generations of humans.

12 It is worth noting that this stanza cannot be found in the *Codex Regius* version, but only in the later version, transmitted in a long manuscript, called *Hauksbók*. Even so, it is included in the main text of most editions of the poem.

which is also partly supported by another Eddic poem, *Hyndluljóð* (st. 43f.). Whether this motif is pagan or Christian will be briefly discussed below.

We could add more details in this summary, but those mentioned will be enough for the points to be discussed below. From this, the following list of the main motifs in an attempted diachronic order can be made, taking all the sources into consideration:

- 1) Moral decline.
- 2) A mighty winter, probably related to the disappearance (swallowing by a wolf) of the sun.
- 3) Natural disasters (earthquakes and flooding).
- 4) The crowing of the roosters.
- 5) The arrival of the enemies (monsters and giants).
- 6) Heimdallr blowing his horn.
- 7) The battle between gods and their antagonists.
- 8) Destruction by fire.
- 9) The earth sinking into the sea
- 10) The new world rising from the sea.
- 11) The survival of a human couple
- 12) The different abodes of human beings.
- 13) The return of the old gods' sons.
- 14) A 'mighty one' coming from above.

Some Important Points of View¹³

Most scholars have been convinced that this collection of motifs should not be seen as 'original' among the Scandinavians, and so some of the key words in dealing with *Ragnarøk* have been influences or loans or borrowings from other religions, most notably from Christianity, but also from other religious and mythological traditions.¹⁴ So by far the most often dealt with problem in the

13 Since the main purpose of this article is about influences, heritage, and borrowings, it will not be attempted to go through all books and articles on the subject of *Ragnarøk*. Instead, I shall stick to some important viewpoints, taking the perspective of influences and the attempts at reconstructing some of the 'original' pagan *Ragnarøk* myth(s).

14 An exception here is a work by STANLEY MARTIN, 1972. Stanley Martin attempts to argue that the *Ragnarøk* tradition, with a few exceptions, was genuinely pagan (p. 48) and had its roots in some cyclical rituals from pre-Christian times. The

scholarship concerning Ragnarök has been the historical roots of the different motifs, and whether in the pre-Christian period there already was some kind of coherent eschatological myth in Scandinavia.

If not the first, then the most systematic analysis of *Ragnarök* was carried out by the Danish folklorist Axel Olrik, who in two books from 1902 and 1914 respectively (translated into German in 1922: *Ragnarök – Die Sagen vom Weltuntergang*), attempted to trace the individual motifs.

After having analyzed the various associated sources, Olrik, in his conclusion, divides the motifs into three groups:

1. those of pagan provenance (noting in parentheses where from they ultimately stem),
2. those of Christian provenance, but already known in the Viking Age.
3. those of Christian provenance, known only from *Völuspá* (and Snorri, building on this poem).¹⁵

According to Olrik, the following motifs belong to the first group:

- The sun is swallowed by a sun wolf (general)
- The mighty winter (Persian)
- The earth sinks into the sea (Celtic)
- The Fenris wolf (general, from the East in particular)
- The snake in the deep (general, from the East in particular)
- The battle of the gods with the death of the king god and his subsequent avenging (Celtic)
- Surtr's fire (Celtic)
- The new generation of gods (Celtic)
- The humans surviving the winter (Persian)

To the second group belong the following motifs:

- The breaking loose of Loki
- The people of Muspell
- The return of Baldr

theory has not been very influential, but should, nevertheless, be taken into consideration.

15 OLRIK, 1902, pp. 289f.

The third group has the following motifs:

- The moral decline of the human race
- The blowing in the Gjalarhorn by Heimdallr
- The darkening of the sun and the disappearance of the stars
- The world fire
- The abodes of the ‘good’
- The coming of the ‘mighty one’

This line of reasoning which aims at tracing the individual motifs has had a deep impact on most of the research that has been done on *Ragnarøk*; for instance, the Swedish historian of religion, Anders Hultgård, wrote in an article from 1990:

The main religio-historical question of whether the pre-Christian Scandinavians possessed a coherent eschatological tradition is difficult to answer solely by referring to medieval Christian doctrine. Descriptions of the whole eschatological process are less prominent in the vernacular religious texts than might be expected with regard to the assumption of a Christian impetus behind the growth of a coherent Ragnarøk tradition. On the other hand, comparative data from Iranian and Indian religions suggest the existence of an eschatological tradition also among the ancient Germanic peoples, which has been lost but is echoed in the early medieval Ragnarøk tradition.¹⁶

We notice here that Hultgård introduces the issue of coherence. We shall, however, return to that below, concentrating here on the question of influences. Much later, in a forthcoming book chapter, Hultgård has explicitly divided the scholars’ perspectives into three groups, 1) A composite group of diverse origins, 2) The Indo-European approach, and 3) A myth under Christian influence (being the most popular in more recent times).¹⁷

Although Olrik’s division is about the origin of the various motifs, and Hultgård’s is an attempt to classify scholarly approaches, the threefold division of both authors seems to be related from a classificatory perspective. Hultgård’s composite group of scholars would then view most motifs as belonging to Olrik’s second group of motifs (Christian motifs, but well known in the Viking Age), whereas his second group (the Indo-European approach)

16 HULTGÅRD, 1990, pp. 355f.

17 HULTGÅRD, 2019.

would view most motifs as belonging to Olrik's first group (the pagan motifs), and Hultgård's third group would relate to Olrik's third group; most motifs would be seen as due to Christian influence.

In the following I am not going to argue against these view-points of Olrik and Hultgård (and many others) as such – quite on the contrary I believe that influences from all these areas have to be taken into consideration in tracing the various motifs, although of course, the details in Olrik's division could well be discussed. But as Hultgård states, “the problem of foreign influences appears rather complicated”¹⁸ – and maybe it is not only a matter of the complications involved in tracing these influences from the three areas, he mentions, but just as much what we actually mean by “foreign influences”. In a recent anthology on *The Seeress's Prophecy, The Nordic Apocalypse* from 2013, we meet in many of the articles similar ideas regarding influences. The focus here, however, is mainly on *Völuspá*, which is compared to mainly Christian notions and parallels from the *Sibylline Oracles*. So, the problem here is somewhat different from the typical history of religion perspective, since it is focussed on a single source, the dating of which is quite complicated, but traditionally believed to be around the year AD 1000, the year when the Icelanders decided to become Christians. But still, since *Völuspá* is one of our main sources, it does have serious consequences if this poem cannot be taken into consideration when attempting to reconstruct the pagan mythology, not least in relation to the role played by fire in *Ragnarök*.

However, foreign influences are identifiable in all religions as far back as they can be traced. Except perhaps for some small hunter-gatherer cultures a very long time ago, all cultures have communicated with other cultures, and communication will also inevitably mean influences, i.e., transfer of cultural traits. In the North, therefore, we know for certain from archaeological evidence that, ever since the Bronze Age, a rather extensive system of inter-relations and communication between Scandinavia and other parts of Europe was in operation, based mainly on trading.¹⁹ But that would certainly also involve, at least a possibility of, the exchange of ideas, including those of a religious character. Thus, without denying the value of the notion of influences, it probably should involve further theoretical considerations than is usually done. We shall come back to that later.

18 HULTGÅRD, 1990, p. 354.

19 E.g., KAUL, 2004.

If we return briefly to Olrik, we notice that basically there were two ways from which the motifs within the *Ragnarøk* myth could be explained: either as common and general observations of nature, or as influences from somewhere else. And if some motif was not part of the natural surroundings in a certain culture, we should probably see it as a borrowing from outside. Although I have no doubt that both these issues, natural phenomena and borrowings, are important for much mythic thinking, this view should, nevertheless, be challenged, for which we shall use the example of fire.

Fire as Part of the Ragnarøk Tradition

Now, turning to fire as a means of destruction, Olrik saw it as a borrowing from Christianity, because in the Mediterranean area observations of nature would naturally induce an idea of heat and fire as a destructive factor, whereas in the North this would not be ‘natural’.²⁰ However, Olrik acknowledged the part played by Surtr, a fire giant (*Völuspá* 52, *Vafþrúðnismál* 50), but argues that it is only in *the Seeress’s Prophecy* (and by Snorri, of course) that Surtr will destroy the world by fire, whereas in *Vafþrúðnismál*, he is only said to have burned the abodes of the gods, as was customary in war and conflicts in the Viking Age.

Therefore, it was also Olrik’s theory that the main factor in the North would be coldness, which would be in accordance with the natural surroundings. This would make it reasonable that a human couple, Líf and Lífþrasir, could survive in a forest, creating some kind of shelter, whereas it would not have any protective function if the world was burning. This latter point no doubt is true, but it is doubtful whether such a kind of logic is applicable to mythic thinking. In the world of mythology anything can happen, so why not also this kind of rescue from a fire?

Anyway, if we look at all the motifs in the sources, we will see that there are apparently three direct actions at work in the final destruction, namely, coldness (as seems to be the case in *Vafþrúðnismál*), the sinking of the earth into the sea, and fire. Which one is the ‘original’? And do we have to choose?

These three ideas are not presented in the same sources, except for Snorri who mentions the *Fimbulvetr* as a kind of prelude to *Ragnarok* itself; fire is

20 OLRIK, 1914, pp. 195-198.

only presented as the direct cause in *Völuspá* and by Snorri, building on this poem. Since both these sources are late (Snorri for sure, and *Völuspá* probably, at least in regard to some stanzas, whereas some may go back to a pagan oral tradition), it seems immediately that there is a good reason to accept that some kind of Christian influence was at work. Whereas the destruction by coldness is mostly on its own – and as just stated it is mentioned by Snorri as one of the events prefiguring the final destruction – the combination of a destruction by fire *and* water is found at many places outside the North.²¹ The very idea of the world being flooded and/or sinking into the sea, is certainly on par with the natural surroundings of much of the North, particularly Denmark and the Frisian coasts – whereas the idea is not as ‘natural’ farther north in Scandinavia, in Norway and Sweden. But what about fire? If we accept the premise that ideas of the world’s destruction are either based in the observation of nature, or are brought in from somewhere else, where such observations are possible, the destruction by fire must be influenced from outside the North, in particular from Christianity.²² However this premise may not hold true.

The very phenomenon of fire is of course known by all early cultures and certainly not only from natural fires caused by heat and by lightning strikes. In order to find the natural causes for the fear of fire as a means of destruction, we may just as well think of the volcanoes, which in the North, however, are known only in Iceland, but not in mainland Scandinavia. But the sources, as was stated, actually are, for the most part, from Iceland, and it is not hard to imagine the impression that volcanic eruptions must have left on the Icelanders in the period in which many of the sources were written down, and earlier, of course. This experience, therefore, would probably be just as forceful as any imported ideas from areas where the climate was much warmer.

But, as is also mentioned by Olrik, the idea of fire as a basic means of destruction in war could be much more decisive.²³ Thus, we know from the

21 OLRIK, 1914, pp. 210-219 and 259f.

22 *IBID.*, p. 258. Although Olrik is not to be seen as a ‘nature mythologist’ in the tradition of Friedrich Max Müller, it seems that some sort of ‘nature mythology’ is important for his theoretical approach in general (not only concerning *Ragnarøk*). It is worth noticing, however, that Olrik clearly prefers the idea of loans and borrowings. According to him, the world fire originated in India, from where it was borrowed by the Greeks, the Persians, and even Jews and Christians (p. 219). So even if such cultures could have developed the idea of a world fire according to their natural surroundings, Olrik argues for the spread of the idea from a certain center (India), and thus clearly accepts a diffusionist framework.

23 *IBID.*, 1914, p. 198.

Viking Age and earlier that battles between chieftains and petty kings would often involve the burning of the halls of the opponents. A large number of sagas mention how this or that chieftain burns in another chieftain and his whole retinue, which is the ultimate destruction of that chieftain, perhaps also in a symbolic way.²⁴ And these sort of destructive fires in war situations were of course known from many places all over the world.

What I aim at here is simply to state that the means of fire for destruction cannot depend, at least not solely, on influences. Societies in which people live in wooden houses will by necessity have experienced the devastating consequences of fire, whether this comes from lightning, volcanoes or human agency. This means that the argument that fire as a means of destruction is not something that is ‘natural’ for Scandinavians is simply not true; when fire is able to destroy a farm, a village or a whole town, the idea that the end of the world will be due to fire seems quite ‘natural’. This does not mean, of course, that influences from Christianity, or even Iranian mythology, cannot be involved. As mentioned, this is quite likely, but it would, in my opinion, be very naïve to argue that influences would be the only source for such a mythic idea as fire.

From Where Do the Eschatological Ideas Stem?

So, where do the eschatological ideas stem from? According to what was just said about fire (and many of the other motifs enumerated above could be analyzed in much the same way), the question is probably not the right one to ask, at least not without some degree of qualification. The comparison of motifs from two (or several) religions or mythologies will inevitably bring forward both similarities and differences. And, in order to argue for influences from culture A to culture B, two prerequisites are necessary: 1) the similarities have to be of a certain kind and sufficiently detailed, so that we can rule out independent configurations based on similar experiences from similar natural, economic, ecological, social, etc. structures.²⁵ And 2) further, of course, we must be able to argue for the possibility of some kind of historical connections. This second prerequisite, as was also argued by Hultgård, is certainly at hand: Christianity, Judaism, Persian religion, and many other religions influenced

24 SUNDQVIST, 2016, pp. 307-311.

25 This problem has been discussed in much greater detail in SCHJØDT, 2017.

each other mutually in the Levant, and also some mythic elements from a common Indo-European heritage must be taken into consideration, so that borrowing as well as heritage would be quite possible, and have no doubt taken place. However, the first prerequisite – the ruling out of independent developments and origins – seems to be somewhat harder to argue, when it comes to the *Ragnarøk* myth. In the mythic language, we hear several times of “Surtr’s flame”, meaning fire, but we do not get any details except that it seems to be a metaphor for the destruction, but, as mentioned, it appears to be much more connected to the battle between gods and giants than to natural phenomena. So, if we go through the sources – perhaps excepting Snorri, but including *Völuspá* – our impression is rather that the role played by fire in war and battle is the real origin of the motif – and not natural fire, caused by either lightning or volcanoes.

Anyway, there is no doubt that fire does play an important role in the sources that we have for pre-Christian Scandinavian eschatology, but we do not hear that it will fall from the sky, and – again with the Christian Snorri as the exception – that it will burn the whole world, as should be expected, if there were any influences from the *Book of Revelation*, or some other eschatological tradition from the eastern Mediterranean. So, according to what was just said about similarities and differences, it appears that the similarities are quite modest and do not involve more complex structures. They could, therefore, easily be seen as common ideas held by all cultures that have experienced the destructive power of fire. The differences are much more conspicuous: Whereas the Mediterranean ideas are mostly based on heavenly fire, and thus more or less inspired by natural phenomena, the Nordic ideas seem to be much more based on war experiences, and thus social phenomena. Again, that does not rule out that at some time during the Middle Ages ideas about the pagan *Ragnarøk* became influenced by Christian notions, mainly from the *Book of Revelation*, as seems to be the case with Snorri. But there is nothing to suggest that the ideas of a destructive fire, playing an important role in *Ragnarøk* are influenced from anywhere, but rather that they are originated simply in the experiences of war between two armies ending up with the burning down of fortresses or towns: the destruction of the social world seems to be the model for the destruction of the cosmic world. From a methodological perspective, there is no doubt, in my opinion, that many more details would be needed in order to argue otherwise.

These considerations can lead to another related question: Did pagan Scandinavians have a coherent narrative about the end of the world, before there were any influences from Christianity? This was addressed by Hultgård as we saw above, and in the forthcoming book chapter mentioned earlier, he concludes with regards to Ragnarøk that there most likely existed such a coherent version, ultimately derived from Indo-European, Persian in particular, myths. Accordingly, it should not be seen as neither Christian inspired nor as a composite myth, and therefore, many of the motifs, enumerated by Olrik, in his second and third group, should rather be seen as pagan. The myth as we have it will rather likely, according to Hultgård, go back to an Indo-European heritage and has, therefore, been transmitted orally through millennia.

The main problem here seems to be the notion of coherence. Hultgård, in the quote above, is very reluctant, when it comes to the significance of a Christian impetus “behind the growth of a coherent Ragnarøk tradition”. But the question is whether there ever was such a coherent *Ragnarøk* tradition, whether or not influenced by borrowings from Christian tradition. It is true that the story line we read in *Gylfaginning*, summarized above, appears rather coherent, but whether or not we can render probable that some of the motifs have direct parallels within the Christian framework, it is not very likely that Snorri, writing in the thirteenth century, more than two hundred years after the official conversion to Christianity, could avoid using his knowledge about these ideas. The point here is that, although we can probably never *prove* that this or that motif is either Christian or pagan, it is likely, beforehand, that Christian motifs did play a part in a thirteenth century rendering of the myth.

This, however, is not to say that there was no eschatological myth in the pre-Christian religion, but as just mentioned, the question is whether it was coherent, and basically what is meant by the term “coherent”. As mentioned above in note 1, it is not very likely that the Scandinavians in the pagan period had a common mythology in the sense that everybody in this vast area of Germanic speaking Scandinavia recounted the individual myths in more or less exactly the same way. By analogy, we must assume that myths were transformed over time and from one geographical area to another, which does not mean, however, that there were no common ideas in operation.²⁶ But it means that we will look in vain for some ‘original’ myth, not least since we do not

26 I have used the notion “discourse” to designate some overarching frameworks, outside which it was not possible to speak about gods and other mythic phenomena, see SCHJØDT, 2013.

even have clear ideas of what “original” means: Is the original *Ragnarøk* myth the story, as rendered by Snorri, when it was told for the first time, or do we allow for some minor differences – something added or something omitted? Or is it when a Christian told or read the narrative that is unfolded in the *Book of Revelation* or when an old sage or chieftain somewhere in the deeper human past told a story in which the main gods were not Óðinn and Þórr, but gods with very different names and probably different characteristics? So, the question as what was the original version does not really make sense at all, if we do not qualify it.

Although Olrik, and to a certain extent also Hultgård were aiming at reconstructing the pagan myth of *Ragnarøk* by subtracting those traits which were not considered as ‘original’, this seems to be an impossible enterprise for at least two reasons. Firstly, it is in general very difficult, and maybe impossible, to decide whether a certain motif, unless it is rather complex in its structure, should be seen as having been borrowed, or whether it could be what Olrik termed “general”; secondly, the very notion of “original” is so floating that it should probably be avoided: We can be certain that the religion in Scandinavia in the ninth century was not exactly the same as in the seventh century, although, of course, there was also most likely much continuity. So again: Is the original pagan myth the one told in the seventh or the ninth century? Under such conditions, it will be hard to speak of a coherent myth: on the one hand, it is easy to imagine some story line being relatively stable with various motifs constituting a kind of prelude to the cataclysm, then the destruction of nature and the fight between cosmic and chaotic forces, followed by the arising of a new world. But, on the other hand, we should hardly expect that, for instance, fire and water would have played the same role in all versions or that the individual motifs would be identical all over the Scandinavian area. The use of these elements would partly be dependent on the natural surroundings which differed significantly from one area to the next in Scandinavia and Iceland, and partly on tradition and influences from outside, which no doubt also differed, the South being more exposed to such influences than the far North.

This is more in accordance with the idea of a composite myth, some elements going far back to a common Indo-European past, and some being influenced by medieval Christian ideas, which are in turn borrowed from somewhere else also. Also observations of nature, however, might have played

an important role (for instance the volcanic eruption AD 536/7),²⁷ and finally also developments within the social world might be reflected somewhat in the myths. In general, therefore, I would suggest that whether or not there was a coherent eschatological myth long before any influences from Christianity, and which motifs were part of it, we will never know for certain. What we *could* know for certain, however, is that myths in oral societies change from time to time and from one area to the next, and often probably from one person to the next, depending on social position, and so on. This changing nature of oral narratives is a fact that was established more than fifty years ago by, among others, Parry and Lord.²⁸ This does not mean that the existence of a coherent storyline in a pre-Christian oral myth can be ruled out completely, but at least we should ask whether, or perhaps rather in which way, such myths are ever coherent. We cannot give an answer to that question here, but basically it can be suggested that the coherence of myths in oral cultures is different from those that are put in writing.

When we look at the *Ragnarøk* myth in Snorri's *Edda*, we notice that he attempts to put all the various motifs into one coherent narrative. *Völuspá* and *Vafþrúðnismál*, on the other hand, differ on important points, probably exactly because they were transmitted orally through centuries, whereas Snorri's *Edda* was created as a written piece of art and strongly influenced by medieval European traditions and ideals, at least when it comes to form. My suggestion, therefore, that I will never be able to prove, of course, is that there never existed a pure and coherent Nordic myth in pre-Christian times, because, as mentioned, myths are always influenced from somewhere, and they are seldom coherent compared to modern standards of narrative coherence. Rather, I am clearly in favor of what by Hultgård was called the "composite theory", because in a sense all myths are composite products. That is the case for the Christian, for the Persian, and the Nordic/Germanic cases alike: The myths in these cultures are due partly to indigenous creativity, among other things inspired by the natural surroundings, and partly to influences from cultures that were once foreign, but could later on become assimilated.

27 This has been forcefully argued by GRÄSLUND/PRICE, 2012.

28 See for instance LORD, 1960.

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CONCLUSION –

THE END OF THE WORLD IN FIRE

DOMINIC BÄRSCH (MAINZ/EICHSTÄTT) &
DOMINIK BERRENS (INNSBRUCK)

Concepts relating to the end of the world figure in many written sources deriving from past cultures across a wide geographical space. Among these concepts is the widespread idea that the world will perish by fire. Despite the fact that there are some culturally specific traits in the various sources, some components of the concepts seem to be similar in many of these sources. Therefore, the question arises whether these concepts have developed independently and parallel in various eras and cultures – which could hint to a possible universal concept of a global conflagration – or whether the idea as a whole or at least some conceptual components of it have been borrowed from one culture and have been – with some conceptual changes – included in another. In the latter case, one could ask if and how the sources address the act of borrowing, for example, is the process made explicit or even used as a means of granting authority to an argument, or is the borrowing concealed? These are the leading questions that this section wished to answer through four case studies, each of them dealing with texts from different periods and cultural backgrounds, namely Latin and Greek writings from Classical Antiquity, as well as Old Iranian, Old Norse, and medieval Latin texts. For all these sources, it is a much-debated question where the idea of a global conflagration stems from, i.e., whether it originated one within each specific time and culture, or whether it was taken over from another culture directly or indirectly, possibly mediated through the ancient Greek and Roman writings that influenced all the others to a certain degree.

The contributions are in a roughly chronological order. The oldest sources treated here are those of the Greco-Roman antiquity. As Dominic Bärsch states in his first contribution to this section, the idea of the world's destructibility permeates Greek and Latin literature from its very beginnings with the natural philosophers of the 6th century BCE to the Christian authors of Late Antiquity, but was often especially associated with the Stoics. Since such a wealth of texts could not be dealt with in this article,¹ Dominic Bärsch focuses on two Christian authors in particular, namely Minucius Felix and Augustine of Hippo. Christian authors faced the challenge to integrate pre-existing pagan conceptions into their Christian faith, thus combining elements of Greco-Roman philosophy with Jewish and Christian doctrines. This (legitimate) use of pagan sources for the education in and the propagation of Christian faith is often referred to as *χρησις* (“*Chrêsis*”), a term introduced by Christian Gnilka.² In order to demonstrate that the end of the world in fire is likely, Minucius Felix and Augustine resort to different strategies of using pagan authorities. While the former argues in his dialogue *Octavius* that a global conflagration has not only been described in the Bible and by Christian authors but by numerous pagan philosophers as well, Augustine focuses especially on the Old and New Testament crediting the latter with more authority in his famous work *De civitate Dei*.

In the secondary literature, it is generally held that the ancient Greeks incorporated the concept of a global conflagration when they encountered the cultures of the Middle East. This *communis opinio* is challenged by Götz König in his contribution to this section. Quite on the contrary, he argues that in the oldest Iranian sources, the Avesta (first millennium BCE), the concept of the end of the world in fire was probably not a prominent feature. This concept seems to appear primarily in two older textual corpora of Pahlavi translation and commentaries of the Avesta in the Sasanian era (third to fifth centuries CE) and in Manichean writings from the third century CE onwards. Because Aristotelian and Neo-Platonic traditions profoundly influenced these traditions, it seems possible that the concept of the end of the world in fire might have even been borrowed from Greek sources and included into the Iranian religious texts. However, this is not mentioned explicitly in the sources and there are furthermore crucial differences between the Greco-Roman and the Iranian conceptions.

1 More on this topic can be found in his forthcoming PhD thesis.

2 GNILKA, 2012.

The third paper in the section, again by Dominic Bärsch, deals with the *Chronica sive Historia de duabus civitatibus* by the twelfth-century bishop and historiographer Otto von Freising. In Book 8 of this work, the medieval scholar describes the end of the world by an all-consuming fire. To support his claim that the so-called *Day of the Lord* is imminent, he cites numerous passages from Old and New Testaments, in addition to several texts by certain non-Christian authors. He attributes different degrees of authority to his sources, with biblical scripture and Christian authors (to which he refers to as *nostri*) being of the highest value, because – according to Otto – these have gained their knowledge directly from divine revelation. Non-Christian authors and philosophers making up the second group are also cited as relevant authorities. But since their understanding stems from experiments and the observation of nature, their knowledge does not share the same epistemic value attributed to that of the *nostri*.

In the last contribution to this section, Jens Peter Schjødt analyses the different concepts of the end of the world in Old Norse literature. The so-called Ragnarøk (“twilight of the gods”) myth appears in several sources each of which name various elements connected to the end of the world. One of these elements is a destruction by fire. Due to the fact that writing was only introduced with the coming of Christianity (in different steps roughly between the tenth to twelfth century), even sources written by persons from the respective culture describing Old Norse religions feature what is most probably a series of loans and influences from Christianity and other religious traditions. However, identifying exactly which were borrowed is difficult, if not impossible to answer. The destruction of the world by fire is often regarded as an element taken over from a Near Eastern religion – a view already challenged by Götz König in his contribution – because the destruction by heat would better fit into a hotter environment than Scandinavia. However, Schjødt argues against this *communis opinio* and refers to the prevalent practice of burning down houses and halls of the enemies as an act of war. The idea of an end of the world in an all-consuming fire might be taken over from practices associated with warfare, but this does not rule out other influences at work in tandem.

As the different contributions have shown, it is in general difficult to track down a single culturally specific source from which the idea of a global conflagration has originated. Furthermore, the claim that this concept spread from one area to many others is even more difficult to maintain. However,

only in a few instances are concepts referred to as explicitly dependent on preceding authorities, as in the text by the high medieval historian Otto von Freising. More often, one can identify connecting features in the sources that could possibly suggest a potential transfer of knowledge from one civilization to another. In particular, it has often been claimed that certain ideas have migrated from the cultures of the Near East to the West, to Greece especially. Similar generalizations are often postulated for the dissemination of ancient motifs in medieval cultures of Northern Europe: In the course of Christianization, those cultures have allegedly adopted certain motifs, thereby comprehensively changing their own paradigms. At this point, it is not our intention to question whether such cultural encounters and transfers occurred, but we want to point out that these deductions need to be treated with some caution. For the ancient Mediterranean, in particular, one should not postulate a sterile transfer of fixed concepts from East to West. It seems rather more fitting to suggest a rich cross-cultural community of shared tales and knowledge with permeable boundaries, as P. Henkelmann aptly states:

Greek texts rarely are a direct reflection of Akkadian, Sumerian or Aramaic literary texts, but should rather be seen as solidified samples taken from a broad stream of tales that were subject to constant adaption, variation and contamination and that circulated within an ancient cultural continuum stretching from the Aegean to Iran and beyond.³

From such a thesis follows quite naturally the conclusion that the individual cultures are not restricted to limited areas, illustrating instead that cultural boundaries were fluid and thoroughly transparent. Consequently, it emphasizes that by no means should we expect separate compartments of fixed knowledge, but rather a constant process of exchange and adaptation. Moreover, this approach is more appropriate for the sources presented in the individual contributions to this volume. Since these accounts always present hybrid formations – to use a term coined by H. Bhabha⁴ – it is in most cases simply not possible to identify the original elements of ideas – as previous approaches of *Quellenforschung* have often tried to accomplish. As demonstrated by Götz König, such classical approaches encounter the problem that it is frequently difficult to decide which culture has influenced the other. Although hybrids present concepts that stem from different traditions, they can, according to

3 HENKELMANN, 2010, p. 323f.

4 Cf. BHABHA, 1994.

Bhabha's theory, not simply be reduced to their individual components. Instead, the principle of emergence, which is already expressed in Aristotle's *Metaphysics* (e.g. VII 17, 1041 b 11-13; VIII 6, 1045 a 8-10), seems more viable here, assuming that the whole – that is the hybrid concept – represents more than the sum of its parts.

Such a view may also correct another claim often sustained in previous scholarship on the global conflagration, namely the assumption that the very aspect of a world-destroying fire is a mere takeover of Christian motifs by previously non-Christian cultures. Jens Peter Schjødt rightly calls this view into question by indicating that flames can be understood in terms of twofold semantics as life-giving and destroying, independent of cultural influences. The experience of the destructive force of fire could therefore have established the idea of cosmic fire catastrophes all over the world.

To sum up, it has become apparent from the individual case studies that the concept of a global conflagration was only partly handed down in a clear line, with minimal adaptations, as shown by Dominic Bärsch in his second contribution on Otto's *Chronica*. However, these paths of transmission cannot always be reconstructed in such obviously linear terms, as with the examples presented by Götz König and Jens Peter Schjødt. Therefore, it can mostly not be excluded that particular features originated from universal human experiences (in this case, negative and positive aspects of fire) and, thus, shaped conceptions of an end of the world by fire.

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ABOUT THE AUTHORS

Jochen Althoff (Prof. Dr.) is a professor of ancient Greek at the University of Mainz. He has published on ancient science and philosophy, especially Aristotle, and organizes the yearly meeting of the research unit Ancient Science and its Reception (“AKAN”) and co-edits a publication series of the same name. Since 2013, he has been vice-speaker of the Research Training Group *Early Concepts of Humans and Nature. Universal, Specific, Interchanged*.

Victoria Altmann-Wendling (Dr.) studied Egyptology, Prehistory and Paleo-Anthropology at the University of Tübingen. From 2011 to 2016, she worked as a scientific assistant in the DFG-project *Re-edition of the Opening of the Mouth Ritual* at the University of Heidelberg. From 2014, she was associated member of the Research Training Group *Early Concepts of Humans and Nature. Universal, Specific, Interchanged* at the University of Mainz, until she received her doctorate in 2017 with a dissertation on the Moon in the temple texts of Graeco-Roman Egypt from the University of Tübingen. Since then, she holds a postdoctoral position in the ERC-Starting-Grant project *Food-Transforms* at the University of Munich. She has published on Egyptian rituals, astronomy, palaeography and funerary culture.

Alberto Bardi (Dr.) is currently a Fellow in Byzantine Studies at Dumbarton Oaks (Harvard University) in Washington, D.C. He holds a PhD in Byzantine Studies from Ludwig-Maximilians-University Munich (2017). He has been visiting scholar at Max-Planck-Institute for the History of Science in Berlin, at the Department of History of Science at University of Oklahoma (Mellon Fellowship Award) and at German Center of Venetian Studies in Venice. His

areas of inquiry are Greek and Latin Philology, Medieval Studies, and History of Science, especially the History of Astronomy in the Middle Ages and in the Renaissance.

Dominic Bärsch (M.Ed.) studied classical philology and theology at the University of Mainz. From 2014 to 2017, he was a research associate at the Research Training Group *Early Concepts of Humans and Nature. Universal, Specific, Interchanged* at the University of Mainz, working on his doctoral thesis about ancient concepts of the end of the world. Since 2018, he works as a research associate in a project on the rhetoric of ancient prayer at the University of Eichstätt. His research interests lie in ancient cosmology and cosmogony and the transformation of thought in “Late Antiquity”.

Susanne Beck (Dr.) studied Egyptology, Arabic, and Middle Eastern cultures at the University of Leipzig, Germany. She received her PhD in Egyptology at the Ludwig-Maximilians-University in Munich, Germany in 2015. Dr. Beck held the position of the assistant professor at the LMU in Munich (summer semester 2015). In 2015, she became the curator of the Egyptian Collection of the University of Tübingen, Germany. Her research interest is focused on magical-medical and religious texts as well as the transfer of knowledge from the ancient Near East to Egypt.

Dominik Berrens (Dr.) studied classical philology and biology at the University of Freiburg. From 2013 to 2017, he was part of the Research Training Group *Early Concepts of Humans and Nature. Universal, Specific, Interchanged* at the University of Mainz, where he received his doctorate with a dissertation on social insects in antiquity in 2016. Since 2017, he has been a postdoctoral researcher in the project *NOSCEMUS – Nova Scientia: Early Modern Scientific Literature and Latin* funded by the European Research Council at the University of Innsbruck. His research interests lie in pre-modern scientific texts and ancient drama.

Tim Brandes (M.A.) studied Ancient Near Eastern Studies and Egyptology at the University of Göttingen. Since 2014, he is part of the Research Training Group *Early Concepts of Humans and Nature. Universal, Specific, Interchanged* at the University of Mainz, where he writes his dissertation on

Babylonian-Assyrian concepts of time. His research interests include Babylonian-Assyrian astronomy, scholarship, and religion.

Jeffrey L. Cooley (Dr.) completed his doctoral work at the Pines School of Graduate Studies of the Hebrew Union College – Jewish Institute of Religion in 2006 and from 2003 to 2009 taught in the Classics Department at Xavier University (Cincinnati). In 2009, he joined the Theology Department of Boston College where he is currently Associate Professor of Hebrew Bible. His first monograph, *Poetic Astronomy in the Ancient Near East* (Eisenbrauns 2013), focused on the intersection of celestial science and narrative in the literatures of ancient Mesopotamia, Ugarit, and Judah. His current work centers on the intellectual history of the ancient Near East, and he is preparing his second monograph, *Names and Knowledge in Ancient Near Eastern Narrative: A Study in Etymology and Epistemology*, for Cambridge University Press.

Roy Ellen (Prof.) is Emeritus Professor of Anthropology and Human Ecology at the University of Kent, Canterbury. His main areas of current interest are ethnobiological knowledge systems, cultural cognition, social system resilience, and inter-island trade. He has conducted field research in archipelagic southeast Asia over a period of 50 years. His most recent book is *Kinship, population and social reproduction in the 'New Indonesia'* (2018). He was elected to a fellowship of the British Academy in 2003, and was President of the Royal Anthropological Institute between 2007 and 2011.

Götz König (Dr.) has studied Iranian Studies, philosophy, and German literature. He is Wissenschaftlicher Mitarbeiter at the Institute for Iranian Studies, Freie Universität Berlin. His work is mainly based in the field of Zoroastrian Studies and comprehends philological studies as well as research in the field of religion, literature and intellectual and cultural history. His current work is focused on the Xorde Avesta (its texts, translation, genesis and history), a history of rationality in Old Iran and a description of the Pahlavi literature as a reformulation of the Zoroastrian tradition under the influence of Greek philosophy.

Lennart Lehmhaus (PhD) studied Jewish Studies, German Language and Literature, and Political Sciences in Duisburg, Jerusalem, and Düsseldorf. At

Martin-Luther-University Halle-Wittenberg he completed his doctoral dissertation on discursive features and cultural contexts of the ethical work *Seder Eliyahu Zuta*. Since 2013, he has been working as a postdoctoral researcher on Talmudic medical knowledge with a comparative eye on other (Graeco-Roman/Ancient Near Eastern) medical episteme in Late Antiquity. This project has been pursued within the Collaborative Research Center SFB 980 “Episteme in Motion”, Freie Universität Berlin, and as a fellow at Harvard University and the University of Pennsylvania. His research interests comprise ancient Jewish cultures and literatures; premodern knowledge and sciences; trajectories of Jewish traditions into contemporary Jewish and Israeli culture.

Tanja Pommerening (Prof. Dr.) holds degrees in Egyptology, pharmacy and history of sciences. She has been a professor of Egyptology at the University of Mainz since 2010. Since 2013, she has been spokeswoman of the Research Training Group *Early Concepts of Humans and Nature. Universal, Specific, Interchanged*. In addition to the overarching questions of universals, cultural specificities and knowledge transfer, her research focuses on the language and culture of Ancient Egypt, ancient Egyptian medicine and science, and the history of knowledge.

Jens Peter Schjødt (Prof. Dr.) is a professor of the Study of Religion at the University of Aarhus, Denmark. He has published on pre-Christian Scandinavian religion, methodology in comparative religion, and various general religious phenomena, such as initiation and sacrifice. He has organized several conferences and networks, mainly within the field of pre-Christian Scandinavian religion.

Liba Taub (Prof. Dr.) is Professor of the History and Philosophy of Science at the University of Cambridge, where she is Director and Curator of the Whipple Museum of the History of Science and currently Head of Department; she is also a Professorial Fellow of Newnham College. Having published extensively on ancient Greek and Roman science as well as the material culture of science, her most recent monograph is *Science Writing in Greco-Roman Antiquity* (Cambridge University Press, 2017).

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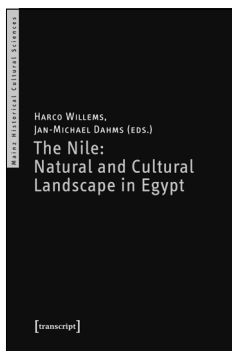
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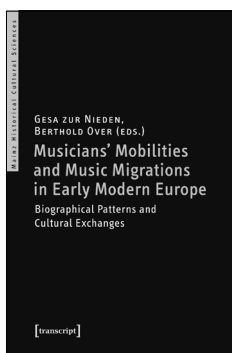
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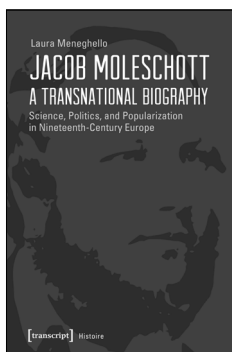
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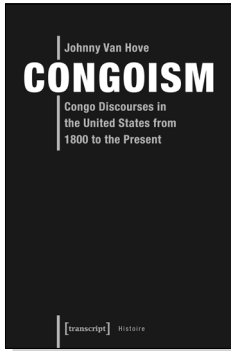


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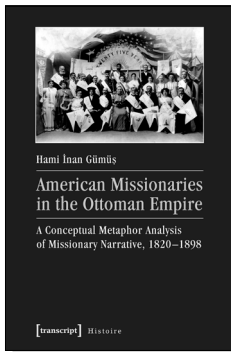
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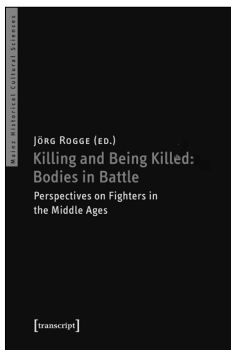
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