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# Scholars, Priests, and Temples: Babylonian and Egyptian Science in Context.

## Introduction

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**Abstract:** This article introduces a double issue comprising 11 papers about Babylonian and Egyptian priests and scholarship between ca. 600 BCE and 200 CE. They constitute the proceedings of the workshop “Scholars, Priests, and Temples: Babylonian and Egyptian Science in Context”, which was held at the Humboldt University Berlin, 12–14 May 2016, with support of the Excellence Cluster TOPOI. The workshop brought together Assyriologists and Egyptologists with expertise in Babylonian and Egyptian scholarship, priesthoods and temple institutions. All contributions have been revised and updated since then. The present contribution offers a brief introduction on previous research, cross-cultural interactions, economic aspects, royal patronage, and internal developments of Babylonian and Egyptian temple scholarship, followed by short summaries of the papers.

**Keywords:** Babylonian and Egyptian scholarship, history of ancient science, Babylonian and Egyptian priesthood, ancient scholars, Babylonian and Egyptian temples

## 1 Temples, Priests, Scholars, and the Historiography of Science

Between ca. 600 BCE and 200 CE, scholarship flourished in the temples of Babylonia and Egypt. Temples provided patronage of priests and scholars and an infrastructure for their activities. Cultic and scholarly duties were performed in the temples, and meetings were held to discuss matters of cult, scholarship and administration. Scholarly knowledge was stored in temple libraries to be consulted, interpreted and used by future scholars. Entirely new scholarly practices also emerged in a temple setting. This could involve the collaboration of numerous scholars over long periods of time, as evidenced by the astronomical diaries from

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Babylon's main temple Esangila (ca. 600–50 BCE). Temples were themselves embodiments and products of scholarly knowledge. The monumental display of scholarship is most impressively realized on the walls and ceilings of Egyptian temples from the Ptolemaic and Roman periods.<sup>1</sup> No comparable decorations and inscriptions are known to have adorned Babylonian temples, although their bad state of preservation prevents a final judgement on this matter. Nevertheless, Babylonian temple complexes with their ziqqurats were no less dramatic manifestations of priestly scholarship<sup>2</sup> and theaters for scholarly activities.

In spite of the parallel and partially overlapping histories of Babylonian and Egyptian temple scholarship, they are not often approached from a cross-cultural perspective. In part this reflects existing disciplinary boundaries, in part a hesitation resulting from earlier cross-cultural investigations that have proven to be deficient. In a bygone era, ancient scholarship was viewed through the lens of modern science. Genealogies of science were created, in which Babylonia and Egypt were assigned to a pre-scientific, religious stage of development.<sup>3</sup> This typically involved the following claims. As temple priests under the patronage of despotic rulers, Babylonian and Egyptian scholars were restricted by religious and royal doctrines and committed to practical objectives raised by religion, royal ideology and administration. Their accurate observations, predictions and computations resulted in casuistic, example-based or numerical forms of knowledge, but no rigorous, general knowledge. Their modes of explanation were deficient, being based on divine agency. In many accounts, these deficiencies are said to have been overcome only when Greek natural philosophers freed themselves from the shackles of religion during the so-called Greek Miracle (fifth century BCE).<sup>4</sup> Until the 1950s, many historians of science, historians of philosophy, and Orientalists subscribed to elements of this narrative, which continues to leave its

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1 For overviews of late-period Egyptian temples and their decorative programs see Arnold (1999) and Minas-Nerpel (2012). For recent investigations of expressions of scholarly knowledge in late-period Egyptian temple inscriptions and decorations see, for instance Leitz (2010), on the crocodile god Sobek at Kom Ombo, various contributions in Rickert and Ventker (2014) including Leitz (2014a) on aromatic substances, Leitz (2014b) and Rickert (2019) on cultic and calendrical knowledge, and Altman-Wendling (2018) on the course of the moon.

2 During the first millennium BCE, Babylonian cultic topography and temple measures were the subject of ritual and speculative scholarly literature (George 1992).

3 A classical example is Frankfort, Henri, Groenewegen-Frankfort, Henriette A., Wilson, John A., and Jacobsen, Thorkild (eds.). 1949. *Before Philosophy. The Intellectual Adventure of Ancient Man: An Essay on Speculative Thought in the Ancient Near East*. Baltimore: Penguin. For a detailed critique see Rochberg (2004), 1–43; Rochberg (2016), 1–60.

4 For the Greek Miracle in historiography, with illuminating quotations by historians, philosophers and scientists, see Heit (2007), 7–89.

marks, even though the underlying assumptions have been debunked on multiple fronts.<sup>5</sup> Instead of using the lens of modern science, modern historiography aims for a contextualized understanding of ancient knowledge systems and scholarly practices. The central question is how ancient actors conceptualized, produced, transformed, transferred and used knowledge in communities, networks and institutions. It is recognized that scribes, scholars and priests, whether active in administration, divination, healing, historiography, or theology, employ a common core of skills and epistemic techniques.<sup>6</sup> In different areas of scholarship, similar theoretical models were used to interpret, predict or explain the phenomena.<sup>7</sup> Babylonian and Egyptian temples have returned to center stage as loci of knowledge production and cross-cultural investigations of Babylonian and Egyptian scholarship during the first millennium BCE have resumed in a new spirit.<sup>8</sup>

## 2 Babylonian and Egyptian Temples as Loci of Scholarship in a Changing World

### 2.1 Cross-Cultural Interactions

After 600 BCE, Babylonia and Egypt experienced partly converging political, cultural and socio-economic changes with repercussions for the temples, the priesthood and scholarship. During the first half of the sixth century BCE, both regions prospered during their final episodes of native rule. The Persian conquest (Babylonia: 539 BCE, Egypt: 526 BCE<sup>9</sup>) marked the beginning of an age of

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5 In addition to footnote 3 see Rochberg (1992), Pingree (1992), and von Staden (1992) in the special issue *Isis* 83.4 (1992), “The Cultures of Ancient Science”, van de Mieroop (1997), and Gabriel (2018), and van de Mieroop (2018) in the special issue *JANEH* 5.1–2 (2018), “Approaching a Critique of Mesopotamian Reason”. For a critique of the historiography of Egyptian astral science see Bernal (1992), Quack (2016), and von Lieven (2000; this issue).

6 See Cancik-Kirschbaum (2010, 2012).

7 See Rochberg (2016), Ch. 5: “The Babylonians and the Rational”; Rochberg (2018).

8 Recent cross-cultural studies of Babylonian and Egyptian scholarship include Friberg (2005) for mathematics, Imhausen and Pommerening (2010, 2016) for various aspects of scholarship, Brown (2016) for the astral sciences, Cancik-Kirschbaum and Kahl (2018) for philological scholarship, Ryholt and Barjamovic (2020) for libraries, and Steinert (2020) for healing practices.

9 For the date of Cambyses’s conquest of Egypt see Quack (2011).

multicultural empires. Cross-cultural interactions intensified in the Persian and Greco-Macedonian empires as a result of migrations, the increasing use of common languages and scribal practices,<sup>10</sup> and administrative and military measures of the central authorities. The results can be observed in legal practices (Muhs: this issue), calendars (e.g. Stern 2012), astral science,<sup>11</sup> healing practices (e.g. Geller 2014), divination (e.g. Furley and Gysembergh 2015; Clancier & Agut-Labordère: this issue), and many other areas. Compared to Babylonia, Greek presence had a larger foothold in Egypt, where Alexandria became an eminent center of Hellenistic scholarship and royal patronage.<sup>12</sup> Moreover, Babylonia suffered from prolonged instability as Seleucid rule gave way to Parthian rule. These factors may explain why Babylonian cuneiform scholarship was less affected by cross-cultural interactions than native Egyptian scholarship. Notable exceptions are the *Babyloniaca*, which the priest Berossus (third century BCE) wrote for a Greek audience, and the *Graeco-Babyloniaca*, a small corpus of school tablets from Parthian Babylon with cuneiform text and its Greek phonetic rendering on opposite sides of the tablet.<sup>13</sup> Babylonian and Egyptian temples became important foci of cultural identity and local governance for native communities,<sup>14</sup> but priests and scholars were operating in shrinking spheres of native literacy. By the first century CE, the Babylonian temples and their scholarly communities are dwindling. The Egyptian temples continue well into the second century CE and dwindle thereafter as what remains of the indigenous organized religion disappears (Smith 2017). Nevertheless, the impression of a terminating culture raised by the end of native literacy is misleading.<sup>15</sup> Native knowledge was passed on in other languages, scripts and media, including perishable ones that may remain unnoticed.

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**10** On multilingualism in Babylonia during the first millennium BCE see Beaulieu (2008), Hackl (2018b), and Stevens (2019). For Egypt see Depauw (2012) and von Lieven (2018).

**11** For an overview cf. Brown (2018). For examples of Babylonian methods in Egyptian sources see Jones (1999) and Ossendrijver and Winkler (2018); see also Quack (2019).

**12** On Alexandria as a center of scholarship see MacLeod (2010); for patronage of scholars under Ptolemaic rule see Berrey (2017).

**13** For the *Graeco-Babyloniaca* see Geller (1997) and Westenholz (2007). For an overview of Greek inscriptions from Babylonia see Oelsner (2014). For evidence of Greco-Babylonian interactions in scholarship and literature see Haubold (2013) and Stevens (2019).

**14** On these topics see, for instance, Frankfurter (1998), Gasse (2001), Dieleman (2005), and Smith (2017) for Egypt; Jursa (2011), de Breucker (2015), Robson (2019), and Stevens (2019) for Babylonia.

**15** On this topic see Dirven (2014); Robson (2019), 244 for Babylonia; Stadler (2008), and Smith (2017) for Egypt.

## 2.2 Economic Aspects of the Temple as an Institution of Scholarship

Research conducted since the 1990s has resulted in a new perspective on first millennium Babylonian temples as economic institutions (Jursa 2011). Compared to previous interpretations, a more significant level of exchange with the surrounding economy is acknowledged. Temple priests were economic actors with sources of income both inside and outside the temple. Priests were usually paid in goods that had to be exchanged on the market. A part of their livelihood derived from ownership of houses, land and slaves, loans, etc. Priests also offered services to private individuals in the form of rituals, divinatory consultations, horoscopes, and the production of funerary artefacts. However, Jursa warns against reducing the Babylonian temple to an economic estate primarily driven by the material needs of priests behind a facade of cultic duties. The economy of the temples was tailored to their overarching religious and political purpose.

Babylonian temple offices were organized through a prebendal system (Waerzeggers 2010: 34–38). Prebends were allotted by the king and inherited to male descendants from a small number of elite families, resulting in a stable priesthood (Waerzeggers 2011: 742–43). Inheritance of prebends could involve their partition among brothers. Prebends could be sold, exchanged and leased in accordance with property law (Frame and Waerzeggers 2011). In Seleucid Uruk even scholarly offices requiring high levels of intellectual competence, such as diviner (*āšipu*) and cultic singer (*kalû*), were traded among the local priesthood.<sup>16</sup> However, the office of temple astronomer (*tupšar Enūma Anu Ellil*, lit. “scribe of Enūma Anu Enlil”) appears to be an exception and its place in the prebendal system is not fully clear. In Babylon’s Esangila and in Borsippa the prebendal system was abolished after the revolts against Xerxes in 484 BCE (Hackl 2018a). Subsequently the priests reorganized themselves in “guild houses” headed by an assembly. Prebendal income was replaced by fixed monthly rations delivered through a temple official. Records from the temple document their delivery to diviners, cultic singers, astronomers, scribes and other temple staff (Beaulieu 2006). Parthian-era (ca. 150–50 BCE) tablets recording the decisions of the Esangila council on the granting of temple positions, silver and arable land to astronomers indicate that a similar system was still in existence by then.<sup>17</sup>

Comparable Egyptian evidence about the employment of temple priests from the Persian era onward is available in Demotic and Greek documents from localities including Elephantine (Porten 1996), Tebtynis (Winkler 2016a; this issue), and

<sup>16</sup> See Corò (2005); Robson (2019): 233–34.

<sup>17</sup> For these documents see van der Spek (1985); Rochberg (2004), 234–35; Ossendrijver (2020a).

Soknopaiou Nesos. Priestly titles and royal temple edicts provide additional insights about priests and their relations with royal authorities (Quack: this issue). Priestly authority over economic matters resided with the *lesonis* priest (Demotic: *mr-šn*), who was selected by state authorities from candidates proposed by the priesthood.<sup>18</sup> Priestly income was guaranteed by a state tax called *syntaxis* (Kessler 1986: 371). Egyptian temples also enjoyed income from agricultural estates. In the Late period they had grown considerably due to private land donations (Gasse 2001: 435), resulting in an expanding priesthood and greater autonomy from central authorities. Temple offices were administered in a prebendal system (Helck 1986: 419) similar to the Babylonian one. Under Augustus (30 BCE–14 CE) the temple estates were partly dissolved.<sup>19</sup> From then on, the temples depended more strongly on income from state tax.

### 2.3 Royal Patronage of Temples and Scholars

Royal patronage of scholars similar to practices at the Neo Assyrian court at Nineveh (ca. 710–650 BCE)<sup>20</sup> probably existed in Babylonia until the Persian conquest, even though no textual evidence is available. After the Persian conquest, Babylonian and Egyptian priests and scholars could only sporadically serve their kings with advice or rituals, but they continued to enjoy royal support through patronage of the temples (Kessler 1986: 371; Waerzeggers 2011: 746). This was in the interest of the foreign kings, because Babylonian and Egyptian kingship derived its legitimacy from the gods, which had to be negotiated through the priesthood. Nevertheless, some rulers appear to have been negligent in this regard. Under Achaemenid rule, there is little or no evidence for patronage of the Babylonian temples (Beaulieu 1989), and only limited evidence for patronage of the Egyptian temples.<sup>21</sup> Ultimate power over the temples resided with the king, but his cultic role was not the same in Babylonia and Egypt. The Babylonian king was conceived as a worshipper, a temple builder and a patron, but not as a priest. He

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**18** See Porten (1996), 15; Haring (2001); Lippert and Schentuleit (2006); Lippert (2007); Winkler (2016b).

**19** Documentary evidence from the Fayum region (Connor 2014; Winkler 2015: 253–57; Monson 2012: 121–41) has nuanced previous assessments that the temple estates were completely dissolved under Roman rule.

**20** For the correspondence of the Neo Assyrian court scholars which was excavated in the palace at Nineveh see Starr (1990), Hunger (1992), Parpola (1993), and Robson (2019), 98–148.

**21** The Egyptian evidence mainly concerns building activities of Darius I (521–487 BCE) at the temples of Hibis and Amheida; see Arnold (1999), 91–92, 137–38; Vittmann (2011), and Kaper (2015), 144–45, and references therein.

was a prominent participant in certain cultic activities, but only initiated priests could interact with the divine image (Waerzeggers 2011). The Egyptian pharaoh was not only patron but highest priest responsible for communicating between the gods and humankind, which remained nominally true under Ptolemaic and Roman rule (Gundlach 2001: 379).

Occasionally conflicts arose between foreign ruler and native elites. Since the temples were instrumental in procuring the legitimacy of kingship, this could have serious repercussions for the priesthood. In Egypt five insurrections took place after 526 BCE, the fourth of which led to independence in 404–343 BCE (Kaper 2015; Vittmann 2011). In 522 BCE, Egyptians and Babylonians revolted against their Persian overlords (Wijnsma 2018). A second Egyptian revolt occurred during the reigns of Darius I and Xerxes 487–484 BCE (Wijnsma 2019), while Xerxes also faced Babylonian revolts in 484 BCE. The subsequent reprisals by Xerxes had far-reaching consequences for the Babylonian priesthood. In Babylon and other northern Babylonian cities priestly elites were removed, as indicated by the sudden end of archives and temple administrations (Waerzeggers 2003/4; 2015a).<sup>22</sup> The prebendary system was abolished in Esangila and, in all likelihood, in other northern Babylonian temples (Hackl 2018a: 184–85), although scholarly activities soon resumed (Ossendrijver 2018). In southern Babylonian cities such as Uruk, elites with northern connections were removed (Kessler 2004), paving the way for priesthoods to develop their local cults. The temple of Anu in Uruk became a major center of scholarship, second only to Babylon.<sup>23</sup> Rather than their Seleucid overlords, Uruk's local rulers presented themselves as patrons of this cult. Moreover, they were actively engaged in its scholarly activities (Ossendrijver 2020b).

### 3 Some Developments in Babylonian and Egyptian Scholarship

How did Babylonian and Egyptian scholarship develop during the first millennium BCE? Can we make sense of these developments by relating them to the changing conditions for temple scholars? Babylonians and Egyptians remained rooted in their ancient traditions, but the histories of Babylonian and Egyptian scholarship during the first millennium BCE are not accurately captured by the term “stream of tradition”, which was introduced in the 1960s by Assyriologist Leo Oppenheim

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<sup>22</sup> See also Robson (2019), 221–52.

<sup>23</sup> For an overview of the scholarly corpora from Esangila and Anu temple see Clancier (2009). On the resurgence of Uruk as a center of scholarship in the Achaemenid era see Frahm (2002).

(Robson 2019: 10–48). Existing knowledge handed down in libraries was not only copied, but reconfigured and adapted to be used in new ways. Ancient texts spurred innovation through commentaries, elaboration and integration with new systems of knowledge (Steele: this issue). Scholarly knowledge and practices increasingly circulated across cultural boundaries and were integrated with native practices, often erasing the distinctions between “native” and “foreign” knowledge. Moreover, entirely new practices involving the observation, prediction and interpretation of phenomena were initiated by Babylonian and Egyptian temple scholars. Prime examples are the Babylonian astronomical diaries and related texts, which approach celestial phenomena, weather phenomena, market phenomena and historical events in a single framework (Ossendrijver: this issue). Another example is zodiacal astrology, which was developed in Babylonia and Egypt between ca. 400 BCE and 100 BCE (Quack: this issue; von Lieven: this issue; Winkler: this issue).

Some Babylonian scholars channeled their response to foreign domination and an increasingly multicultural environment through historiographical writings, giving rise to a new genre of “priestly literature” (Jursa and Debourse 2017). In chronicles, historical-literary epics and fictitious letters mostly originating from the Esangila temple, kings who liberated Babylonia from foreign yoke are a recurrent topic (de Breucker 2015). The new compositions are conspicuously silent on the Persian kings (Waerzeggers 2015a: 204–205). Another development that can be traced in historiographical texts is the growing importance of local cults and systems of governance. In several compositions from Babylon the successes and the failures of kings are interpreted through the lens of a “Marduk ideology” (de Breucker 2015: 83–86). In the same spirit, scholars in Seleucid Uruk composed a fictitious chronicle in which king Shulgi (21st century BCE) was punished for offending Anu.<sup>24</sup> In a related development, compositions about legendary antediluvian and historical sages were created to establish genealogies of local priesthoods and systems of knowledge.<sup>25</sup> None of the abovementioned compositions may have left the priestly spheres of cuneiform literacy (Jursa and Debourse 2017: 84–87), but Berossus, a Babylonian priest versed in two historiographic traditions, addressed his *Babyloniaca* to a Greek audience (Beaulieu: this issue; de Breucker 2011). Berossus lets Babylonian history begin with Nabonassar (747 BCE), whose reign is the starting point for the *Babylonian Chronicle* (Waerzeggers: this issue). According to the *Almagest*, Claudius Ptolemy’s influential treatise on mathematical astronomy from the second century CE, systematic Babylonian

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<sup>24</sup> For an edition see Glassner (2004), No. 48; see also Beaulieu (1993).

<sup>25</sup> See most recently Helle (2018) and Robson (2019), 185–87. On antiquarianism as an aspect of Babylonian scholarly engagement with the past see Beaulieu (2013).



observations of lunar eclipses also began under his reign. Modern scholarship views these attributions not as historical facts but as Hellenistic reflections on Nabonassar as an innovator of historiographical and astronomical scholarship (Waerzeggers 2012: 298; this issue).<sup>26</sup>

Analogous developments can be observed in the Egyptian historiographical sources (Moyer 2011: 84–140). The project of Berossus is paralleled by that of the Egyptian priest Manetho (third century BCE), who composed the *Aegyptiaca* in Greek on the basis of Egyptian temple archives.<sup>27</sup> The ancient genre of king lists was further revived during the reign of Ptolemy IV (221–204 BCE), when lists of royal ancestors began to appear in hieroglyphic inscriptions on temple walls (Minas 2000). The *Demotic Chronicle* (third century BCE) contains a series of *ex eventu* prophetic statements about the fate of Egyptian kings from Amyrtaios (404 BCE) to Nectanebo I and Tachos (365–362 BCE). Kings who observed the “law” were able to complete their reign and succeeded by their sons, while the reign of kings who violated the law was terminated. Subsequent prophecies point to troubles under the second Persian domination and to the alleviation of suffering under the Greeks (Moyer 2011: 128–34).

The partial convergence of Babylonian and Egyptian scholarship that these examples speak to can be attributed on the one hand to the increasingly similar socio-economic, political and linguistic conditions for Babylonian and Egyptian temple scholars, on the other hand to the increasing cross-cultural transfer of scholarly, administrative, social and religious practices. The emergence of the multicultural Persian and Greco-Macedonian empires can be identified as an important trigger of these developments.

## 4 Overview of the Contributions

The contributions consist of two parts, each focussing on a different set of aspects of temple scholarship. Part I comprises four contributions about priests, scholars, their communities, and hierarchies. Part II comprises seven contributions about internal developments in Babylonian and Egyptian scholarship.

### 4.1 Part I. Priests, Scholars, and Their Communities

The increasing mobility of professionals, whether voluntary or through deportation, contributed significantly to the transmission of scholarly knowledge across

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<sup>26</sup> For a refutation of the often-made claim that the Babylonian astronomical diaries began under Nabonassar see Steele (2019).

<sup>27</sup> Gundacker (2018); Moyer (2011), 84–141; Verbrugghe and Wickersham (1996).

the empires of the first millennium BCE. Philippe Clancier and Damien Agut-Labordère (“Charming Snakes (and Kings) from Egypt to Persia”) explore the dissemination of snake divination in the wake of the Assyrian invasions of Egypt (672–664 BCE), which resulted in the deportation of Egyptian snake charmers and diviners to Assyria. In Mesopotamia, snake divination belonged to the responsibilities of the diviner (*āšipu*), but in Egypt it constituted a distinct profession (*ḥrp Srqt*) with an important role at the court. In the wake of their rise to fame at the Assyrian court, snake charmers also asserted their political influence in Egypt under Persian rule.

The *Sîn-lēqe-unninī* clan features prominently in Uruk’s economy, cult and scholarship from the Neo Babylonian period until the Late Seleucid period (ca. 600–150 BCE). Johannes Hackl and Joachim Oelsner (“The Descendants of the *Sîn-lēqe-unninī* during the Late Achaemenid and Early Hellenistic Periods – a Family of Priests, Scribes and Scholars and Their Archival and Learned Texts”) survey the family relations and activities of this clan during the Late Achaemenid and Early Seleucid periods (ca. 400–300 BCE), which have not received much attention. Tablets written by *Sîn-lēqe-unninī* scribes, or documenting their transactions, reveal a similar scope of scribal, economic, priestly, and scholarly activities as in later periods. However, *Sîn-lēqe-unninī* scribes are underrepresented in the economic transactions compared to other elite families. The authors propose that this is because the Late Achaemenid and Early Seleucid documents mentioning *Sîn-lēqe-unninī* members originate from the archives of other families, while their own archives have not been found due to accidents of preservation.

The contributions by Joachim Quack and Andreas Winkler investigate Egyptian priestly and scholarly offices, which multiplied during the Late period. Quack (“Priestly Scholars in Late Egypt: the Theoretical Side”) discusses Egyptian non-documentary texts that present priestly and scholarly functions, classifications and hierarchies from different angles of view. An early Christian view is offered by the *Stromateis* of the church father Clement of Alexandria (ca. 150–215 CE). He distinguishes singers, astronomers (ὠροσκόπος), “scribes of the divine book”, stolist and prophets, and mentions for each priestly office a number of books, e.g. four “books of Hermes” for the astronomer. An inner Egyptian view is offered by the pre-Roman “Book of the Temple” and “Ritual for Entering the Chamber of Darkness”. The former describes the priestly hierarchy of an ideal temple and the duties of each priest, ranging from intellectual offices such as the “scribe of the divine book”, the “priest of Sakhmet”, the “scorpion charmer” and the schoolmaster, to menial ones. Courtly etiquette is presented as an aspect of the scholarly curriculum. The more difficult composition “Ritual for Entering the Chamber of Darkness” is an initiatory dialogue for scholars, which presents the ideal scholar as someone whose knowledge can be traced back to primeval times.

Andreas Winkler (“Stellar Scientists: The Egyptian Temple Astrologers”) discusses the evidence for astrologers in Egyptian temples during the Graeco-Roman period, with a focus on the questions of who could act as an astrologer, what knowledge was required to become one, and what was their position in the temple hierarchy. The astrologer-astronomer (*imy-wnw.t*, lit. “Who is in the Hour”) was responsible for establishing the divisions of time and the appropriate time for cultic rituals. His duties were more observational than computational and they may not always have included the production of horoscopes. But the *Stromata* of Clement of Alexandria informs us that some had advanced knowledge of the planets, as indicated by the titles of their “books of Hermes”. Moreover, some astrologers were “polymaths” versed in different areas of knowledge. The office of temple astronomer circulated between different priests, as indicated by Ptolemaic-era documents from Tebtynis. There is also explicit evidence from Roman-era Tebtynis that this office could be purchased. As the zodiac was incorporated in Egyptian astral science during the last centuries BCE, horoscopy emerged as a new form of personal divination. However, the monumental temple zodiacs served a different, more theological purpose by depicting the moment of creation (*thema mundi*). Tombs and coffins were likewise adorned with zodiacs, but instead of revealing the fate of the occupant, they assisted rebirth by recreating the moment of original birth. These theological innovations were part of the knowledge that came with becoming a temple priest.

## 4.2 Part II. Developments in Scholarship

Paul-Alain Beaulieu (“Berossus and the Creation Story”) investigates the creation accounts in Book 1 of the *Babyloniaca*. Beaulieu argues that Berossus reworked elements from a version of the Babylonian creation epic *Enūma eliš* (“When Above”) and Greek traditions to create a narrative for a Greek audience that presents the Babylonian priesthood as the sole legitimate interpreters of knowledge. In this account, culture was created before the flood by the composite being Oannes, half fish and half human, and then transmitted to humankind through a succession of antediluvian sages (*apkallu*) and postdiluvian scholars (*ummānu*). Beaulieu tentatively interprets the elimination of female agency in the creation of humans as a deliberate modification by Berossus for which there are both Babylonian and Greek antecedents. The priestly setting of the *Babyloniaca* testifies to the role of the Babylonian temple in the transmission, elaboration and exchange of knowledge during the fourth century BCE.

Markham Geller (“Canonized Knowledge in Late Antiquity between Jewish and Babylonian Scholars”) discusses the relationship between curriculum and

scholarship in Babylonia and in the Babylonian Talmud through their patterns of canonicity. The hermeneutical practices underlying Mishnah, Tosephta and Gemara drew from Babylonian practices that produced compendia known as *ahû* (lit. “extraneous”) and *nishû* (lit. “excerpt”). Geller proposes that this knowledge was transmitted among a small elite group of scholars who upheld cuneiform literacy throughout the first three centuries CE.

Alexandra von Lieven (“The Religious Sciences in Ancient Egypt”) argues that the activities of Egyptian temple scholars and the knowledge which they produced are best captured by the concept of “religious science”, because their efforts to observe, compute and understand the phenomena were intertwined with religious and magical practices. The Egyptian conception of the cosmos was conducive to the development of religious science, because it entailed the notion that deities are connected to the cosmos, so that knowledge of the phenomena was of prime importance for priests. An informative example of Egyptian religious astronomy is the cosmographic composition “Fundamentals of the Course of the Stars”, which deals with the daily course of the sun god Re, the cycle of the decans and the phases of the moon (von Lieven 2007). It is attested in monumental versions dating between the 13th century BCE and the sixth century, and on six Roman-era papyri from the temple library of Tebtynis. On two of these papyri, sections of the original text quoted in hieratic are accompanied by a Demotic rendering and a commentary. Such compositions were available in libraries across Egypt. Von Lieven argues that scholars in the more prominent temples of Memphis, Heliopolis, Hermopolis and Thebes also produced observational records, even though they have not been found yet.

Brian Muhs (“Egyptian Scholars, Priests and Temples between Autonomy and State Authority”) explores how Egyptian legal and administrative practices developed in response to the changing relation between state and temple. During intermediate periods, when central authority was weak, legal and administrative practices were continued by the temples. In the Saite and Persian periods (664–332 BCE), resurgent central authorities re-established control over taxation and legal practices. In some cases, legal practice was unified in new codices, with the responsibility of the temples reduced to private property disputes. In contrast to common opinion, the temples played a role in codifying new laws, because the latter refer to documents that were drawn up by temple scribes. With regard to property titles, written evidence was increasingly privileged over verbal testimony. This gave rise to the practice of antiquarian scholarship, whereby priests attempted to document past transactions and ownership. In the Ptolemaic Period (332–30 BCE), royal authorities continued to regulate temple courts and temple notaries.

Mathieu Ossendrijver (“Weather Prediction in Babylonia”) investigates Late Babylonian tablets with innovative rules for predicting weather phenomena. In several compositions, weather is predicted by combining long-term astronomical prediction with short-term inferential methods. The authors probably belong to the same priestly circles that produced the astronomical diaries. In the absence of any textual evidence that the new methods were used for predicting weather phenomena for future dates, it is proposed these developments in weather prediction are part of a larger trend to explain non-astronomical phenomena by relating them to predictable astronomical phenomena.

John Steele (“The Continued Relevance of MUL.APIN in Late Babylonian Astronomy”) presents textual evidence that the astral composition MUL.APIN (“Plow Star”), which dates before the seventh century BCE, continued to be used in a variety of ways during the last centuries BCE by scholars from Babylon, Borsippa and Uruk. They not only copied its tablets, but also created new compositions in which schemes from MUL.APIN concerning the rising and setting of stars, the visibility of the moon, the path of the sun, and shadow lengths are adapted, elaborated or integrated with astronomical and astrological concepts of a more recent date.

Caroline Waerzeggers (“Writing History under Empire: the Babylonian Chronicle Reconsidered”) reinterprets the *Babylonian Chronicle* as a form of literary historiography produced by priestly elites from Babylon under Persian rule. Events from the reigns of Babylonian kings from Nabonassar to Šamaš-šuma-ukīn (667 BCE) are interpreted through the lens of their interactions with Assyrian and Elamite power. The authors belong to the same community of scholars who produced the astronomical diaries. The complete chronicle probably gave an account of the fall of Assyria and that of Babylonia as culminations of the ascendancy of Elam. By intentionally omitting, selecting, framing and arranging political events from long intervals of time, Babylonian history is explained in a new way.

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