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Late Antique Data Management

This chapter will discuss how imperial period and late antique authors of erudite compilations, that is, authors composing works out of excerpts of variegated content and size, tackled their projects. At the same time, there can be no discussion of the issue of data management unless we also address concepts of orality, oral transmission and formation that pervade the talmudic text as well as its scholarship. A discussion of the most pertinent arguments for an oral transmission of the Talmud will therefore open the chapter and propose ways in which the talmudic evidence for such a transmission could be read considering the work's cultural context. To some extent, then, this chapter will open a world of fragments and fragmentary knowledge that are still challenging – but that enable contemporary scholarship to arrange them in many different ways and to different ends.

THE PERENNIAL APPEAL OF ORALITY

The blind, unfit, or unlearned teacher represents the ideal of unmediated knowledge that persisted throughout antiquity and late antiquity. The blind Homer, innocent children as arbiters of oracles, Moses with the "heavy tongue," a simple carpenter and a fisherman from Galilee, the anchorite monks of the Egyptian desert, female martyrs expounding Christian doctrine, and the illiterate Muhammad are but a few examples. The Mishnah makes a somewhat different case, yet with similar ideological consequences: the work claims to be Oral Torah, a recording of the laws that God gave orally to Moses on Mt. Sinai and that were

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transmitted from Moses all the way down to rabbinic sages.[1] Contrary to the above examples, knowledge does not appear as necessarily unmediated in the Mishnah and later rabbinic texts. Yet, along similar lines, oral transmission makes this particular kind of knowledge available only to an exclusive group of people. The basic question, then, is whether this tenet of an oral tradition is mainly aetiological or whether it implies an actual prohibition of writing down decisions, even narratives pertaining to rabbinic law.

The reasons for such a tenet have been variously discussed. Its cause could have been the necessity to distinguish rabbinic (Oral) Torah from Mosaic (Written) Torah, especially vis-à-vis the nonrabbinic environment, or for the sake of the reinforcement of the teacher–student relationship.[2] The problem is that neither the Mishnah nor the later Talmuds are in any way specific about the implications of Oral Torah. The concept is clearly a rabbinic invention, however, as Second Temple sources are silent on the subject.[3] Scholars are thus left with their own judgement regarding how to evaluate the evidence.

A dominant pedagogical device in the Mishnah and, since they are based on it, also in both the Palestinian and the Babylonian Talmud, is repetition. The root of the Hebrew verb *šnh* (שנה) is also the basis of the word *mishnah* (lit., "repetition," "repeated tradition"). Another prominent verb in the Mishnah as well as the Talmuds is *tny* (תני), which similarly refers to "repeat, learn a Tannaitic tradition, to recite, to report a tradition."[4] Individuals are repeatedly called reciters of tradition, that is, *tannay* (in the Palestinian Talmud) or *tanna* (in the Babylonian Talmud). As Moulie Vidas recently pointed out, there is a notable distinction between the Palestinian Talmud's *tannay* and the Babylonian Talmud's *tanna*.[5] Being a *tannay* is part of being and certainly of becoming a sage, whereas the *tanna* seems to be a person with a distinct occupation.[6] Some Babylonian households appear to have had a *tanna* in residence.[7] Maybe the task of the

[1] m. Avot 1:1.

[2] See Peter Schäfer, *Studien zur Geschichte und Literatur des rabbinischen Judentums*, Arbeiten zur Geschichte des antiken Judentums und des Urchristentums XV (Leiden: E. J. Brill, 1978), 153–197; Martin S. Jaffee, *Torah in the Mouth: Writing and Oral Tradition in Palestinian Judaism 200 BCE–400 CE* (Oxford: Oxford University Press, 2001), 147–152.

[3] See Jaffee, *Torah in the Mouth*, 7.

[4] *DJBA*, see "תני."

[5] Moulie Vidas, "What Is a *Tannay*?," *Oqimta* 7 (2021).

[6] See b. Qidd. 49b, and Vidas, "What Is a *Tannay*?," 25, as well as 28n23. In general, the Babylonian *tanna* is described as inferior to the sage; see Moulie Vidas, *Tradition and the Formation of the Talmud* (Princeton: Princeton University Press, 2014), 113–214.

[7] E.g., b. Ber. 14a; see Vidas, "What Is a *Tannay*?," 28.

Babylonian *tanna* was similar to the precious (and expensive) educated slaves who were capable of reciting the entire work of Homer, Hesiod, or other lyrical poets.[8] These slaves served as aide-mémoires to their masters or performed at banquets.[9] Although sometimes brought into the conversation about the formation of the Talmud, the *tanna* appears to have served a specific function in his own time rather than working towards a future project (the Talmud) by serving as "human tape recorder."[10]

The idea of an oral learning culture and a prohibition against committing to writing anything associated with it is strongest in the Babylonian Talmud.[11] Evidence for an actual ban, however, is very sparse. Only in two instances does the Talmud refer to such a ban, and these instances are reworkings from parallel passages in the Palestinian Talmud (b. Tem. 14b; b. Git. 60b). Tendentious reworkings are generally ascribed to authors' changing attitudes and life circumstances. In this case, the foregrounding of orality seems to relate to the pedagogical standards imposed by the Sasanian cultural hegemony.[12] The Palestinian Talmud allows at least occasional or private documentation of law.[13]

Yet both passages in the Babylonian Talmud that are critical of writing Oral Torah or *halakhot* allow for interpretations that do not constitute a general ban. The passage in b. Gittin 60b is concerned with Oral Torah and may refer not to the interpretation of law (*halakhah*), but, rather, simply to the public translation of the Hebrew Bible into Aramaic during the Shabbat liturgy. The reader of the assigned portion from the Torah was not allowed to recite from memory, while the translator was not allowed to translate from writing. Rather, translators prepared themselves in the Beit Midrash with the help of written translations, glossaries, and commentaries.[14] The maxim in b. Temurah 14b, again, prohibits the writing down of

[8] See Christian Jacob, "Athenaeus the Librarian," in *Athenaeus and His World: Reading Greek Culture in the Roman Empire*, ed. David Braund and John Wilkins (Exeter: University of Exeter Press, 2000), 109, referring to a letter that Seneca wrote to Lucilius (*Ad Lucil.* 3.27.5).

[9] See Vidas, *Tradition and the Formation of the Talmud*, 75.

[10] Ari Bergmann, *The Formation of the Talmud: Scholarship and Politics in Yitzhak Halevi's Dorot Harishonim*, Perspectives on Jewish Texts and Contexts 17 (Berlin: De Gruyter, 2021), 92, tracing this interpretation back to Y. I. Halevy.

[11] See Steven D. Fraade, "Literary Composition and Oral Performance in Early Midrashim," *Oral Tradition* 14 no. 1 (1999): 35n6; Vidas, "What Is a *Tannay*?," and Yair Furstenberg, "The Invention of the Ban against Writing Oral Torah in the Babylonian Talmud," *AJSR* 46, no. 1 (2022).

[12] See Yaakov Elman, "Orality and the Redaction of the Babylonian Talmud," *Oral Tradition* 14, no. 1 (1999): 45.

[13] See Furstenberg, "Invention of the Ban."

[14] See Shifra Sznol, "Text and Glossary: Between Written Text and Oral Tradition," in *Greek Scripture and the Rabbbis*, ed. Timothy M. Law and Alison Salvesen (Leuven: Peeters, 2012), 226. She refers to b. Git. 60b as the golden rule for readers and translators. Sznol

halakhot, in contrast to the already written Torah.[15] *Halakhot* were, as is implied by the word's root "to go" (הלך), inquiries sent to experts of Torah. Terminologically, *halakhot* were distinguished from the *mitzvah*, the ruling with a biblical basis.[16] The situation seems mirrored in Roman law, where laws registered in a codex were occasionally enhanced and adapted for certain cases and individuals. Yet these private rescripts and "letters from the emperor responding to legal questions from private citizens" were collected separately from the codex.[17] The prohibition of writing down *halakhot* might similarly have referred to the insertion of such situational rulings into a document of collectively sanctioned rulings.[18]

Undeniably, there are many implicit references to oral transmission.[19] The Talmud clearly imagines the rabbinic world to be an oral one.[20] Students are sitting at the feet of their masters; they are listening and repeating. The setting is rather pastoral, no libraries are described, and references to writing material are, although present, marginal. In fact, we do not even know if there was an economic benefit to this learning, because the picture that is raised is one of men "immersed and soaked in learning" with nothing in their lives other "than Torah – day and night."[21] The talmudic schooling system that emerges from these

translates the passage as: "The words which are written thou art not at liberty to say by heart, and words transmitted orally thou art not at liberty to recite from writing" (224).

[15] b. Temurah 14b reads as follows: "Rabbi Abba son of Rabbi Hiyya said in the name of Rabbi Yohanan: Those who write down the words of *halakhot* are likened to one who burns the Torah. Rabbi Yehuda son of Nahum, the declaimer of Resh Lakish, expounded: … One may not recite oral teachings from memory. The school of Rabbi Ishmael taught: 'Write for yourself these words' [Exodus 34:27]. 'These words' you may write, but you may not write *halakhot*." Translation follows Elizabeth Shanks Alexander, "The Orality of Rabbinic Writing," in *The Cambridge Companion to the Talmud and Rabbinic Literature*, ed. Charlotte E. Fonrobert and Martin S. Jaffee (Cambridge: Cambridge University Press, 2007), 46.

[16] See Jaffee, *Torah in the Mouth*, 76–77.

[17] Charles N. Aull, "Legal Texts," in *A Companion to Late Antique Literature*, ed. Scott McGill and Edward J. Watts (Cambridge: Cambridge University Press, 2018), 418.

[18] The "Scroll of Fasting" referred to in b. Eruv. 62b might be considered such a sanctioned document.

[19] See the evidence collected by Yaakov Sussman, "The Oral Torah in the Literal Sense: The Power of the Tail of a Yod" [in Hebrew], in *Meḥqerei Talmud III: Talmudic Studies Dedicated to the Memory of Professor Ephraim E. Urbach*, ed. Yaakov Sussman and David Rosenthal (Jerusalem: Magnes Press, 2005), 232–233, and Elman, "Orality and the Redaction of the Babylonian Talmud," 54–56.

[20] This imagining of an oral past and present might be comparable to the imagined "legal role the rabbis claimed for themselves" within the "highly variegated and diverse Judean (or, Jewish) society in third-century Roman Palestine." Naftali S. Cohn, "Sectarianism in the Mishnah: Memory, Modeling Society, and Rabbinic Identity," in *History, Memory, and Jewish Identity*, ed. Ira Robinson, Naftali S. Cohn, and Lorenzo DiTommaso (Boston: Academic Studies Press, 2016), 33.

[21] Sussman, "Oral Torah in the Literal Sense," 246–247 (author's translation).

depictions caused David Goodblatt to conclude that it looked rather underdeveloped compared to other contemporary institutions.[22]

Yet this picture, although uncontested given the lack of archaeological and textual evidence for the educational culture in Sasanid Mesopotamia, does not seem to do justice to the result. The Talmud is too elaborate and too deeply in conversation with the literary standards of its time to be the result of an educational system that focuses on the memorization of laws that either were or were not, or maybe only temporarily, relevant. Moreover, the model for oral transmission developed based on this evidence cannot account for the formation of the Talmud unless we assume that the sages were working towards this collaborative outcome from the very beginning. In that case, as David Weiss Halivni suggests, professional memorizers would have traveled from the school of one rabbinic sage to the next while memorizing the focal points of the ongoing discussions.[23] Memorizing a live discussion is, however, something different than learning an epic song (Homer) or any other fixed sequence of information. The raw memories of these memorizers would then have been smoothed out by a severe redaction, when, under circumstances that remain unclear, the sages decided to write down the oral recollections.[24] The model is shaky in its reliance on human capacity: Not only would the memorizer's recollections have been imprecise at times, but the sudden death of a memorizer would have further jeopardized the transmission of knowledge and the project as a whole.

Up to this day, spontaneous retrieval of knowledge is what makes or breaks the impression of an accomplished scholar.[25] Imperial period and late antique pedagogy fostered and relied on memorization to a much

[22] David M. Goodblatt, *Rabbinic Instruction in Sasanian Babylonia*, *SJLA* 9 (Leiden: Brill, 1975), 284–285.

[23] See David Weiss Halivni, *The Formation of the Babylonian Talmud*, trans. Jeffrey L. Rubenstein (Oxford: Oxford University Press, 2013), 3–4 and 133–143.

[24] See Shai Secunda, "The Sasanian 'Stam': Orality and the Composition of Babylonian Rabbinic and Zoroastrian Legal Literature," in *The Talmud in Its Iranian Context*, ed. Carol Bakhos and Rahim Shayegan, *TSAJ* 135 (Tübingen: Mohr Siebeck, 2010), 150 and 152. See also Elman, "Orality and the Redaction of the Babylonian Talmud," 84. The oral model is, however, very challenging for scholars, who are accordingly forced "either to abandon research into the formation of the Talmud entirely, or to focus research on the redacted Bavli alone." Alyssa M. Gray, *A Talmud in Exile: The Influence of Yerushalmi Avodah Zarah on the Formation of Bavli Avodah Zarah*, BJS 342 (Providence, RI: Brown University Press, 2005), 4.

[25] See also Michael D. Swartz, *Scholastic Magic: Ritual and Revelation in Early Jewish Mysticism* (Princeton: Princeton University Press, 1996): "Although a literate culture has the capacity to store information in written texts, those texts often do not displace the adept memorizer; intellectuality is still conceived in terms of the scholars of memorized text" (36). Similarly, Jocelyn P. Small, *Wax Tablets of the Mind: Cognitive Studies of Memory and Literacy in Classical Antiquity* (London: Routledge, 1997), 84–85.

greater extent than does its modern counterpart: today, digital tools, dictionaries and handbooks, help to bypass embarrassment. In late antiquity, on the other hand, if people wanted to appear erudite, they were usually entirely dependent on their memory. Mnemotechnics were therefore essential for personal and social advancement, and elaborate systems of remembering knowledge based on places, symbols, and letters were developed since antiquity.[26] What the ancients were able to master from memory – judging from their written record – was certainly impressive. But there is a difference and a certain imbalance between, on the one hand, recognizing elaborate techniques for memorizing and retrieving knowledge and, on the other, the claim that Quintilian's "equation of treasury directly with memory and only indirectly with writing depends on the fact that it is memory and *not* a superior filing technique that allows the classical writer to retrieve the appropriate excerpt" (emphasis added).[27] Filing and notation techniques underwent many improvements from the early imperial period onward, as will be shown in the second half of the chapter. They did not and could not replace memorization for the obvious reason that filing and notation techniques could not be deployed as spontaneously. But they made elaborate written productions – such as the Talmud – possible.

Mental capacities and oral cultures have fascinated ancient and recent thinkers alike, and for much the same reason: Prominent examples of texts that teem with sayings are monastic and rabbinic ones. Both text corpora suggest that the knowledge they portray is the result of oral transmission. The anchorite monks are said to have been illiterate, whereas rabbinic literature is said to be the result of oral transmission. For both corpora, sayings have been interpreted to be a sort of an oral recording and hence the earliest layer, while more elaborate stories and homilies are thought to form the latest stratum.[28] With regard to monastic literature, however, Lillian Larsen has convincingly shown that the use of sayings does not

[26] See Small, *Wax Tablets of the Mind*, 82–94.

[27] Small, *Wax Tablets of the Mind*, 179, referring to Quintilian, *De orat.* 11.2.1 and 3.

[28] On this interpretation of monastic texts, see Lillian Larsen, "The *Apophthegmata Patrum* and the Classical Rhetorical Tradition," in *Papers Presented at the Fourteenth International Conference on Patristic Studies Held in Oxford 2003: Historica, Biblica, Ascetica et Hagiographica*, ed. Frances Young, M. J. Edwards, and P. Parvis (Leuven: Peeters, 2006), 409–411; and Lillian Larsen, "The *Apophthegmata Patrum*: Rustic Rumination or Rhetoric Recitation," *Meddelanden* 23 (2008): 21–30. The authors of the sayings are generally classified as Amoraim and, accordingly, are thought to have transmitted these sayings orally; see Elman, "Orality and the Redaction of the Babylonian Talmud," 59–60, and discussion later on.

attest to oral culture, but, rather, to students trained according to Greek and Latin writing practices, who made extensive use of *chreiai*.[29] Scholars of Talmud may never be as fortunate as Larsen, who was able to prove her claim with exercises, ostraca, wooden tablets, and papyri found in monasteries. Yet they can still follow her proposition and see what happens if they read the Talmud "in light of 'the literary genre to which [it] belong[s].'"[30] In this case, the analysis of the talmudic genre in the previous chapter suggests a comparison with symposiac compilations and erudite commentaries. Interestingly, oral transmission has not been suggested for any of the books classified under these labels. This contrasts with texts of religious standing, such as the Mishnah and the Talmuds, monastic literature, the New Testament, and the Qur'an.[31]

The next section will consider the arguments that have been raised so far for an oral transmission and formation of the Talmud from a comparative perspective. Yaakov Elman, who argued for an oral transmission history of the Talmud, corroborated his argument by comparing the work to the Zoroastrian compendium *Dēnkard*. I will contest his conclusions with observations derived from a comparison of the Talmud with erudite compositions from the Roman Empire. This is again due to the lack of comparable sources in Sasanid Mesopotamia, although we should assume that they existed. The Babylonian Talmud was most likely not the region's sole monumental compilation.

ARGUING WITH YAAKOV ELMAN

In a lengthy article titled "Orality and the Redaction of the Babylonian Talmud" (1999), Yaakov Elman advanced several arguments that seem to speak for an oral tradition and even formation of the Talmud. Elman's arguments summarize the main ideas about the oral nature of

[29] See Lillian Larsen, "Early Monasticism and the Rhetorical Tradition: Sayings and Stories as School Texts," in *Education and Religion in Late Antique Christianity: Reflections, Social Contexts and Genres*, ed. Peter Gemeinhardt, Lieve Van Hoof, and Peter Van Nuffelen (New York: Routledge, 2016), 21–27.

[30] Larsen, "*Apophthegmata Patrum* and the Classical Rhetorical Tradition," 30, citing from Pierre Hadot, *Philosophy as a Way of Life* (Oxford: Blackwell, 1995), 65.

[31] On orality and the New Testament see, e.g., James D. G. Dunn, *The Oral Gospel Tradition* (Grand Rapids: Eerdmans, 2013). These are also the books most prone to "textualism," i.e., the treatment of "works as sheer texts, in isolation from both their authors and the world in which those authors lived." Robert A. Segal, "How Historical Is the History of Religions?," *Method and Theory in the Study of Religion* 1, no. 1 (Spring 1989): 3.

the Babylonian Talmud and thereby provide a good platform to reflect on the implications of these objections for a written model.

Elman's first argument concerns the position of the Talmud as a written document between the oral culture of the Amoraim, the assumed originators of the sayings, and the Geonim, post-talmudic rabbinic scholars living under the Abbasid Caliphate. Since both of these generations of sages emphasize orality, Elman does not see how a work the size of the Talmud could have originated in written form in between the two eras.[32] Elman's second argument is based on the fact that rabbinic literature is replete with variant readings, which, according to him and many other scholars, are a sign of an oral transmission that led to the transformation of an original version through the loss or addition of pieces of information.[33] In his third argument for an oral genesis of the Talmud, Elman points to the absence of "a terminology for copying, arranging, editing, and redaction" and argues further that the size of the Talmud does not comport with late antique writing technology.[34] Finally, Elman noted that the talmudic lines of argument (*sugyot*) are often formulaic and stereotypical. Ring structures, chiastic structures, and the segmentation according to numbers are encountered: features that facilitate memorization.[35] Elman's arguments are very suggestive – not only in support of oral transmission and formation but also as a basis to discuss alternative interpretations.

The first argument relies on the assumed oral culture of the Amoraim and Geonim. The Amoraim bear that name because they are the originators of sayings in Aramaic. The name derives from the standard use of *amar* (אמר), meaning "he said." Since "XY says" is the earmark of *say*ings, however, the formulation may have been generated by style and convention rather than actual speaking by word of mouth. Indeed, the sayings are concise and very much to the point, so much so that heavy reworking or editing would have to be assumed as an intermediary step between the actual uttering of the content and the version that ended up as saying or maxim in the Talmud. The intellectual work necessary to mentally turn an utterance into a saying would have been enormous. It is much easier to work with templates and to arrange thought in written form. Martin Jaffee and Steven Fraade have therefore suggested that orality in this case should

[32] Elman, "Orality and the Redaction of the Babylonian Talmud," 59–60.
[33] Elman, "Orality and the Redaction of the Babylonian Talmud," 55–56.
[34] Elman, "Orality and the Redaction of the Babylonian Talmud," 65 and 68–74.
[35] Elman, "Orality and the Redaction of the Babylonian Talmud," 81–93.

be imagined as a process of alternating between writing and oral discussion.[36] In particular, Fraade's model, characterized by Elizabeth Shanks Alexander as an "orality that lies both behind and in front of the extant rabbinic texts," seems appealing here.[37] The orality before the saying would be a discussion, the solution to a puzzle assigned by a teacher, or even a game. Then again, purely written settings, such as personal musings over other texts, reformulated quotes, or summaries, are also feasible.

The post-talmudic generation of sages, the Geonim, promoted oral tradition over the written. This tendency is best seen in the context of the theological discussions of their time and place: oral versus written transmission preoccupied Islamic and rabbinic scholars alike.[38] Moreover, when the Geonim speak about their own oral culture, they usually refer to the memorization of the Mishnah and corresponding drills, not an oral composition.[39] As Uziel Fuchs has recently shown, they were most likely in possession of the Talmud in written as well as oral form.[40]

The second argument is more focused on the talmudic text and is based on the multiple variants within the Talmud, and between the Babylonian Talmud and rabbinic literature from Palestine. These variants gave rise to the above-mentioned models by Jaffee and Fraade whereby written texts were transformed through oral transmission before they were written down again. Acknowledging the limits of human memory but also the marks of Roman writing habits within the text, these models consider writing to be an intermediary stage that is then transformed again through oral transmission.[41]

One would expect variants resulting from oral transmission to be arbitrary. Yet, as it turns out, in most cases (if not all of them), the variants

[36] Jaffee, *Torah in the Mouth*, and Fraade, "Literary Composition and Oral Performance." See also the summary by Alexander, "Orality of Rabbinic Writing," 53–55.

[37] Alexander, "Orality of Rabbinic Writing," 55.

[38] See Gregor Schoeler, *The Genesis of Literature in Islam: From the Oral to the Read*, New Edinburgh Islamic Surveys (Edinburgh: Edinburgh University Press, 2002), and Talya Fishman, "Claims about the Mishna in the *Epistle* of Sherira Gaon: Islamic Theology and Jewish History," in *Beyond Religious Borders: Interaction and Intellectual Exchange in the Medieval Islamic World*, ed. David M. Freidenreich and Miriam Goldstein (Philadelphia: University of Pennsylvania Press, 2012).

[39] For the geonic emphasis on memorization, see Robert Brody, *The Geonim of Babylonia and the Shaping of Medieval Jewish Culture* (1998; repr., New Haven: Yale University Press, 2013), 155–161.

[40] See Uziel Fuchs, *The Geonic Talmud: The Attitude of Babylonian Geonim to the Text of the Babylonian Talmud* [in Hebrew] (Jerusalem: Herzog Academic College, 2017).

[41] See Alexander, "Orality of Rabbinic Writing," 55, and Jaffee, *Torah in the Mouth*, 128–140.

are not haphazard deviations but, rather, versions exposing a new take on the subject. With regard to talmudic stories with obvious parallels in the Palestinian Talmud, for example, Jeffrey Rubenstein was able to establish a list of recurring features and devices used to give these stories a new twist.[42] Shamma Friedman recognizes a "typical intervention" in stories (as well as in the legal parts) by the commentators or redactors.[43] As will be discussed in more detail in Chapter 4, the creation of variants was a lesson in its own right in the Roman curriculum and was artfully professionalized. To bring a story to a different conclusion, for example, was a way of learning how to turn a given argument in one's own favor, just as the original purpose of rhetorical training was juridical argumentation.[44] The techniques were fairly standard and resonate with the way in which talmudic stories were recast. Rather than the product of a commentator or redactor, these story variants look like the result of rhetorical exercises, or the implementation of this very learning, both trained and executed in writing. This does not, of course, rule out the possibility that an author may, at times, have relied on additional oral information regarding the case described in a story.

Recent scholarship on ancient literacy has repeatedly referred to empirical research among illiterate and semiliterate people to strengthen the argument for a literate mindset. Paul Evans, for example, drew attention to the work of Aleksandr Romanovich Luria, who "found that nonliterate persons strongly resisted requests for word definitions."[45] Not only did they find the task of defining a word nonsensical but they were also unable to describe a word without using it. Literate people, on the other hand, solved the same problem with considerable ease. The same was true for syllogistic exercises.

[42] E.g., "wordplay or paranomasia; symbolic character names; irony; keywords and repetitions; dialogue; interior monologue, order, structure." Jeffrey L. Rubenstein, *Stories of the Talmud* (Baltimore: Johns Hopkins University Press, 2010), 203.

[43] Shamma Friedman, "A Good Story Deserves Retelling: The Unfolding of the Akiva Legend," in *Creation and Composition: The Contribution of the Bavli Redactors (Stammaim) to the Aggada*, ed. Jeffrey L. Rubenstein, *TSAJ* 114 (Tübingen: Mohr Siebeck, 2005), 57, and see further Jeffrey L. Rubenstein, "Criteria of Stammaitic Intervention in the Aggada," in Rubenstein, *Creation and Composition*.

[44] See Stanley F. Bonner, *Education in Ancient Rome: From the Elder Cato to the Younger Pliny*, Routledge Library Editions: Education 91 (London: Methuen, 1977), 253–263, for a summary of exercises on providing sound variants of sayings and narratives.

[45] Paul S. Evans, "Creating a New 'Great Divide': The Exoticization of Ancient Culture in Some Recent Applications of Orality Studies to the Bible," *JBL* 136, no. 4 (Winter 2017): 759.

The question remains, however, to what extent the execution of these tasks relates to literacy qua alphabetization or, rather, to the syllogistic sense of how to handle the range of exercises that accompany alphabetization in Westernized societies. For example, Luria asked non- and semiliterates the following syllogistic question: "Bears in the north, where there is snow, are white. The city XY is in the north, where there is always snow. What color are the bears there?"[46] The answer was unanimously "brown." The questioned people relied on their own knowledge about bears instead of focusing on the syllogistic and tricky nature of the question. The results are interesting but perhaps in a slightly different way than Luria and, for that matter, Evans, used them. The definition of words and the solving of simple syllogisms may be part of the primary curriculum in Westernized societies but they are not related, per se, to the basic ability of reading or writing. The distinction, then, should not be between literates and illiterates but between those who received literacy training beyond mere recognition and use of letters and those who did not. In fact, Luria's fieldwork shows to what extent continuous exercises based on the same syllogism affect the mind. Indeed, when he performed the syllogistic exercise with people whose reading and writing abilities had dwindled during years of neglect, they were still able to follow this distinct pattern of thought and to understand the task.[47] In addition to proving what he anticipated, namely, that knowledge of writing had a decisive effect on reasoning processes, Luria's study also highlightes the lasting effect of repetitive exercises.[48] Late antique teachers envisioned exactly this effect on their students' minds when they anticipated that "Dexterity of mind and an almost mathematical ability in dealing with the elements of learning" would result from their letting the students toil through endless repetitive exercises.[49]

David Olson's empirical research has shown that literates are much more sensitive toward language. Illiterate people, for example, are not capable to the same extent as literates of associating letters with words (e.g., *b* with baby, ball, or rabbit) or of isolating a letter from the rest of a word (e.g., *f*-ish). Olson's most telling example is an exercise he performed with his preliterate grandchild: "I showed her a card on which I had written

[46] My paraphrase from Evans, "Creating a New 'Great Divide,'" 760.
[47] Evans, "Creating a New 'Great Divide,'" 760.
[48] On Luria's intent, see David R. Olson, "Why Literacy Matters, Then and Now," in *Ancient Literacies: The Culture of Reading in Greece and Rome*, ed. William A. Johnson and Holt N. Parker (New York: Oxford University Press, 2009), 388.
[49] Raffaella Cribiore, *Gymnastics of the Mind: Greek Education in Hellenistic and Roman Egypt* (Princeton: Princeton University Press, 2001), 223.

'Three little pigs.' I read it to her and had her say back to me what it said. I then covered up the last word and asked her to tell me what it now said, to which she replied, 'Two little pigs.' She assumed that the written marks represented objects, pigs, not words, a kind of picture writing."[50] Olson's examples substantiate the claim of the literacy hypothesis that "a writing system and a tradition of writing is not a neutral practice."[51] Rather, language and mind are connected in ways that are still to be further explored.

Oral transmission and formation are, of course, not necessarily tied to illiteracy. Indeed, regarding rabbinic sages, many scholars appear to assume a voluntary refusal to read and write *halakhot* or Oral Torah more broadly. The mindset of rabbinic sages would in that case be literate and explain the saturation of rabbinic literature with comments and jokes that rely on wordplay and paronomasia, which are inextricably related to the ability to understand the anatomical makeup of a word or phrase. Indeed, puns, explanations based on homonyms, mute letters, and the like are exactly the features that dominate talmudic stories and arguments.[52] If these features were later redactional additions, it needs to be asked what the original message of these stories would have been. Equally obtrusive as these wordplays are certain types of syllogistic reasoning that the *progymnasmata* introduced at an early stage of education.[53] Thinking along the oral tradition model, these features may have diffused into oral culture through a literary education gained elsewhere. Still, it needs to be asked how these linguistic adornments came into being if not through writing and how they lasted transmission by tradents, who did not necessarily have the same education and could not imagine a silent letter in a word.[54]

[50] Olson, "Why Literacy Matters," 392.

[51] Olson, "Why Literacy Matters," 393.

[52] On the omnipresence of (complex) paronomasia in stories throughout rabbinic literature, see Jonah Fraenkel, "Paronomasia in Aggadic Narrative," *Scripta Hierosolymitana* 27 (1978). On syllogism in the Talmud, see Adolf Schwarz, *Der Hermeneutische Syllogismus in der talmudischen Litteratur: Ein Beitrag zur Geschichte der Logik im Morgenlande*, Jahresbericht der Israelitisch-Theologischen Lehranstalt in Wien, vol. 8 (Vienna: Verlag der Israelit.-Theolog. Lehranstalt, 1901). For lists of hermeneutical rules, see Günter Stemberger, *Einleitung in Talmud und Midrasch*, 9th ed. (Munich: C. H. Beck, 2011), 26–33.

[53] E.g., Theon, *Progym.* 124–125, and Saul Lieberman, *Hellenism in Jewish Palestine: Studies in the Literary Transmission of Beliefs and Manners of Palestine in the I Century B.C.E.–IV Century C.E.*, *TSJTSA* 18 (New York: Jewish Theological Seminary of America, 1962), 47–68. Schwarz, *Der Hermeneutische Syllogismus*, 190, however, concludes that it is exactly in the occasional deviations that the main syllogism used in rabbinic text, the so-called *qal wahomer*, underlines the consubstantiality between the Aristotelian application and the rabbinic one.

[54] Albert Lord, for example, studied illiterate Serbo-Croatian poets who were professional memorizers of lengthy songs and found that they revealed completely different assumptions

Would it not have been more efficient to focus on rhythm and meter if the goal were to remember and retain the old traditions, and even continuously add new elements, instead of preserving linguistic puns that primarily excite the one who sees them in written form?

It is indeed quite difficult to imagine that a completely alphabetized person would refuse to write down their insights for posterity and, instead, prefer to rely on the fragility of another mortal's mind or on occasional notes. Now that we have the Talmud in front of us as a complete work, it is easy to muse about a possible oral transmission and formation, possibly with a redaction of some sort. But the rabbinic sages could not anticipate that this project would succeed; maybe they would not even have dared. They were confronted with many hazards, not least a higher mortality rate. It seems more likely that the sages were not, from their perspective, working toward the or even a Talmud, but that they studied, composed, and taught for their own benefit, not knowing what would become of their efforts.

"Learned orality" in late antiquity can generally be described in terms of the declamation of a previously memorized text or as the reading of a text before an audience. Such performative reading is rendered as reciting (*recitatio*) in Latin.[55] Audiences immersed themselves in content to observe the reciter's skill in making an argument rather than focusing on the memorization of the exact content of the performance. Indeed:

> Did the audience (in a strict sense) for Roman poetry go to hear a performance, learn the song/poem by ear, and then go home with it in their memories, to perform it later to others? It is clear that they did not. There is no example known to me of any person who performed a Latin poem or a speech before a second person, who in turn transmitted it orally to a third. Instead, authors or other performers read from written texts to audiences, who, if they wished to experience that text again, obtained a written copy.[56]

Still, Theon's – and only Theon's – *progymnasmata* suggest an exercise in attentive listening, or *akroasis* (*Progym.* 106–107 P). Students were

about language and its structure than did literate people. He concluded that "the written technique … is not compatible with the oral technique, and the two could not possibly combine, to form another, a third, a 'transitional' technique. It is conceivable that a man might be an oral poet in his younger years and a written poet later in life, but it is not possible that he be both an oral and a written poet at any given time in his career. The two by their very nature are mutually exclusive." Albert B. Lord, *The Singer of Tales* (Cambridge: Harvard University Press, 1960), 129, quoted in Evans, "Creating a New 'Great Divide,'" 759.

[55] See Emmanuelle Valette-Cagnac, *La lecture à Rome: Rites et pratiques*, L'antiquité au présent (Paris: Belin, 1997), 111–115.

[56] Holt N. Parker, "Books and Reading Latin Poetry," in Johnson and Parker, *Ancient Literacies*, 193. (Parker was imprisoned in 2016 for the possession of child pornography.)

trained to listen so carefully that they were able to recall the structure of a speech and the most important arguments. The purpose, however, was not memorization but imitation of style, which in this context can also refer to the succession of arguments, intonation, and gesture: "Some younger orators acquired so good an ability by listening to famous orators that their works were attributed to their masters."[57] Although students recalled speeches in written form, and not orally, quickness of the mind and eidetic memory was obviously the ideal – then and now.[58]

This ideal brings us to Elman's third argument for an oral transmission of the Talmud, the absence of "a terminology for copying, arranging, editing, and redaction."[59] Several factors may account for this absence without necessarily implying actual oral transmission. First, the texts collected in the Talmud reflect a belief in an originally oral conception of the early texts. Following up with this textual "truth," the talmudic texts imagine pastoral settings in which genuinely wise and quick-witted teachers instruct their students. Second, antique and late antique texts do not seem to make "the slightest distinction in kind between writing on the memory and writing on some other surface," as Mary Carruthers observed.[60] This "exact correspondence between the material and the mental library" is then also reflected in the vocabulary used for book production, which converges with the processes of memory and memorization.[61] A separation between the two is not always possible. Third, terminology of book production is generally absent from imperial period and late antique literature, a fact that will be the subject of the second half of this chapter. Apparently, processes of book production were so evident that they did not need to be discussed (just as I do not see a reason to inform the reader about how I produced this manuscript).

Similarly, the Gospels have been said to have emerged out of successive performances; see a summary of arguments and their refutation in Larry W. Hurtado, "Oral Fixation and New Testament Studies? 'Orality,' 'Performance' and Reading Texts in Early Christianity," *NTS* 60, no. 3 (July 2014). As he points out, orality in the imperial period can best be described as "enjoyment of the spoken word" (323).

[57] Theon, *Progym.* 106–107 P. Translation follows George A. Kennedy, *Progymnasmata: Greek Textbooks of Prose Composition and Rhetoric*, *WGRW* 10 (Leiden: Brill, 2003), 69. The exercise is only extant in the Armenian translation edited and translated in Patillon, *Progymnasmata*.

[58] On written recalling, see Patillon, *Progymnasmata*, c–cvi.

[59] Elman, "Orality and the Redaction of the Babylonian Talmud," 65.

[60] Mary Carruthers, *The Book of Memory: The Study of Memory in Medieval Culture*, 2nd ed., Cambridge Studies in Medieval Literature 70 (Cambridge: Cambridge University Press, 2008), 34.

[61] Jacob, "Athenaeus the Librarian," 109.

Elman sustains this argument further with the observation that the verb "to write" is used approximately 3,000 times, while the verb "to say" appears over 70,000 times by his count.[62] Again, I would hold that the structure "XY says" is, first and foremost, the defining structure of the literary unit "saying," rather than a reflection of actual speech. The saying as a rhetorical device was very popular in the imperial period and late antiquity and was highly theorized.[63] The declarative saying, for example, the *apophantikon*, was conceptualized as consisting of a speaker (*prosopon*) and a meaningful sentence (*logos*). Speaker and content are unrelated in the sense that the same sentence could be attributed to various people to suit different contexts.[64] Indeed, a saying could make "different points on different occasions. But they are only used to make one point on any one occasion."[65] The saying had the pedagogical function of associating figures of the past with prevailing standards of correct behavior and speech in the present.[66] Because of these advantages, sayings were used from the very beginning of education. Wooden tablets used by students testify to their struggle to conjugate the verb "to say" in all its variants in order to produce appropriate *chreiai*.[67]

Chreia is the generic term for a literary form that is best explained in the words of a first-century author, since it is a form that is no longer distinguished in this way. The *progymnasmata* of Hermogenes explain it as follows:

> A chreia is a reminiscence of some saying or action or a combination of both which has a concise resolution, generally for the purpose of something useful. Some are sayings-chreiai, some action-chreiai, some mixed chreiai. Sayings-chreiai are those in which there is only speech; for example *Plato said that the Muses dwell in the souls of the gifted*. Action-chreiai are those in which there is only action; for example *Diogenes, on seeing a youth misbehaving, beat the paedagogus*. Mixed chreiai are those with a mixture of speech and action; for

[62] See Elman, "Orality and the Redaction of the Babylonian Talmud," 64–65.

[63] See the material concerning the "saying-chreia" collected in Ronald F. Hock and Edward N. O'Neil, eds. and trans., *The Progymnasmata*, vol. 1 of *The Chreia in Ancient Rhetoric*, SBL Texts and Translations 27/Greco-Roman Religion Series 9 (Atlanta: Scholars Press, 1986), and Hock and O'Neil, eds. and trans., *Classroom Exercises*, vol. 2 of *The Chreia and Ancient Rhetoric*, *WGRW* 2 (Leiden: Brill, 2002).

[64] See Larsen, "Early Monasticism," 23.

[65] Teresa Morgan, *Popular Morality in the Early Roman Empire* (Cambridge: Cambridge University Press, 2007), 21, referring to sayings *and* stories. These were, in fact, the same accounts for any one excerpt, if well executed. See also Jacob, "Athenaeus the Librarian," 107, on Athenaeus's use of doublets.

[66] See also Larsen, "Early Monasticism," 21.

[67] See Hock and O'Neil, *Classroom Exercises*, 51–78.

example *Diogenes, on seeing a youth misbehaving, beat the paedagogus and said "Why were you teaching such things?"* (*Progym.* 6.3–14 R)[68]

Aelius Theon further explains in his *progymnasmata* that the *chreia*, contrary to the maxim (*gnōmē*) or reminiscence (*apomnēmoneuma*), is always attributed to a person. Theon praises the usefulness of the *chreia* not only for pedagogical purposes but for life in general: "A chreia is given that name *par excellence*, because more than the other [exercises] it is useful [*khreiôdês*] for many situations in life, just as we have grown accustomed to call Homer 'the poet' because of his excellence, although there are many poets" (*Progym.* 97).[69]

Seen from this perspective, if certain rabbinic sages are portrayed to have said something, this relates foremost to the author's choice to cast a certain *logos*, often a maxim, as a *chreia*. The *logos* benefits from the attribution in at least two ways: First, it is enhanced with an esteemed authority that is thought to support its content. Second, the *logos* is more easily memorized if it can be associated with the mental picture of a person. Yet, as pointed out above, there is no natural connection between the speaker and the *logos*. The speaker may, therefore, easily be substituted if they are no longer suitable. Similarly, identical maxims are often attributed to different rabbinic sages within the Babylonian Talmud but also between the Talmud and other rabbinic texts. These changes never affect or distort the content of the sayings, since the characters are, in their function as speakers, without character.[70]

In his fourth argument, Elman discusses the size of the Talmud. According to Elman, the Talmud's size, slightly over 2,000 folia in a codex, does not comport with the writing and book production technology of late antiquity.[71] Based on word count, Elman provides an estimate of the length of the Babylonian Talmud in Torah scrolls. In his 1999 article, the estimate was eighteen Torah scrolls; another estimate, in 2007, based on a large, possibly eighth-century fragment of the Talmud, yielded ten and a half scrolls.[72] If we follow another suggestion by Elman, namely, that

[68] Translated by Hock and O'Neil, *Progynasmata*, 175.

[69] Translation follows Kennedy, *Progymnasmata*, 15.

[70] See also Sergey Dolgopolski, *The Open Past: Subjectivity and Remembering in the Talmud* (New York: Fordham University Press, 2013), 126. He notes that "the Amoraic speakers do not have personalities. Rather they function as placeholders defined by the difference in their choreographed roles, not by their identities or by any content or structure of their argument."

[71] Elman, "Orality and the Redaction of the Babylonian Talmud," 68–74.

[72] Elman, "Orality and the Redaction of the Babylonian Talmud," 74; and Yaakov Elman, "Middle Persian Culture and Babylonian Sages: Accommodation and Resistance in the

"each tractate would have been copied separately," we have thirty-two scrolls or "books," for that matter, of different sizes.[73] Elman's comparison with the Zoroastrian compendium *Dēnkard*, composed in the ninth and tenth centuries, supports the notion that the Talmud is indeed of an impressive size, since the *Dēnkard* consists of 169,000 words, whereas the Talmud contains 1,836,000 words.[74] If, on the other hand, the Talmud is compared to Greek and Latin *oeuvres*, the former's size is put into considerable perspective.

The draft commentaries of Pliny the Elder (first century), for example, on which his *Natural History* is based, were written in tiny script on both sides of 160 papyrus scrolls, each 6–10 meters in length.[75] Except for this example, however, calculations as to the original sizes of works are rare.[76] Nevertheless, Manfred Landfester's *Autoren- und Werklexikon* gives a good impression of the productivity of Greek and Latin authors or,

Shaping of Rabbinic Legal Tradition," in *The Cambridge Companion to the Talmud and Rabbinic Literature*, ed. Charlotte Elisheva Fonrobert and Martin S. Jaffee (Cambridge: Cambridge University Press, 2007), 178. Unfortunately, Elman does not provide the size of a Torah scroll, and the estimate remains somewhat imprecise.

[73] Elman, "Orality and the Redaction of the Babylonian Talmud," 74. In this count, I did not include the five tractates that make use of a different technical language compared to the other tractates: Nedarim, Nazir, Kerithot, Me'ilah, and Tamid. See Stemberger, *Einleitung*, 216. These five tractates are also characterized by a generally very low number of loanwords; see Theodore Kwasman, "Loanwords in Jewish Babylonian Aramaic: Some Preliminary Observations," in *The Archaeology and Material Culture of the Babylonian Talmud*, ed. Markham J. Geller, IJS Studies in Judaica 16 (Leiden: Brill, 2015), 336. Kwasman further points out "that a part of the language used in these tractates is a standard literary Eastern Aramaic" and that they were older than the other tractates (336 and 336n4). Although the matter is not completely resolved, a truncated source indicates that these tractates were not taught in Babylonia (see Brody, *Geonim of Babylonia*, 156).

[74] Elman, "Middle Persian Culture and Babylonian Sages," 178. On the *Dēnkard,* see also Jason S. Mokhtarian, *Rabbis, Sorcerers, Kings, and Priests: The Culture of the Talmud in Ancient Iran* (Oakland: University of California Press, 2015), 35–37.

[75] Albrecht Locher and Rolf C. A. Rottländer, "Überlegungen zur Entstehungsgeschichte der *Naturalis Historia* des älteren Plinius und die Schrifttäfelchen von Vindolanda," in *Lebendige Altertumswissenschaft: Festschrift für Hermann Vetters*, ed. Manfred Kandler (Vienna: Holzhausen, 1985), 143.

[76] One exception is an estimation of the length of one of Julius Africanus's *cesti*. This estimate is, however, based on a piece of the whole work; the rest of the presumably twenty-four *cesti* are only extant in a very fragmentary form; see Martin Wallraff, Carlo Scardino, Laura Mecella, and Christophe Guignard, *Iulius Africanus Cesti: The Extant Fragments*, trans. William Adler, Die Griechischen Christlichen Schriftsteller der ersten Jahrhunderte 15 (Berlin: de Gruyter, 2012), xxxiv. The estimate for the eighteenth *cestus* is a scroll of 3.30 meters long, which would add up to a total of 79.20 meters if an equal size is assumed for every *cestus*.

more likely, authors and their teams of slaves and hired personnel.[77] To give just a few examples, Columella (first century) wrote twelve books on agriculture and one on trees.[78] Josephus Flavius (first century) wrote *The Antiquities of the Jews* in twenty books, *The Jewish War* in seven books, and the treatise *Contra Apionem*.[79] In addition to the thirty-seven books (including the book-length introduction) of *Natural History*, Pliny the Elder, who died at the age of 55, authored one book on javelin throwing from horseback, two books on the life of Pompenius Secundus, twenty books on the Germanic wars, three books (covering six scrolls due to their bulky nature) called *Studiosus*, eight books on grammar, and thirty-one books continuing the historical work started by Aufidius Bassus.[80] That is a total of 102 books! Aelian (second to third centuries) composed seventeen books on the *Nature of Animals* and fourteen books on *Variegated History*.[81] The physician Galen (second to third centuries) is said to be the author of over 250 works.[82] Libanius (fourth century) wrote 1,544 letters (though the originality of two may be doubted) and 144 school exercises (*progymnasmata*). Augustine of Hippo (fourth to fifth centuries) wrote his *Confessions* in thirteen books, *Contra academicos* in three books, *De civitate Dei* in twenty-two books, *On Christian Doctrine* in four books, *De Trinitate* in fifteen books, and five single books. That is a total of at least sixty-two substantial works.[83] John Chrysostom (fourth to fifth centuries) is the author of 700 orations, twenty sermons, six books of theological discourse, and probably 241 epistles.[84]

Another striking feature of these lifetime achievements, apart from their impressive size, is the wide range of topics they cover. A certain polymathy was clearly the intellectual ideal. Given these numbers, Elman's *comparandum*, the *Dēnkard*, may have been an unfortunate choice,

[77] See Joseph Howley, "In Rome," in *Further Reading*, ed. Leah Price and Matthew Rubery (Oxford: Oxford University Press, 2020); and Candida Moss, "Fashioning Mark: Early Christian Discussions about the Scribe and Status of the Second Gospel," *NTS* 67, no. 2 (2021).

[78] Manfred Landfester, ed., *Geschichte der antiken Texte: Autoren- und Werklexikon*, Der Neue Pauly, Supplemente 2 (Stuttgart: J. B. Metzler, 2007), 183.

[79] Landfester, *Geschichte der antiken Texte*, 328.

[80] This list is found in a letter by Pliny the Younger, *Letter* 3.5; see Roderich König and Gerhard Winkler, eds. and trans., *C. Plinius Secundus d. Ä., Naturkunde, Lateinisch-Deutsch Buch I: Vorrede, Inhaltsverzeichnis des Gesamtwerkes, Fragmente, Zeugnisse*, 2nd rev. ed. (Berlin: de Gruyter 1997), 312–315.

[81] Landfester, *Geschichte der antiken Texte*, 5.

[82] Landfester, *Geschichte der antiken Texte*, 254.

[83] Landfester, *Geschichte der antiken Texte*, 90, estimating a total of over 100 texts.

[84] Landfester, *Geschichte der antiken Texte*, 324.

since it appears that the time's book production technology was perfectly capable of composing a work the size of the Talmud, so much so that it even becomes feasible to argue that a single person, with the appropriate amount of help, would have been capable of composing a work the size of the Talmud (and more!) during their lifetime. This would challenge the traditional assumption that generations of sages were involved in the work's final process of redaction and formation.

Elman's last argument concerns structures that seem to have a mnemotechnical background, such as stereotypical structures and lists, ring and chiastic structures, and segmentation according to numbers.[85] It is during this discussion of complex structures, however, that Elman concedes that "some written components may well have played a role in the ultimate form" of the Babylonian Talmud.[86] Indeed, while clear structures may facilitate memorization, their artificial makeup does not reflect speech and is more easily conceptualized in writing. Orators composed their speeches in written form precisely because this allowed a conceptualization according to structures that facilitated easy memorization and apparent sophistication.[87] Mnemotechnical structures, therefore, refer foremost to a carefully designed written composition intended to be memorized. However, since these patterns were the ones according to which people learned how to write, and which also defined style, authors customarily used them even when they wrote commentaries or letters.[88] Cause and effect of this entanglement was that, "[e]ven in their most literary moments, Romans preferred imagining texts (at least potentially) as speech acts."[89]

The formulaic, stereotypical formulation of lines of argument in the Talmud, called *sugyot* (sing. *sugya*), is another feature Elman raises to sustain his argument. The sugya is a post-talmudic expression used for units that resemble the classical juridical argument composed of "a statement with a support (usually a scriptural or Tannaitic prooftext) followed by a challenge (*qushya*, קושיה), a resolution (*teiruts*, תירוץ) of the challenge,

[85] Elman, "Orality and the Redaction of the Babylonian Talmud," 81–93.
[86] Elman, "Orality and the Redaction of the Babylonian Talmud," 93.
[87] See Giuseppe La Bua, "Aiebat se in animo scribere (Sen. Contr. 1 praef. 18): Writing in Roman Declamations," in *Papers on Rhetoric 10*, ed. Lucia Calboli Montefusco (Rome: Herder, 2010).
[88] See Marie-Pierre Bussières, "Biblical Commentary," in McGill and Watts, *Companion to Late Antique Literature*, 313–314.
[89] Andrew M. Riggsby, *Mosaics of Knowledge: Representing Information in the Roman World* (New York: Oxford University Press, 2019), 8.

another challenge, another resolution, and so forth."[90] David Brodsky has shown that this structure parallels the teaching in the progymnasmatic exercises "On Thesis" and "On Introduction of Law."[91] These were written exercises for students in a developed stage of the Greco-Roman curriculum. The stereotypical structure of the sugya is, if anything, primarily indicative of rhetorical training and not of an oral learning culture.

The discussion of Elman's arguments for an oral Talmud has shown that the Talmud can be considered congruent with much of imperial-period and late antique literature precisely because of its preference of the spoken word over the written one. Like other works, the Talmud is silent about technologies of data management and composition. The Talmud further anatomizes language in ways that can only be achieved by literate and particularly schooled minds that "see" words. It takes similarly schooled minds to appreciate respective puns. One would need to assume a voluntary waiver of literacy, which seems tricky in the face of the mortality rate in late antiquity. Indeed, the size of the Talmud seems to suggest a composition from written excerpts rather than oral tradition. And even in that case, data management was a highly sophisticated matter that left clear marks on the text.

LOOKING OVER AND BEYOND PLINY'S SHOULDER: DATA MANAGEMENT IN THE IMPERIAL PERIOD AND LATE ANTIQUITY

How are we to imagine the process of compiling in the sense of writing with excerpts? There was no formal training for compiling; at least, no school curriculum attests to such. Additionally, authors of compilations often used metaphors when describing their procedures. Macrobius, for example, describes his plan of action for the *Saturnalia* as follows: "We ought to imitate bees if I can put it that way: wandering about, sampling the flowers, they arrange whatever they have gathered, distributing it among the honeycomb's cells, and by blending in the peculiar quality of their own spirit they transform the diverse kinds of nectar into a single taste" (*Sat.* praef. 5 [Kaster, LCL]). If we are to make something out of this metaphor,

[90] David Brodsky, "From Disagreement to Talmudic Discourse: Progymnasmata and the Evolution of a Rabbinic Genre," in *Rabbinic Traditions between Palestine and Babylonia*, ed. Ronit Nikolsky and Tal Ilan, *AJEC* 89 (Leiden: Brill, 2014), 173.

[91] See Brodsky, "From Disagreement to Talmudic Discourse," 173–206. In the second part of his article, Brodsky argues that even certain shifts in the hermeneutics that the Babylonian Talmud applies to the Bible have their roots in the claim for clarity of argument as emphasized in the *progymnasmata*.

then Macrobius collected data, stored it, and subsequently redistributed and reorganized it in his book, together with his own thoughts.

The image of the honeycomb is also found among the titles of miscellanies known to Gellius:

> Thus, some called their books "The Muses," others "Woods," one used the title "Athena's Mantle," another "The Horn of Amaltheia," still another "Honeycomb," several "Meads," one "Fruits of my Reading," another "Gleanings from Early Writers," another "The Nosegay," still another "Discoveries." Some have used the name "Torches," others "Tapestry," others "Repertory," others "Helicon," "Problems," "Handbooks," and "Daggers." One man called his book "Memorabilia," one "Principia," one "Incidentals," another "Instructions." Other titles are "Natural History," "Universal History," "The Field," "The Fruit-basket," or "Topics." Many have termed their notes "Miscellanies," some "Moral Epistles," "Questions in Epistolary Form," or "Miscellaneous Queries," and there are some other titles that are exceedingly witty and redolent of extreme refinement. (Gellius, praef. 6–10 [Rolfe, LCL])

Titles like "Meads," "The Field," and "Fruit-basket" relate graphically to the etymology of Latin *lego*, to read (lit., "to collect" or "to cull, pluck"), as well as to the variegated and colorful nature of the miscellany.[92] Other titles reflect the reason for the production of the book, what it means to the author, or what the book should come to signify to the reader. The honeycomb, like the others, is a repository and display of personal *collectanea*, "the fruits of reading." One work simply refers to its material form, the wooden tablets from which it is made, hence "Woods."

As already pointed out in the previous paragraph, data management of literary excerpts was apparently not an ingenious invention but, rather, something quotidian that was not worth an explicit outline. Scholars interested in how ancient authors progressed in fashioning what we, in the last chapter, termed an erudite compilation must cull information from indirect references by authors, the makeup of the text, that is, remains of its original physicality, the text's shape, its regularities and irregularities, and also from archaeological cues.

Pliny the Elder's preface to his *Natural History* and a letter by Pliny the Younger are the most explicit literary sources at our disposal about data gathering in the imperial period. Still, they do not paint a clear-cut picture of how Pliny the Elder managed the production of such a complex work. In the (book-long) preface to *Natural History*, Pliny states the following

[92] On the etymology of *lego*, see Carruthers, *Book of Memory*, 34. Similarly, "ancient Greek had no verb meaning 'to read' as such: the verb they used, *anagignōskō*, means 'to know again,' 'to recollect'" (34).

with regard to the goal he pursued with his ambitious work: "From a reading of approximately 2,000 volumes … written by one hundred select authorities, I have comprised in thirty-six volumes 20,000 things worthy of consideration – since, as Domitius Piso says, we have need of storehouses, not of books."[93] So, Pliny uses a metaphor to describe the type of book he wants to create, a storehouse, and provides a specific number of items he wants to store in this house, 20,000. Obviously, he tried to keep track of the information he had gathered. Judging from a modern recount, however, it appears that Pliny lost track of his data at some point. The numbers, which appear highly exaggerated, are, in fact, not exaggerated at all. The things (*rerum*) Pliny discusses amount to approximately 34,000.[94] Considering this extremely high number of topics, it is not surprising that Pliny's method of keeping track collapsed at some point. Nevertheless, he managed to write a pretty consistent work from the thousands of excerpts that he collected over the years. How did he do it?

A letter by Pliny's nephew and adopted son, Pliny the Younger, is the only testimony for the elder's method. Alas, many questions remain open since the letter focuses on work ethic and not on compilatory techniques. At least, the information indicates how the elder was able to gather such a vast amount of material within a reasonable time frame: Pliny the Younger describes his uncle (eulogizing) as a ceaseless and driven student who would not waste a single minute. He had the *notarius* (secretary) by his side at all times with books to read from and wax tablets (*pugillares*) on which to copy relevant excerpts. A slave read while Pliny indicated the passages that should be copied by the secretary, and although it is possible that Pliny also read by himself, Pliny the Younger generally refers to the books as *being read*.[95] The relief from reading enabled him to concentrate solely on the content, which he scanned for references to natural substances according to his book project. What can be gathered from this account of Pliny's method is lacunary, but it nevertheless offers the scaffolding from which to paint a more coherent picture. Based on the information in the letter, a close analysis of *NH*'s text, and archeological finds, Albrecht Locher and Rolf Rottländer have

[93] Pliny, *Naturalis historia*, praef. 17, cited according to Trevor Murphy, "Pliny's Naturalis Historia: The Prodigal Text," in *Flavian Rome: Culture, Image, Text*, ed. Anthony Boyle and William J. Dominik (Leiden: Brill, 2002), 302. In the indices of his sources, Pliny the Elder lists 146 Latin and 327 Greek authors.

[94] See König and Winkler, *C. Plinius Secundus*, 390.

[95] Pliny the Younger, *Letter* 3.5; see König and Winkler, *C. Plinius Secundus*, 313–318.

made specific suggestions as to how Pliny organized his data and finally arranged it into a coherent text.[96]

Locher and Rottländer begin their analysis by noting that it is inconceivable that Pliny owned all his 2,000 sources. Otherwise, Pliny the Younger would certainly have mentioned the vast private library he had inherited to a friend in one of his many letters. Instead, he mentions "only" the 160 *commentarii* with notes that came down to him.[97] Since books needed to be returned to their owners, to a public library, or to a friend, it was necessary to copy relevant passages. Indeed, recurring mistakes such as wrong associations and the misclassification point to the fact that the context of the excerpts was no longer available to Pliny when he finally composed *Natural History*.[98] Excerpting information was thereby an everyday practice, even a necessity that Pliny turned into the basis and goal of his work, which should function as a storehouse of organized, preexisting knowledge. Excerpting and compiling were both a stylistic choice and a necessity.

Since many of Pliny's excerpts were apparently taken en route, the *notarius* must first have made a copy of a certain passage on a wax tablet that could conveniently be carried along. Generally speaking, wooden tablets, waxed or unwaxed, were predominantly used for notes because they could either be covered with another layer of wax or simply be scrubbed off for reuse. Papyrus, by contrast, did not allow for as many reutilizations, and parchment was too expensive.[99] Yet only a restricted number of wooden tablets could be carried along together with book manuscripts; consequently, a single tablet may have served for the copying of several different excerpts. In this manner, completely unrelated excerpts were collected on a single tablet. *Descriptores* (keywords) had to be added immediately to an excerpt in order for Pliny and his servants to associate them later with the correct main topic and entry. These keywords were important to remember the reason why a particular text had been excerpted, and they helped to distinguish between the mix of excerpts that ended up on the same tablet during one reading session.

[96] See Locher and Rottländer, "Überlegungen zur Entstehungsgeschichte der *Naturalis Historia*."

[97] Pliny the Younger, Letter 3.5; see König and Winkler, *C. Plinius Secundus*, 316.

[98] E.g., the confusion of *magnes lapis* and magnesite; see Locher and Rottländer, "Überlegungen zur Entstehungsgeschichte der *Naturalis Historia*," 140.

[99] On the advantages of using reusable wooden tablets instead of papyrus, see William Brashear and Francisca A. J. Hoogendijk, "Corpus Tabularum Lignearum Ceratarumque Aegyptiarum," *Enchoria* 17 (1990): 22.

Locher and Rottländer suggest that the process of excerpting and organizing the collected data did not end with the wax tablets. It could not have ended there, since the information on the tablets was mixed and the tablets themselves bulky: It would have been difficult to keep track of the keywords, and storage would have taken up a considerable amount of space. In particular, wax tablets need to be protected from anything pressing down on them. This was usually achieved with a rim between the two waxed surfaces that faced each other in a diptych, or with a small wooden cube in the middle of the tablet.[100] This characteristic did not pose a problem in everyday use but it is rather impractical for storage. It appears more likely that the excerpts were copied, one at a time, onto another writing surface, before sorting and storing them according to the keywords.[101]

For this intermediate step, scholars have proposed different kinds of writing material, such as "papyrus off-cuts, slates, ostraca, or individual palimpsest sheets of parchment" – materials widely used for taking notes.[102] Depending on the size of the literary enterprise and the financial situation and preferences of the author, different and even mixed writing surfaces are indeed conceivable for this step. In the case of Pliny and the enormous number of excerpts he used, Locher and Rottländer assume that a uniform writing surface that facilitates storage and review would have been most suitable. Based on discoveries of wooden slats in the Roman military camps of Vindolanda (England) and Vindonissa (Switzerland), the two scholars propose that Pliny copied individual excerpts onto such thin (0.25 mm/0.01 inch) and very small (20 cm/7.9 inch by 10 cm/3.9 inch) "wooden leaves."[103]

The slats were found in large quantities in the camps; many of them are inscribed with lists and notes pertaining to the organization of the camp, thereby testifying to their usefulness for data management. One

[100] On the makeup of wax tablets, see Cribiore, *Gymnastics of the Mind*, 154–155.

[101] See Locher and Rottländer, "Überlegungen zur Entstehungsgeschichte der *Naturalis Historia*," 142. Regarding Athenaeus's *Deipnosophistai*, yet without further discussion of the material aspects of the process, see Jacob, "Athenaeus the Librarian," 104. He suggested that Athenaeus "started to organize his reading notes and collection of excerpts in categories such as 'wine,' 'cups,' 'fishes,' 'courtesans,' 'water,' 'parasites,' etc." (551n182).

[102] Peregrine Horden, "Prefatory Note: The Uses of Medical Manuscripts," in *Medical Books in the Byzantine World*, ed. Barbara Zipser (Bologna: Eikasmos Online II, 2013), 3.

[103] See Locher and Rottländer, "Überlegungen zur Entstehungsgeschichte der *Naturalis Historia*," 146. Not everybody agrees with Locher and Rottländer on this issue. Relying strictly on Pliny the Elder and, especially, Pliny the Younger's sparse information and little glimpses from other authors, Tiziano Dorandi, *Nell' officina dei classici: Come lavoravano gli autori antichi* (repr., Rome: Carocci Editore), 13–28, suggests that the excerpts were not transferred on slats but written on scrolls, the *commentarii*.

such slat also contained a line of Virgil's *Aeneid* (9.473), which shows that they were also used for mnemotechnical purposes.[104] The slats were light and easily inscribable with ink. Lengthier texts would run over several of these tablets. The sequence in which they had to be read was then marked by diagonal cuts in the corners.[105] In other cases, the tablets were bound together in a concertina-like form, a method also known to the writers of the texts collected in the Babylonian Talmud.[106]

Locher and Rottländer assume that the slats were a phenomenon of the north with its suitable wood and that they served the special needs of the military camps in which they were found. They proposed that Pliny learned about their usefulness when he served as an officer in a camp that sent troops to Vindolanda. Since the tablets in Vindonissa can be dated to the middle of the first century CE, and those from Vindolanda to the latter part of the same century, Locher and Rottländer think they were a recent invention.[107]

There is at least one other first-century source that mentions small and thin slats and seems to corroborate Locher and Rottländer's dating. The context of this mention, however, is far removed from the organization of military camps, although not necessarily from the private preoccupations of their inhabitants. In three of his epigrams, the Rome-based poet Martial mentions such wooden slats to which he refers as Vitellian tablets, a name that may have been derived from their manufacturer.[108] In book 2, epigram 6, Martial describes how his friend Severus had been so fond of his, Martial's, epigrams that he copied them on Vitellian tablets and carried

[104] See J. David Thomas, "The Latin Writing-Tablets from Vindolanda in North Britain," in *Les tablettes à écrire de l'antiquité à l'époque moderne*, ed. Elisabeth Lalou, Bibliologia 12 (Turnhout: Brepols, 1992), 204. The tablets have been published by Alan K. Bowman and James D. Thomas in *Vindolanda: The Latin Writing-Tablets*, Britannica Monograph Series 4 (London: Society for the Promotion of Roman Studies, 1983).

[105] See Thomas, "Latin Writing-Tablets," 205.

[106] A passage in tractate Nid. 30b // Lev. Rab. 14:2 compares the fetus in the womb to a folded notebook (פינקס שמקופל, *pinqas shemequpal*); see Menahem Haran, "The Codex, the Pinax, and the Wooden Slats" [in Hebrew], *Tarbiẓ* 57, no. 2 (1988): 157. Haran further points to Hul. 91b, which alludes to Gen. Rab. 69:3 and God's folding of the land of Canaan like a notebook (*qiplah kepinqas*, קיפלה כפינקס). y. Ma'aser Sheni 4:10 (55b) // Exod. Rab. 1:15 refer to a concertina-like *pinax* made of twelve (twenty-four in Exod. Rab.) tablets. For an illustration of a notebook, see Haran, "The Codex, the Pinax, and the Wooden Slats," 163, or Bowman and Thomas, *Vindolanda*, 39, fig. 7.

[107] See Locher and Rottländer, "Überlegungen zur Entstehungsgeschichte der *Naturalis Historia*," 146.

[108] See Martial, *Epigrams*, ed. and trans. David Roy Shackleton Bailey, LCL 480, 233n11.

them around in the puff of his garment. In a section of epigrams devoted to different forms of tablets, two refer to the usefulness of said tablets:

Vitellian tablets
Although she may not have read them yet, a girl knows what Vitellian tablets want. (*Epig.* 14.8 [Bailey, LCL])

The delicate tablets were apparently the preferred means for conveying secret messages of love and desire – but not exclusively so, as Martial specifies in the next epigram:

The same
Because you see we are very small, you think we are being sent to somebody's mistress. You are wrong. This tablet asks for money also. (*Epig.* 14.9 [Bailey, LCL])

Thin wooden slats thus seem to have served very different purposes throughout the Roman Empire. They met the administrative needs of military camps, served admirers of fine poetry as aide-mémoires, and helped lovers and embarrassed supplicants achieve their secret goals.

Locher and Rottländer are mistaken when they confine the slats to the northwestern Empire. The Palestinian revolutionary Bar Kokhba, for example, wrote a letter on such a thin wooden leaf.[109] In fact, the talmudic use of the term *pitqa* (פיתקא), a loanword from Greek *pittakion* (πιττάκιον), may refer to a similar, if not identical, lightweight carrier of text. The Greek usage of the term refers to a "tablet, label, ticket, promissory note or receipt."[110] Similarly, the Talmud mentions it as a carrier of a writ of summons (b. Rosh Hash. 31b; b. Qidd. 70a), an apotropaic pendant (b. Qidd. 73b), a note shot by an arrow (b. Sanh. 26a), a farewell note (b. Sanh. 96b), and a promissory note (b. Bek. 8b). In three stories, such notes fall from the sky, informing the protagonists about what to do (b. B. Metz. 86a; b. Sanh. 64a; b. Yoma 69b). In yet another story, such *pitqa*-tickets help two teachers who were banned from the study house communicate with those still inside (b. Hor. 13b). It seems, therefore, that the *pitqa* is a lightweight "slip."[111] Besides wood, other materials such as leaves, papyrus, or even parchment snippets, may also have been used to fashion suitable tickets.

Imperial period and late antique epitomizers possessed writing surfaces that supported the collection and storage of excerpts. Copied on lightweight and thin material, excerpts were much easier to handle than

[109] See Haran, "The Codex, the Pinax, and the Wooden Slats," 161–162.
[110] LSJ, see "πιττάκιον."
[111] *DJBA*, see "פיתקא."

bulky wax tablets and could be stored according to main, secondary, and maybe even tertiary keywords. Locher and Rottländer base their thesis of keywords on the mistakes in Pliny's text, which are likely to happen when using this method, such as wrongly interpreted descriptors, questionable connections, and false comments.[112] Pliny must have gathered excerpts until his collection seemed exhaustive enough for the project he envisaged. By the time he finally started to arrange commentaries on specific lemmas for *Natural History*, he had long forgotten about the context of the excerpts, and the books had been returned. The only thing he could do at this stage was verify the keywords and reassign the excerpts, if needed. At this stage it was impossible to make the connection between the Greek name of a plant and its Latin counterpart, for example, if he had only noted either the Greek or the Latin name as a descriptor and stored the excerpts accordingly in separate places. This led to two separate entries on the same plant in two different locations.[113] The same happened at times with Greek and Latin city names or names of people. Keywords that could refer to either of two things also challenged this system. *Electrum*, for example, can refer to both an alloy of silver and gold and to amber.[114]

Although not free from mistakes, the keyword system allowed Pliny to organize vast amounts of excerpts. When he finally started to compose *Natural History*, which begins with the cosmos and ends with precious stones, he was able to consult the excerpts referring to specific categories and subcategories according to keywords. The slats further allowed him to arrange and rearrange a selection of excerpts until the most meaningful and appealing composition for the entry on a given subject was achieved. It appears that Pliny generally attempted to follow the rhetorical structure (introduction, narration of the case, proofs, and peroration), adding excerpts that did not fit loosely at the end.[115] Frictions were glossed over by an original commentary.

[112] See Locher and Rottländer, "Überlegungen zur Entstehungsgeschichte der *Naturalis Historia*," 143.

[113] There are, for example, separate entries for the Greek *raphanos* and the Latin *brassica*, both referring to the same vegetable (cabbage/radish). Yet the excerpt used for the Latin entry states that the Greeks had no use for the plant; see Locher and Rottländer, "Überlegungen zur Entstehungsgeschichte der *Naturalis Historia*," 143–144.

[114] See Locher and Rottländer, "Überlegungen zur Entstehungsgeschichte der *Naturalis Historia*," 144.

[115] See Locher and Rottländer, "Überlegungen zur Entstehungsgeschichte der *Naturalis Historia*," 145.

The literary style of the initial sources, however, still shines through in the final version.[116]

The flexible and easily transferable nature of separately copied excerpts helps to account for the complex structure of many texts from the imperial period and late antiquity. Without wasting expensive writing materials, the slats allowed authors to experiment with different arrangements until they found the most suitable structure. To what extent and how – if at all – they included their own voice to link one excerpt with the next remained, of course, an individual choice.[117]

Most of all, the model of excerpts written on light, easy-to-transport materials may account for the complex structures of excerpt-rich texts such as the symposiac works by Athenaeus and Macrobius, or the Babylonian Talmud. It explains how the composers of these works were able to create meaningful units out of a large selection of excerpts because they were able to juggle the excerpts and to experiment with different versions before settling for one and finalizing a subsection. Regarding the Talmud, this would explain subsections (*sugyot*) that are almost identical but differ in arrangement (e.g., reversed).[118]

To make a case for the Talmud similar to the one made by Locher and Rottländer for Pliny's *Natural History*, their thesis needs to be expanded and further substantiated. New evidence, together with a somewhat broader perspective on the subject, allows us to distance Locher and Rottländer's thesis from an all-too-neat model of index cards and boxes. Rather than on leaf tablets alone, excerpts were probably stored on writing materials of very different shapes and sizes – mostly the material on which they were composed in the first place. This expanded thesis will be the subject of the next paragraph.

THE UBIQUITY OF EXCERPTING AND REASSEMBLING: WRITING MATERIAL IN LATE ANTIQUITY

Two distinct practices governed the literary productivity of the imperial period and late antiquity: excerpting and reassembling. By focusing on

[116] See Locher and Rottländer, "Überlegungen zur Entstehungsgeschichte der *Naturalis Historia*," 145.

[117] Julius Africanus, for example, provides the reader of his poikilographic work *Cesti* with a voice "in the persona of an educator and omniscient narrator with advice to give and, above all, a solution for all of the problems discussed." Wallraff et al., *Iulius Africanus Cesti*, xxvi.

[118] On the phenomenon of the so-called *sugyot mukhlafot* or *afukhot*, see Yehonathan Etz-Chayim, *Introduction to the Oral Law*, Unit 5: *The Babylonian Talmud* (Tel Aviv: The Open University, 1992), 62–64.

the small and significant unit, by way of "fragmentation," "miniaturization," and "condensation," authors produced massive works. The procedure appears to point to a Roman-era "connection between acquisition of territory and acquisition of knowledge."[119] Yet neither this connection nor the elaborate methods used to excerpt and reassemble are mentioned by authors. This fact may be worthy of closer consideration since authors were otherwise rather keen to highlight the innovative traits of their works. Pliny, for example, praises the index of book titles he provides for the readers of *Natural History* with the aim of sparing their time. According to Pliny, only Valerius Soranus had provided such an index before he did.[120] Only a few years later, Martial lists a number of reasons why he did not publish more than 100 epigrams in his second book: to save paper, to save on the expenses for a copyist, and to ensure that the book would be short enough not to anger the reader should it turn out that it was not worth the time spent reading it.[121] Eusebius, Bishop of Caesarea, consistently highlights the merits of his variously applied tabular methods.[122] But neither data management nor excerpting and reassembling was apparently considered innovative enough to be mentioned. Could it be that these practices were common knowledge, something quotidian, self-evident, and simple, as if they were the only way to produce respective books and texts?

Scholarship justifiably tends to focus on ancient texts that, at some point or another, were copied onto fine parchment or papyrus, either as scrolls or codices. Less prestigious materials, such as palm panicles, bones,

[119] Jason König and Greg Woolf, "Encyclopaedism in the Roman Empire," in *Encyclopaedism from Antiquity to the Renaissance*, ed. Jason König and Greg Woolf (Cambridge: Cambridge University Press, 2013), 29. For fragmentation, see Marco Formisano, "Towards an Aesthetic Paradigm of Late Antiquity," *Antiquité Tardive* 15 (2007): 283. For "miniaturization," see Jacques Fontaine, "Unité et diversité du mélange des genres et des tons chez quelques écrivains latins de la fin du IVe siècle: Ausone, Ambroise, Ammien," *Entretiens sur l'Antiquité classique* 23 (1977): 444–445 (with n1) and 451. On "condensation," see Stephan Dusil, Gerald Schwedler, and Raphael Schwitter, "Transformationen des Wissens zwischen Spätantike und Frühmittelalter," in *Exzerpieren – Kompilieren – Tradieren: Transformationen des Wissens zwischen Spätantike und Frühmittelalter*, ed. Stephan Dusil, Gerald Schwedler, and Raphael Schwitter (Berlin: de Gruyter, 2016), 12.

[120] Pliny, *Naturalis historia* praef. 32–33, and König and Winkler, *C. Plinius Secundus*, 22–23. For a brief discussion of the Roman history of the table of content, see Riggsby, *Mosaics of Knowledge*, 22–29.

[121] See Martial, *Epig.* 2.1.

[122] See Matthew R. Crawford, *The Eusebian Canon Tables: Ordering Textual Knowledge in Late Antiquity*, *OECS* (Oxford: Oxford University Press, 2019), 75–78.

soft and hard clay, loose stones (not graffiti on walls, rock, or statues), fabric, gems and semiprecious stones, (noble) metal, leather, skin, ivory, glass, and wood are usually not associated with the production of literary texts but, rather, with school exercises, notes, and amulets.[123] Yet these materials, the use of which is also attested across texts in Hebrew square script, stand at the beginning of every lengthy text, guiding and shaping its development.[124] Among these, the most common writing materials were wooden tablets, shards of broken pottery (ostraca), and papyrus scraps.

Ostraca were in use throughout the Mediterranean area, the earliest dating to the second millennium BCE and the latest to the eighth century CE, when paper replaced them.[125] Although ostraca have been found with inscriptions in every language spoken in the Roman and Sasanid Empires (Greek, Hebrew, Aramaic, Parthian, Latin, Latin-Punic, Middle Persian, Demotic, and Coptic), the archaeological finds decrease significantly outside of Egypt but cover the modern territory of Iran.[126] The geography of the finds, however, does not represent the actual use of ostraca, which were most likely equally ubiquitously used in the Mediterranean and adjacent areas. Rather, ostraca were subject to decay or the gradual degradation of the script due to unfavorably wet weather conditions. Most importantly, they suffered scholarly neglect until recently.[127]

For administrative purposes, such as bills, receipts (bookkeeping), lists, tokens, letters, exercises, testaments, and notes, ostraca were the preferred writing surface.[128] Ostraca lent themselves to writing because of

[123] The list of materials is an almost verbatim translation of Brashear and Hoogendijk, "Corpus Tabularum Lignearum," 21.

[124] On materials attested to transmit texts in Hebrew square script (including mosaics), see Philip Alexander, "Oral Tradition and Writing in the Rabbinic Culture of Late Antiquity: Between Qumran and the Cairo Genizah," in *Encyclopedia of Jewish Book Cultures Online*, ed. Emile Schrijver (Leiden: Brill, 2019).

[125] See Roger S. Bagnall, *Everyday Writing in the Greco-Roman East*, Sather Classical Lectures 69 (Berkeley: University of California Press, 2011), 123–135.

[126] See Bagnall, *Everyday Writing*, 130. On Pahlavi (Middle Persian) ostraca, Bagnall writes: "Nearer to the conventional end of antiquity, ostraca were in use in Iran, where a trove of merely two hundred Pahlavi ostraca was found in excavations at ancient Rhagai or Ray, on the south side of the Elburz mountains and twelve kilometers south of modern Teheran. These are in the main short memoranda of rations, mostly in bread and wine, dating to the sixth century" (125). Pahlavi ostraca were published by Dieter Weber, *Ostraca, Papyri and Pergamente: Textband*, Corpus Inscriptionum Iranicum III, Pahlavi Inscriptions 4/5, Ostraca & Papyri 2: Texts (London: School of Oriental and African Studies, 1992).

[127] See Bagnall, *Everyday Writing*, 121–122, for a discussion of ostraca finds in archeological digs, both past and recent.

[128] See the tables in Bagnall, *Everyday Writing*, 132.

their smooth surface, because of their abundant availability, and because they were free of charge. These, however, were not the only qualities of ostraca. Compared to papyrus, parchment, or wood, they are very durable and therefore suitable for documents meant to last. This explains why they were predominantly used for civil affairs.[129] Archives of ostraca show that ostraca were often further broken and shaped into rectangles to facilitate their use and subsequent storage.[130] Since the ink could easily be washed off, ostraca often show signs of correction and reuse.[131] Changes and additions to content attest to the repeated consultation of some, while others were marked consecutively as belonging together.[132] This attests to the sophisticated ways in which pieces of information were collected and stored in a way that made retrieval possible. If necessary, the content of ostraca was copied and systematically gathered on papyrus, while the shards were discarded or reused.[133]

Wooden tablets also had their specific advantages and disadvantages compared to other writing surfaces. It was easier to write on them than on papyrus, they could be reused like ostraca, and they were not as heavy as the latter but more prone to decay. Like ostraca, wooden tablets served very different purposes. Testaments, birth announcements, bills, receipts, and contracts but also sermons, hymns, prayers, and excerpts of literature, exist on wooden tablets.[134] Although wooden tablets continued to be in

[129] On qualities of ostraca other than availability and lack of cost, see Julia Lougovaya, "Writing on Ostraca: Considerations of Material Aspects," in *The Materiality of Texts from Ancient Egypt: New Approaches to the Study of Textual Material from the Early Pharaonic to the Late Antique Period*, ed. Francisca A. Hoogendijk and Steffie M. van Gompel, Papyrologica Lugduna-Batava 35 (Leiden: Brill, 2018).

[130] E.g., the so-called Racing Archive of Oxyrhynchus (150 ostraca, fourth century CE) or, already in the third to second centuries BCE, the Philadelphia Cellar Archive (see Lougovaya, "Writing on Ostraca," 54–55).

[131] See Clementina Caputo and James M. S. Cowey, "Ceramic Supports and Their Relation to Texts in Two Groups of Ostraca from the Fayum," in Hoogendijk and Gompel, *Materiality of Texts from Ancient Egypt*, 74–75.

[132] See Paolo Gallo, *Ostraca demotici e ieratici dell'archivio bilingue di Narmouthis II* (nn. 34–99) (Pisa: Edizioni ETS, 1997), l–li.

[133] See Bagnall, *Everyday Writing*, 133.

[134] See the list in Brashear and Hoogendijk, "Corpus Tabularum Lignearum," 34–35; Patrice Cauderlier, "Les tablettes grecques d'Egypte: inventaire," in Lalou, *Les tablettes à écrire de l'antiquité à l'époque moderne*, 74–94, for a list of Greek tablets from Egypt. For a list of mentions of tablets by Greek and Roman writers, see Paolo Degni, *Usi delle tavolette lignee e cerate nel mondo greco e romano*, Ricerca Papirologica 4 (Messina, Italy: Sicania, 1992), 73–146. On the production of wooden tablets, see Carlo Federici, Lucia Mita, and Michelangelo Pezzano, "Nota sulle caratteristiche tecnologiche delle tavolette lignee vaticane," in *Tavolette lignee e cerate da varie collezioni*, ed. Rosario

use at least until the fourteenth century CE, a sharp decrease is observable from the eighth and ninth centuries onward.[135] It appears that everyday writing in late antiquity was governed by independent pieces of written information, which had to be managed and meaningfully stored.

Empirical support for Locher and Rottländer's thesis may thus be found in the way people organized their daily receipts, that is, in their bookkeeping practices. The "Heroninos archive," an exceptionally vast and intact collection of letters, documents, and accounts found in the Fayum area in Egypt, provides a rare glimpse into how an estate was managed.[136] The documents, dating to the third century CE, are especially interesting for the present purpose, since erudite works similarly dealt with "big estates" in terms of the number of books and excerpts they handled.

Judging from that evidence, it appears that the managers of subunits of the estate had to account for their expenses and profits on a daily basis. They produced quite short accounts from receipts, which were most likely written on the small and cheap materials discussed above. These accounts were then collected by accountants and merged into a detailed monthly account of all the revenues and expenses effected by the estate. These monthly accounts were consolidated once more at the end of the year before a final fair copy of this annual report was produced for the landowner.[137]

This process parallels the one described above for the management of literary data in many ways. Accountants needed to identify a system by which to arrange and store different pieces of information, that is, agree on a shorthand for labeling receipts and entries.[138] The system had to allow for a subsequent, sometimes much later, collation of the information. Similarly, composers sorted their excerpts according to keywords before arranging individual commentaries, drafting, and finally copying them onto a single writing surface. And like the receipts on shards, scraps, and slats that were eventually discarded, the excerpts

Pintaudi, Pieter J. Sijpesteijn, and Roger S. Bagnall, Papyrologica Florentina 18 (Florence: Edizioni Gonnelli, 1989), 203–211 and 221–223, for an illustration of how tablets were made.

[135] See Caroline Bourlet, "Les tabletiers parisiens à la fin du moyen âge," in Lalou, *Les tablettes à écrire de l'antiquité à l'époque moderne*, 338–341.

[136] See Dominic Rathbone, *Economic Rationalism and Rural Society in Third-Century A.D. Egypt: The Heroninus Archive and the Appianus Estate*, Cambridge Classical Studies (Cambridge: Cambridge University Press, 1991), 1.

[137] See Rathbone, *Economic Rationalism and Rural Society*, 335–341.

[138] For examples of shorthand in bookkeeping, see Roger S. Bagnall, *The Kellis Agricultural Account Book (P. Kell. IV Gr. 96)*, Dakhleh Oasis Project: Monograph 7, Oxbow Monograph 92 (Oxford: Oxbow Books, 1997), 70.

of a composer, if not purposely discarded, fell prey to decomposition over time. The composers of erudite compilations may not have enjoyed as comprehensive trainings as the *phrontistes* themselves, but they were certainly aware of the standard methods for archiving documents.

The composition and success of lengthy works, whether yearly accounts or literary works, obviously relied on the production of multiple drafts. As Locher and Rottländer have pointed out, a mobile writing carrier that enabled the arrangement of excerpts before fixing them would have facilitated the production of such a coherent work made from excerpts considerably. Tablets, ostraca, and scraps of papyri would easily have allowed for this sort of mobility. Wooden tablets, in particular, are suggestive of such mobility *and* suited for convenient storage, since they allow for the drilling of sturdy holes and subsequent bundling by means of strings. Although tablets have been in use for a long time, the small format appears to have been established in the early imperial period.[139]

This technology had several advantages. Confidential texts were bound together with their messages facing inward and tied with strings on both sides and/or with a cord and sealed.[140] The holes allowed the owner to attach a string and carry the notebook by it.[141] They could serve the purpose of suspending the tablet on a wall for storage in a school or at home to facilitate repeated reading and memorization.[142] Most significant for the present argument, however, is not the fact that tablets with individual content could be tied together but that they could be untied again. If one wanted to change the sequence of the content of such a wooden notebook,

[139] See Andrea Jördens, "Codices des Typs C und die Anfänge des Blätterns," in *Material Aspects of Reading in Ancient and Medieval Cultures. Materiality, Presence and Performance*, ed. Anna Krauss, Jonas Leipziger, and Friederike Schücking-Jungblut, Materiale Textkulturen 26 (Berlin: de Gruyter, 2020), 116–117. On prior use of writing tablets, see John Z. Wee, "Phenomena in Writing Creating and Interpreting Variants of the Diagnostic Series Sa-gig," in *In the Wake of the Compendia: Infrastructural Contexts and the Licensing of Empiricism in Ancient and Medieval Mesopotamia*, ed. J. Cale Johnson, Science, Technology, and Medicine in Ancient Cultures 3 (Berlin: de Gruyter, 2015), 251–255; or Dorit Symington, "Late Bronze Age Writing-Boards and Their Uses: Textual Evidence from Anatolia and Syria," *Anatolian Studies* 41 (1991): 111–123.

[140] See Cribiore, *Gymnastics of the Mind*, 153. See also Michael A. Speidel, *Die römischen Schreibtafeln von Vindonissa: Lateinische Texte des militärischen Alltags und ihre geschichtliche Bedeutung*, Veröffentlichungen der Gesellschaft Pro Vindonissa 12 (Brugg, CH: Gesellschaft Pro Vindonissa, 1996), 22–23, for illustrations of sealed tablets.

[141] For the carrying of wooden notebooks on cords, see Brashear and Hoogendijk, "Corpus Tabularum Lignearum," 26, or the picture in Cribiore, *Gymnastics of the Mind*, 154.

[142] On the purpose of the holes in the wood, see Brashear and Hoogendijk, "Corpus Tabularum Lignearum," 26.

or add or remove content, the binding could simply be detached and then retied. In this way, personal *collectanea* could eventually be organized according to topic and disseminated as an encyclopedic work.

The compilation of notes, literary and otherwise, was thus an everyday practice, and it is not surprising that the codex used for literary texts was a development of the account book rather than a prestigious invention in itself.[143] Indeed, references to such *polypticha* point out that literature often took form on this basis. Aulus Gellius's reference to miscellany titled "Woods" (*silva*) was already mentioned. In his work *On Grammarians*, Suetonius similarly quotes from a letter that the *philologus* Lucius Ateius wrote to a certain Hermas: "Remember to recommend my *Hyle* [woods] to others; as you know, it consists of material of every kind, collected in eight hundred books [*libros*]."[144] The seemingly exaggerated number of 800 books becomes more feasible if one conceives of the work as comprised of wooden notebooks of a more resilient making, holding together a mere handful of wooden tablets. Quintilian associates "woods" with draft versions of personal compositions: "An opposite fault is committed by people who elect to make a draft of the whole subject as rapidly as possible, and write impromptu, following the heat and impulse of the moment. They call this draft their 'woods [*silva*]'" (*Inst.* 10.3.17).[145] Still, some people obviously considered even their drafts worthy of a broader audience.

Personal notes, smaller or longer compositions, adapted or paraphrased excerpts, or actual copies appear to have been the basis for larger compositions. This further modifies Locher and Rottländer's thesis about the practice of excerpting directly, and somewhat exclusively, from books. Indeed, erudite compilations often feature what appear to be distinct excerpts from a well-known author but in a version different from what is considered the original or standard version. This has been observed in Julius Africanus's *Cesti* as well as in Ioannes Stobaeus's *Anthology*. Africanus even acknowledges at some point that he uses his own version of the *Nekyia* (Odyssey).[146]

[143] See Jördens, "Codices des Typs C und die Anfänge des Blätterns."

[144] Suetonius, *De illust. gramm.* 10 (Rolfe, LCL).

[145] Translation slightly adapted from Quintilian, *The Orator's Education, Volume 4: Books 9–10*, ed. and trans. Donald A. Russell, LCL 127 (Cambridge, MA: Harvard University Press, 2002), 345. Clearly, then, wooden tablets also served students at a much more advanced stage, who drafted their orations on such tablets. See Cribiore, *Gymnastics of the Mind*, 156, also with reference to Libanius, who mentions tablets in one of his letters (*Ep.* 911.1) and in an oration (*Or.* 35.22) .

[146] In the eighteenth Cestus; see Wallraff et al., *Iulius Africanus Cesti*, xxiv.

Through inheritance, endowment, or copying the *collectanea* of others, people came into the possession of a sort of prefabricated excerpt, which further facilitated the process of compilation and helps account for the speed and productivity of authors. Rosa Maria Piccione suggests that the use of such short anthologies was the reason for Stobaeus's many dittographies.[147] The same practice can account for parallel or almost parallel stories and sayings in rabbinic literature. If a composer (or someone of their staff or team) did not remember or know that the same or similar content they found on a tablet had already been stored in the archive and assigned a different keyword, the piece was inevitably going to end up in a completely different context than its cognate.

Whether draft or fair copy, tablets represented and were associated with people's personal achievements. This notion manifests itself in the few instances in which the Talmud mentions tablets and notebooks, referring to them as *pinqsa* (פינקסא), a loan word from Greek *pinax* (πίναξ). First, the *pinqsa* are usually attributed to their owner. The notebook of Rabbi Yehoshua ben Levi (b. Shabb. 156a) is mentioned, or the one by Ilfa (b. Menah. 70a). Rabbi Hiyya is said to have had a notebook in which he wrote down his business transactions (b. B. Qam. 99b). The image of personal achievement being visible by the sheer possession of a notebook or through its content stretches into the heavenly realm, where everybody is said to have their own tablet on which their deeds are recorded. This confidential tablet is opened each time someone makes a vow (b. Ned. 22a).[148]

Beyond the association of tablets with memory as internalized knowledge (e.g., Prov. 3:3 and 7:3: "Write [my commandments] on the tablet of your heart"), the examples discussed here show that tablets were the material locus of personal knowledge and achievement.[149] A similar notion can be observed in the Hadith collection *Ṣaḥīḥal-Bukhārī* (d. 870), which lists the different writing surfaces from which the Qur'an was compiled. The list moves from materials directly to the "hearts of men," thereby again drawing a direct line between the physicality of writing and the physicality of the human being: "Then I searched out and collected the parts of the Quran, whether they were written on palm leaves or flat stones or in the

[147] Rosa Maria Piccione, "Sulle fonti e le metodlogie compilativi di Stobaeo," *Eikasmós* 5 (1994): 286–287.

[148] For mentions of wooden tablets in Palestinian rabbinic literature, see Colette Sirat, "Les tablettes à écrire dans le monde juif," in Lalou, *Les tablettes à écrire de l'antiquité à l'époque moderne*, 56–58.

[149] Prov. 3:3 (// 7:3) is discussed in Carruthers, *Book of Memory*, 34. The terminology "locus of knowledge" is borrowed from Jacob, "Athenaeus the Librarian," 109.

hearts of men."[150] A later recension of Hadith by Ibn 'Atiyya (d. 1147) expands the list of materials: "At the time of the messenger of God, the Qur'an was dispersed in the hearts of people. People wrote some of it on sheets, on palm-leaf stalks, on pumice stone, on baked clay, and on other items like that."[151] Beyond their religious significance, these passages can be read as sources of information about writing culture, data gathering, and compilation during and after late antiquity.

It may be concluded that taking notes, or even composing lengthy literary pieces, on writing surfaces with limited space, such as slats, scraps, or shards, was a practice that accompanied almost any process of writing and studying in late antiquity. This "piecemeal writing practice" resulted from the material circumstances of the time, from the availability and cost of writing surfaces combined with the increased prestige of literacy and the political need for administrators. These givens simultaneously prompted, suggested, and enabled authors' work with excerpts. Although the fair copies in the manuscripts or even prints before us still bear the imprints of these intermediate auxiliary steps, the auxiliaries themselves appear to have been left to decay or were reused once a project had been successfully finished. Regarding rabbinic texts that claim oral transmission, it should be asked to what extent these intermediary stages were considered proper writing at all.

CONCLUSION

This chapter has dealt with many intermediate and unobtrusive steps in the creation of complex works such as Pliny's *Natural History* or the Babylonian Talmud. These steps relate mostly to data management which appears to have been a version of the methods applied in bookkeeping. Accountants needed to store receipts and other data retrievably so that they were able to draft a weekly, a monthly, and finally a fair copy of the yearly income and expenses for the landlord. The fact that data management is not discussed by any author of the imperial period or late antiquity confirms the perceived ordinariness of the procedure. A similar sense of ordinariness may also have pervaded the attitude toward the intermediary bits and pieces of information that preceded erudite literary

[150] Francis E. Peters, *A Reader on Classical Islam* (Princeton: Princeton University Press, 1994), 180. My thanks to Liran Yadgar for pointing this out to me and providing me with the relevant texts.

[151] Norman Calder, *Classical Islam: A Sourcebook of Religious Literature*, ed. and trans. Jawid Mojaddedi and Andrew Rippin (London: Routledge, 2003), 121.

compositions, or a fair copy of the revenue of an estate, for that matter. It should, therefore, be asked whether what rabbinic ontology considers "writing" includes these preliminary notes and compositions, or if the focus is only on fair copies or even only the process of copying the Torah.

This sense of ordinariness is also entangled with the observation that late antiquity's dominant play with excerpts, its perfection of the "jeweled style," is simultaneously the result *and* cause of the era's material givens for writing.[152] Writing on tablets, ostraca, and scraps of papyrus requires precision and brevity, which was converted into a virtue, while the restricting shape of tablets and shards also stimulated creativity.[153]

Such small, intermediate writing surfaces are suggestive of the above-outlined thesis by Locher and Rottländer. According to their model, composers of erudite compilations (commentaries, miscellanies, encyclopedic works) collected excerpts on small surfaces and stored them according to keywords. Once composers set out to write an entry or commentary on a specific topic, they gathered the excerpts with the appropriate descriptor and assembled them in a meaningful way. Thanks to the flexible and loose nature of the excerpts, composers could play with different arrangements without spoiling parchment or paper, and without wasting much time until they settled for one. Finally, the composer compensated for any remaining friction, break, or contradiction between the excerpts by adding remarks, explanations, and objections, or by introducing the perspective that was to follow.

Because of the already-mentioned ordinariness of this method, it is only alluded to or described in metaphorical terms by imperial period and late antique authors. Macrobius, for example, describes the pedagogical program behind *Saturnalia* by invoking the image of the bee. A similar pastoral metaphor appears in the rabbinic treatise *Avot de Rabbi Natan* (A18), an extra-talmudic tractate concerned with the mishnaic tractate Avot (*Sayings of the Fathers*):

> What was Rabbi Akiva like? A worker, who took his basket and went outside. When he found wheat, he put it in the basket. When he found barely, he put it

[152] The term "jeweled style" was coined by Michael Roberts, *The Jeweled Style: Poetry and Poetics in Late Antiquity* (Ithaca, NY: Cornell University Press, 1989), who related the habit of using excerpts to the time's literary aesthetics.

[153] On the virtue of brevity, see Quintilian, Inst. 10.3.32–33 [Russel, LCL]): "I do not advise unduly wide wax tablets [*ceras*], because I knew a young man, otherwise a good student, who wrote excessively long pieces [*sermones*], because he measured them by the number of lines; this fault, which could not be corrected by repeated warnings, disappeared when his notebook was changed." For the observation that some texts seem to be in dialogue with the form of the shard on which they are written, see Cribiore, *Gymnastics of the Mind*, 151–152.

in it. Spelt—he put it in. Beans—he put them in. Lentils—he put them in. When he came home he sorted out the wheat by itself, the barley by itself, the spelt by itself, the beans by themselves, and the lentils by themselves. This is what Rabbi Akiva did; he made the entire Torah into rings upon rings.[154]

If the "basket" is taken as metaphor for a miscellaneous notebook, then Rabbi Akiva is here depicted as taking excerpts from different books, metaphorically referred to as wheat, barley, spelt, beans, and lentils. He pools them in a miscellany (the basket) before sorting them out again to provide a commentary on the Torah (the rings). This method matches the one presumably applied by Pliny the Elder in his *Natural History*.

So far, the metaphor concerning Rabbi Akiva has been read in reference to mnemotechnics and the ancient method of memorizing according to loci. As reported by Cicero, Simonides invented this method when he identified mutilated corpses by recalling where people had been reclining at the banquet before the roof buried them. Cicero concludes that:

for those who would train this part of the mind, places [*locos*] must be selected and those things [*rerum*] which they want to hold in memory must be reproduced in the mind and put in those places: thus, it would be that the order of the places would preserve the order of the things; moreover, the likeness of the things would represent the things themselves, and so we use places instead of a wax tablet, images instead of letters.[155]

The problem with ancient imagery of cognitive processes is that it is based on and shaped along writing processes as Cicero's quote shows. If tablets are a symbol of personally acquired knowledge just like memory, the "tablets of the mind," and if honeycombs refer as much to mentally created loci as to the material locus which is the tablet (or the like), it becomes almost impossible to distinguish where a text speaks of the cognitive ownership of knowledge and where knowledge is owned in a material way. In the end, the value of memorization and, even more so, exegesis remains questionable without the verifiable counterpart of a text.[156]

The next chapter will probe the relationship of the talmudic text to the method of data management described in the present chapter. Since the Talmud itself adheres to the ideology of Oral Torah, it is the text's form and, quite literally, its "texture" that can tell us something about the processes that led to its construction.

[154] Translation follows Barry W. Holtz, *Rabbi Akiva: Sage of the Talmud* (New Haven: Yale University Press, 2017), 180.
[155] Cicero, *De oratore* 2.353–354, quoted according to Small, *Wax Tablets of the Mind*, 83.
[156] See Jacob, "Athenaeus the Librarian," 109.