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Epigraphic Essays in Honor of Frank Moore Cross

Edited by

JO ANN HACKETT AND WALTER E. AUFRECHT

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Paleography of the Semitic Judean Desert Scrolls

ESTHER ESHEL

In 1951, it still seemed possible to call for an objective paleographical agenda detached from historical or textual considerations, as S. A. Birnbaum (1952: 7) wrote in his study of the paleography of the Dead Sea Scrolls:

In view of the inherent difficulties in establishing, by means of internal evidence, the historical context in which documents like the Cave Scrolls belong, the paleographer may consider himself fortunate that he is not subject to the dangers of being misled by historical or textual theories. It makes no difference to him whether the Wicked Priest is King Jannaeus, King Aristobulus II, Paul or a medieval allegory . . . whether the Masoretic Text was fixed in the second Century B.C.E., the first Century C.E., or at any other time. . . . The paleographer stands in no need of defending widely accepted hypotheses of long standing or pet theories of his own, nor propounding important new ones. All he has to do is to sort out and classify the forms of the script, i.e., he is concerned only with objective data.

As Birnbaum himself demonstrated in his survey, however, the paleographer cannot adhere to a totally objective agenda; nor can he refrain from taking external evidence into consideration when examining scripts. Today, the necessity for broad-based training and broad fields of interests on the paleographer's part is clear, as is the inestimable contribution of tools derived from archaeology, history, and literary analysis to paleographic studies. I aim here to survey briefly the state of paleographical research of the scripts found in Semitic Judean Desert documents, first outlining the history of the study of the three types of Jewish scripts. First, the formal book hand, which can be divided into three major phases: Archaic (ca. 275–150 B.C.E.), Hasmonean (ca. 150–30 B.C.E.), and Herodian (ca. 30 B.C.E.–70 C.E.). Second, cursive, which diverged from the Aramaic cursive style known since the 3rd century B.C.E., and later developed into semicursive (ca. 150 B.C.E.–1 B.C.E.) and extreme cursive (55 C.E. to 135 C.E.). Third, Paleo-Hebrew (for the period ca. 250 B.C.E.–135 C.E.). I then consider the contribution of related fields to paleographical studies: calligraphy and scribal practices, on the one hand, and the most up-to-date radiocarbon dating techniques used to corroborate paleographical dating, on the other.

History of Research

Formal Book Hand

Prior to the discovery of the Dead Sea Scrolls in 1947, Second Temple–period paleographers had to rely on a limited Hebrew and Aramaic epigraphic corpus. This relatively small corpus consisted primarily of Aramaic papyri as well as ostraca found in Egypt, mainly in Elephantine, dating to the Persian and Ptolemaic periods. From Dura–Europos came 3rd-century B.C.E. inscriptions. In Palestine, there were a few known funerary inscriptions, mostly from the Herodian period. Of these then-known texts, one of the most important was the Nash Papyrus, which contains the Decalogue followed by the *Shema*^c, also found in Egypt (Cook 1903; Albright 1937). This text was difficult to date because of the lack of parallel sources at the time of its discovery.¹ In 1937, W. F. Albright wrote the first modern paleographic discussion devoted to the Nash Papyrus, an analysis that is still valid. It included a basic typological outline of the development of Jewish scripts from the 5th century B.C.E. until the First Jewish Revolt.

After the initial appearance of the Dead Sea Scrolls on the market, it was Professor E. L. Sukenik who first recognized their authenticity and antiquity. Upon examining the first fragments from Qumran Cave 1 on 25 November 1947, Sukenik noted their resemblance to Herodian ossuary inscriptions found in Palestine, of which the most important was the Uzziah inscription (Sukenik 1931); and a feature that was shared by both: the use of ligatures—namely, two or more letters combined into one (Sukenik 1955: 14, 28–29).² Sukenik also produced the first table of the alphabets found in 1QS and of the alphabets of the two scribes of 1QH, 1QM, 1QIs^a, 1QIs^b, and 1QpHab. His survey discussed only the “typical letters” found in each scroll and made no attempt to assign a chronological sequence to the manuscripts. Sukenik did note that, although penned by different scribes, the scrolls in question represent a relatively brief time span. One important typological feature that he suggested for determining sequence was the appearance of final letters. In 1QS and 1QIs^a, only final *mem* and *nun* are found, whereas in the other scrolls final *kap*, *pe*, and *šade* also appear. Based on this differentiation, he postulated that 1QS and 1QIs^a should be dated earlier than 1QH, 1QM, and 1QIs^b (Sukenik 1955: 40). Sukenik was followed by J. C. Trever (1949), who grouped the scripts into two “schools,” each of which represents a different time period. He also suggested a chronological sequence for the Cave 1 manuscripts.³ This pioneering epigraphic research was followed by Albright’s further studies based on the new material from the Judean Desert, which enabled him to confirm his early dating

1. Albright (1937) dated it to the second half of the 2nd century B.C.E., while Cook (1903) dated it to the 2nd century C.E.

2. In his diary, Sukenik wrote, “He showed me a fragment written on parchment: *Genizah!*” (27 November 1947). Two days later, he saw four fragments written in Hebrew, concerning which he wrote, “The script seems ancient to me, very much the writing on the Uzziah inscription (Sukenik 1955: 17).”

3. Trever (1949) dated 1QIs^a to between 125 and 100 B.C.E.; 1QS to 75 B.C.E.; and 1QpHab and 1QapGen to between 25 B.C.E. and 25 C.E.

for the Nash Papyrus, rebutting those who argued for a medieval dating of the Nash Papyrus (Albright 1949; 1950).

The discovery of the first 300 manuscripts from Qumran Cave 4 in 1952, as well as 1st- and 2nd-century C.E. documents in Wadi Murabbaʿat set the stage for initiation of comprehensive surveys of the paleography of the Judean Desert texts. Among the outstanding figures involved in this endeavor was F. M. Cross, who in 1955 began his study of the earliest manuscripts from Qumran Cave 4—that is, 4QSam^b and 4QJer^a. He also noted that, in a very difficult-to-read manuscript from Cave 4, one can find “the earliest Qumran exemplar of the cursive tradition, the archaic manuscript of Exodus and Leviticus (4QExod–Lev^f)” (Cross 1998: 387).

Cross compared these documents with the “sister scripts” of Palmyrene and Nabatean (Cross 1955). Cross distinguished between the “Jewish Script” and the (common) Aramaic Script of the 4th and the 3rd centuries B.C.E. from which it was developed (Cross 1955). Following Albright, Cross dated the Nash Papyrus to ca. 150 B.C.E. or even earlier (Cross 1955: 148 n. 3). In his survey, Cross outlined the two main tasks of paleography: “The first, and most important, is a detailed description of the parallel courses of evolution of the book-hand (formal script) on the one hand, and the cursive on the other. . . . A second task is the study of the separation of the related scripts, Jewish, Palmyrene, and Nabatean, from the parent Aramaic script” (Cross 1955: 148). He concluded that, in general, “the formal Jewish book-hand derives from a formal tradition of the early third century, as yet unknown from cursive third century ostraca and papyri” (Cross 1955: 153) and “4QSam^b, especially, but also 4QJer^a, belongs to the tradition of the Persian chancellery script of the 4th century B.C. both in its technique of penning letters, and in the size of letters” (Cross 1955: 158).

Three years earlier, in 1952, Birnbaum published his survey of Dead Sea Scrolls paleography, in which he dealt with some theoretical issues related to the field (Birnbaum 1952). In 1958, Nahman Avigad published the first schematic survey of their paleography (Avigad 1958). His aim was twofold: first, to establish a sequence of evolution for Hebrew script, both formal and cursive; and second, to establish an absolute chronology for this script’s various typological series. In considering these studies, we must take into account the still-limited nature of the textual corpus available to the above-mentioned scholars. Avigad classified the known texts into six categories: (1) Persian and Ptolemaic periods; (2) Hasmonean period; (3) the “Herodian” group of scrolls; (4) funerary inscriptions from the Herodian period; (5) Bar-Kokhba period; and (6) 3rd–4th centuries C.E.

Following his above-mentioned paleographic study of 4QSam^b, in 1961 Cross produced what must be considered the most comprehensive research of the Judean Desert document scripts, his masterful treatment in the Albright Festschrift (Cross 1961). This study was updated in 1998. In his 1961 study, Cross distinguished the following:

1. the Aramaic script of the late Persian Empire and the rise of national scripts. His written description of each letter was accompanied by seven lines of alphabets from various texts, the earliest dated to ca. 375–350 B.C.E., and the latest to ca. 175–125 B.C.E. (Cross 1961: 137, fig. 1);

2. the development of the formal Jewish hand, illustrated by ten lines of alphabets, starting with a transitional script between the archaic and Hasmonean scripts, dated ca. 175–150 B.C.E., and ending with the post-Herodian script, dated to ca. 133 C.E. (Cross 1961: 138–39, fig. 2);
3. the development of scripts in semi-cursive and cursive traditions, illustrated by 11 lines of alphabets, starting with the early Jewish semi-cursive script dated to ca. 150 B.C.E., and ending with the post-Herodian cursive script from a document dated to 134 C.E. (Cross 1961: 148–49, 162, figs. 3–5); and
4. For purposes of comparison, Cross added four lines from the earliest Nabatean and Palmyrean scripts: the earliest Nabatean dated to ca. 95 B.C.E., and the earliest Palmyrene dated to 44 B.C.E. (Cross 1961: 163–64, figs. 6–7).

In this survey, Cross provided a comprehensive description of the major evidence for each period, describing each individual letter. His descriptions focused on each letter's development, looking at both calligraphy and typology. In the 1998 edition, Cross refined his earlier dating of the texts with the assistance of newly published documents.⁴

The corpus of texts included in Cross's 1998 edition includes some 800 manuscripts found at Qumran—essentially, the entire corpus of Qumran scrolls dating from the mid-3rd century B.C.E. to the third quarter of the 1st century C.E. (68 C.E.). The script of these manuscripts was described in the survey, in line with the above-mentioned categories. Other sources from this period found in the Judean Desert were also included, among them documents from Wadi Murabba'at, Naḥal Ḥever, Naḥal Seiyal, Judean Desert caves, Masada manuscripts and other related texts, dating mainly to the 1st and 2nd centuries C.E. One important text is a dated Edomite marriage contract found at Maresha, from 176 B.C.E., which enables confirmation of the paleographical dating of texts from the first half of the 2nd century B.C.E., including the Nash Papyrus (E. Eshel and Kloner 1996).

Cross's study was confined to documents in book hand; the task of studying extreme cursive script was later undertaken by A. Yardeni (see below). In addition to the overall surveys mentioned above, we must note the existence of detailed paleographical studies devoted to one manuscript, usually in conjunction with comparisons to similar scripts found in other scrolls: for example, studies of the Copper Scroll (Cross 1962), 4QJer (Yardeni 1990b), 4Q448 (Eshel, Eshel, and Yardeni 1992: 219–29), and some manuscripts of 4QMMT.⁵

4. Thus, for example, Cross redated the classical Aramaic cursive of the late Persian period, exemplified by Papyrus Luparensis (Cross 1961: fig. 1:1) from ca. 375–350 B.C.E. to ca. 400 B.C.E. (Cross 1998: pl. 9:1); and the proto-Jewish formal hand, exemplified by 4QSam^b, from the late 3rd century B.C.E. (Cross 1961: fig. 1:4) to mid-3rd century B.C.E. (Cross 1998: pl. 9:4). In general, the 1998 edition is more informative, due to the publication of additional texts that had been unavailable in 1961. The main addition is the Edomite Marriage Contract from Maresha (Cross 1998: pl. 11:1), see below; and the substitution of an old Hebrew script and Paleo-Hebrew script from Qumran (Cross 1998: pl. 14) for the early Nabatean and Palmyrean scripts (Cross 1961: figs. 6–7).

5. For a description of the scripts found in 4Q397 and 4Q398, see Yardeni 1994.

Jewish Cursive Script

Yardeni made the first detailed survey of the extreme cursive script in her doctoral dissertation (Yardeni 1991), later published in book form (2000).⁶ She dealt mainly with the Jewish extreme cursive, comparing it with the script in the earliest scrolls from Qumran.

Her special method included a “genealogical” chart presenting the “skeleton” of each letter, where, in her opinion, “the changes in the direction of the strokes and their meeting point are responsible for most of the differences between letter-types as well as script-style” (Yardeni 2000: 2.149). Her examination of the cursive script follows the evolution of the individual letter forms, classifying them according to typological features and arranging the different forms of each letter-type according to their evolutionary phases. To her study she appended a discussion of the Nabatean script, the ancestor of the Arabic script, which diverged from the Aramaic script in the early to mid-2nd century B.C.E. One of her important conclusions notes the possible role of contacts with other scripts on letter formation:

Several types of letter-forms in the Jewish script had a direct relation to similar types in the Aramaic script. Those types underwent further changes in the course of time, and new variants evolved in a process within the Jewish script. Some of the cursive letter-forms evolved directly from the Jewish book-hand, and others were influenced by it through adoption of ornamental elements. Those elements occasionally became dominant parts of the letter-forms. In addition to the different types and their variants, different stages of evolution of the individual letter-forms sometimes appear side by side in one hand-writing. The appearance of an extreme cursive hand in the late Herodian and Post-Herodian periods may be partly the result of close contacts with the Nabatean and Greek cursive scripts. (Yardeni 2000: 2.215)

Yardeni’s study surveys Hebrew and Aramaic documents written in Jewish cursive script style from the Herodian and post-Herodian periods.

Paleo-Hebrew Script

In total, 12 texts written in Paleo-Hebrew script were found at Qumran (Barthélemy and Milik 1955; Skehan, Ulrich, and Sanderson 1992; Freedman and Mathews 1985; see updated list in Tov 2010);⁷ and one papyrus written in Paleo-Hebrew on both sides (by different hands) was found at Masada.⁸ The Paleo-Hebrew texts from Qumran include mainly pentateuchal books and one copy of Job. In addition, a text labeled 4QPaleoParaJosh was found, and 3 texts remain unidentified: 4Q124, 4Q125 (Skehan, Ulrich, and Sanderson 1992: 205–15) and 11Q22 (García Martínez, Tigchehaar, and van der Woude 1998: 415–18). In his doctoral dissertation, M. D. McLean (1982) subjects this script to a general examination, making comparisons with earlier and later inscriptions written in Paleo-Hebrew script, including Jewish coins.

6. The documents from Nahal Hever were first published by Yardeni (2000). The first documents from the Seiyal collection were published by Cotton and Yardeni (1997) and then by Yardeni and Levin in Yadin et al. (2002).

7. On the scribal nature of these texts, see Tov 1996.

8. It is labeled Mas 1o (Mas 1039–320; Talmon 1999). For identification of this composition, see H. Eshel 1991.

Freedman and Mathews (1985) extensively studied the script of one of these scrolls, 11QpaleoLev.

Finally, since 1985, a new corpus of inscriptions, written in Aramaic, Hebrew, Samaritan, and Greek, has been discovered in the course of excavations at Mount Gerizim, which will have an impact on future paleographic studies. This corpus consists of some 400 fragments of engraved inscriptions, 360 of which were written in Jewish script, dating to the 3rd and 2nd centuries B.C.E. The *editio princeps* recently published by Dušek (2012) consists of 381 inscriptions in Aramaic script, 7 inscriptions in Paleo-Hebrew script, several inscriptions in “mixed” script (Aramaic and Paleo-Hebrew), an inscribed square-shaped object, an inscribed ring, and 4 Samaritan inscriptions.⁹

Until now, the known engraved inscriptions came mainly from Second Temple-period Judea. As opposed to texts written on leather or parchment, the engraved inscriptions from Mount Gerizim preserve some old letter forms. They not only serve to enrich our knowledge of the development of the Jewish script; they are a welcome addition to the corpus and shed light on the question of its geographical origins.

Related Fields

Calligraphy and Scribal Techniques

As noted above, paleography derives benefit from related disciplines. Of these, calligraphic research and study of scribal techniques make an important contribution to examination of the Judean Desert document scripts. Calligraphy studies the movement of the hand and its direction; thus it can assist in the reading and restoration of texts. Like paleography, the study of calligraphy follows the development of styles and writing techniques and can therefore be used to enrich our knowledge of the scripts in different periods. Its study in the context of Hebrew scripts was established by (among others) Yardeni, who accompanied her verbal description with 19 illustrative plates (Yardeni 1990a).

The realm of scribal technique includes: (1) the technical aspects of writing, including the materials used, ruling, blocks of writing, columns, margins, titles, and writing practices, such as word and verse divisions; (2) scribal notations; and (3) special scribal practices related to the writing of sacred texts: writing the Tetragrammaton, phylacteries, and so on. The first pioneering study of these aspects was carried out by Martin (1958), who presented a detailed survey of scribal practices based on scrolls from Cave 1, the only ones then available. Tov’s new survey, with its examination of all the relevant features constitutes a major contribution to paleographical study (Tov 1998; 2004).

Carbon Dating

In the past decade, the technique of radiocarbon dating has been introduced to the field of Qumran studies, providing scholars an independent check on paleographical dating. It is well known that most Qumran scrolls, because they are literary

9. For earlier publications, see Naveh and Magen 1997; Magen, Tsfania, and Misgav 2000; Magen, Misgav, and Tsfania 2004; and Magen 2008.

compositions, do not have date formulas.¹⁰ The first radiocarbon test on Judean Desert documents was performed in 1990 at the Institut für Mittelenergiephysik, Zurich. The scholars involved took small samples from 14 documents found at six sites in the Judean Desert, 8 of which came from Qumran (Bonani et al. 1991: 29; 1992). As control texts, they used 4 documents with date formulas: one from Wadi Daliyeh, dated 352–351 B.C.E.;¹¹ one from the Seiyal collection, dated 130–131 C.E.; another from Wadi Murabba‘at (Mur 30), which they believed dated to 134 C.E.; and one from Kh. Mird, dated 744 C.E.

In determining dates for texts, the test took statistical errors of the mean and variances (the higher value of these possibilities is always provided) into account, as well as the radiocarbon age range. The test results show “good agreement between radiocarbon and paleographic dates . . . in nine of the ten cases” (Bonani et al. 1991: 29). The sole exception is in 4QTestQohat, “where the difference between the paleographic and the radiocarbon dates is considerable, on the order of 200 years” (Bonani et al. 1991: 30). No clear explanation for this difference was suggested, but it is possible that it was due to contamination of the text.

In 1994, a second radiocarbon test was performed at the National Science Foundation Accelerator Mass Spectrometry (AMS) Facility at the University of Arizona in Tucson (Jull et al. 1996). On this occasion, multiple measurements of several samples were taken and compared to paleographic dating. Twenty samples were examined: 17 from Qumran documents (Caves 1 and 4, including one patch of a scroll); as well as 1QIs^a, which was examined in the first test. As controls, they took 3 texts with date formulas from the above-mentioned texts: 5/6 H₂Hev/Se 8a dated to 135 C.E.; 5/6 H₂Hev Pap Yadin 21 dated to 11 September 130 C.E.; and 5/6 H₂Hev Pap Yadin 19 dated to 16 April 128 C.E. Again, the results were: “With one exception, the dates of the documents determined by the 14-C test are in good agreement with the dates suggested on the basis of paleographic analysis” (Jull et al. 1996: 87). The exception this time was 4Q258, which was “anomalously young and difficult to explain in terms of the expected age of the material.” But a second clear specimen sample of the same text was taken, “subjected to extensive acetone cleaning . . . as well as the acid-base-acid treatment.” On this occasion, the radiocarbon dating was “comparable to the palaeographic age” (Jull et al. 1996: 89).

Altogether, 34 documents were examined, and in all but one case the results matched the paleographical dating (Broshi 1999; Doudna 2000). Comparing the case of 4Q258 discussed above, we may conjecture that 4QTestament of Qohat was also covered with some material that interfered with its correct dating.

Table 1, based on the two series of radiocarbon dating tests performed, compares the radiocarbon dating to the paleographical dating of the Qumran texts tested. Additional relevant information and updates have been included.¹²

10. Yardeni claimed that the scrolls found in Cave 4 were literary in nature (Cotton and Yardeni 1997: 283). Recently, H. Eshel (2001) was able to show that three economic documents—4Q343, 4Q345, and 4Q348—together with at least four other economic documents were found at Qumran.

11. For the latest edition of these texts, see Dušek 2007.

12. Some of the information about the Qumran texts is missing in Bonani’s articles, and other data are incorrect. I have tried to supply the missing information as well as possible.

Table 1. Comparison of Radiocarbon and Paleographic Dating

<i>Text</i>	<i>Calibrated Age Range(s)</i>	<i>Paleographical Date</i>	<i>Script</i>
1. 4Q208 (Enastra)	166–102 B.C.E.	175–125 B.C.E.	Archaic or early semiformal
2. 4Q249 (CryptA)	191–90 B.C.E.	175–125 B.C.E.	Archaic or early semiformal + cryptic
3. 4Q317 (AstrCrypt)	164–93 B.C.E.	150–100 B.C.E.	cryptic
4. 1QIsa ^a	202–107 B.C.E.	125–100 B.C.E.	Hasmonean
5. 4QLevi ar	191–155 B.C.E.	125–75 B.C.E.	
6. Mas11 (apocrJosh)	169–93 B.C.E.	125–75 B.C.E.	Early Herodian
7. 11QTemple Scroll	97 B.C.E.–1 C.E.	125–75 B.C.E.	
8. 1QapGen	73 B.C.E.–14 C.E.	50 B.C.E.–50 C.E.	Herodian
9. 4Q521 (MessApoc)	35 B.C.E.–80 C.E.	100–80 B.C.E.	
10. 4Q365	209–117 B.C.E.	100–75 B.C.E.	
11. 4QSam ^c	192–63 B.C.E.	100–75 B.C.E.	
12. 1QS col. 11	159 B.C.E.–20 C.E.	100–75 B.C.E.	Special semiformal Hasmonean
13. 4Q258 (4QS ^d)	95 B.C.E.–122 C.E.	30–1 B.C.E.	Early Formal Herodian
14. 4Q266 (4QD ^a)	5–80 C.E.	100–50 B.C.E.	Semicursive Hasmonean
15. 4QpaleoExod ^m	159 B.C.E.–16 C.E.	100–25 B.C.E.	
16. 4Q267 (4QD ^b)	194–45 B.C.E.	50–1 B.C.E.	Formal
17. 4Q345 (Deed A)	390–100 B.C.E.	50–1 B.C.E.	
18. Mas1j (psJub)	33 B.C.E.–74 C.E.	30–1 B.C.E.	Early Herodian Formal
19. 4QTestQohat	388–353 B.C.E.	30–1 B.C.E.	
20. 1QpHab col. 13	104–43 B.C.E.	30–1 B.C.E.	Herodian
21. 4Q171 (4QpPs ^a)	22–28 C.E.	50 B.C.E.–50 C.E.	
22. 4QPaleoExod ^m patch	120 B.C.E.–63 C.E.	50 B.C.E.–50 C.E.	
23. 1QH ^a	21 B.C.E.–61 C.E.	30 B.C.E.–68 C.E.	

As table 1 clearly indicates, the match between the dates determined by radiocarbon dating and the data elicited on the basis of paleographical dating and data is striking.

In addition to this, radiocarbon testing can help to resolve historical questions and issues. Two examples suffice. First, two documents found at Murabba'at (Mur 22 and Mur 29), which scholars dated to the Bar-Kokhba Revolt, were examined by H. Eshel, Broshi, and Jull (1998).¹³ The radiocarbon results showed that the documents date

13. See also H. Eshel 2002.

between 91 B.C.E. and 78 C.E. Thus, these two documents and presumably two additional ones (Mur 25 and 30) were written during the First Jewish Revolt—dating which is further substantiated by numismatic evidence.

Second, three additional documents were examined by Broshi and H. Eshel (2001) as a means of checking the validity of Knohl's theory that an Essene messiah served as the model for Jesus. Knohl argues that Jesus "was heir and successor of the messiah of Qumran" (Knohl 2000: 71). Knohl grounded his argument on two hymnic compositions, the first preserved in two fragmentary versions: (a) 1QH^a col. 26, 4QH^a, and 4QH^c; (b) 4Q491 frg. 11, col. 1:5–11; and the second in two versions as well: (a) 4QH^a frg. 7, col. 1:13–23; col. 2:1–14; (b) 4Q491 frg. 11, col. 1:13–16 (Knohl 2000: 75–86).¹⁴ Carbon dating of these manuscripts makes Knohl's identification of this messianic figure with Menahem the Essene doubtful, since 4QH^a and 4Q491 were shown to date to between 187 and 51 B.C.E., long before the reign of King Herod. They are therefore in no way related to Jesus.

Conclusion

In this survey, I have tried to follow developments in the field of Qumran paleography from its infancy, beginning with the discovery of the first scrolls from Cave 1, until recent years. The pioneering works in the field, especially those by Frank Moore Cross, not only remain valid but have received dramatic substantiation from the newly applied technique of radiocarbon dating.

According to Kuhn (1970), paradigms both define what science is and carry within them the seeds for their own transcendence. While paradigms force scientists into adherence to the status quo, they also bring about revolutionary instances of paradigmatic change, and this change constitutes scientific progress. Since the early days of Qumran studies, the paleographic paradigm has been subjected to examination based on the available external archaeological finds and on the application of tools from additional fields, the most important of which was radiocarbon testing. As these examinations show, the basic paradigm is still germane; at the same time, it has been undergoing refinements as more data have become available. Looking to the future, based on the scholarly achievements outlined above, I believe the time is ripe for the compilation of the existing paleographic data in a comprehensive chart of all the texts classified according to script and date. A summary chart of this sort would be of inestimable value to future research. In the meantime, we have the wonderful charts of Frank Cross as a guide. For convenience, they are presented here (figs. 1–7).

14. Knohl (2000: 26) dates all these manuscripts "to a period between 50 B.C.E. and the beginning of the Christian era."

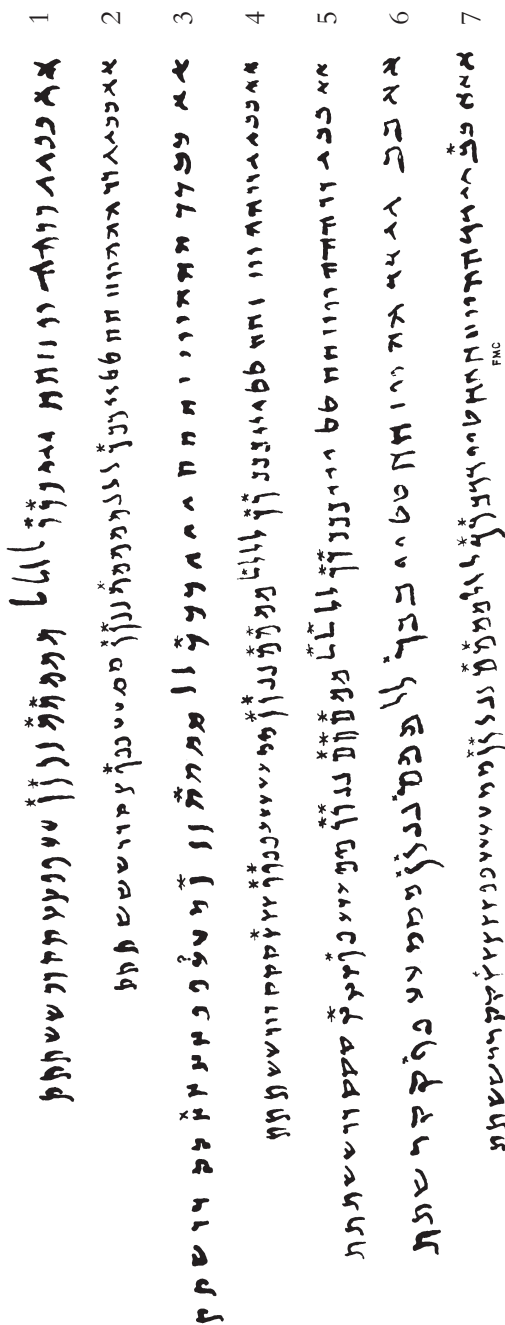


Fig. 1. Early Aramaic and Proto-Jewish Scripts. Reproduced with permission from F. M. Cross, *Leaves from an Epigrapher's Notebook* (Harvard Semitic Studies 51; Winona Lake, IN: Eisenbrauns, 2003) 7.

Line 1. The classical Aramaic cursive of the late Persian Empire, ca. 400 B.C.E. From Papyrus Luparensis, *CIS (pars secunda)* I: 1, 146 A, B, Tab. XVII.

Line 2. An Aramaic Vulgar cursive of the early third century B.C.E. from Egypt. From the Edfü Papyrus published by Sayce-Cowley, *PSBA* 29 (1907) pls. I, II.

Line 3. An Archaic proto-Jewish hand of the mid-third century B.C.E. The script contains letter forms which eventually evolve into the early Jewish cursive character. This manuscript, 4QExod-Lev^f [4Q17] is now published in *Qumran Cave 4*:VII (DJD XII): 133–44.

Line 4. An Archaic proto-Jewish formal hand of the mid-third century B.C.E. From a manuscript of 4QSam^b [4Q52] published in part by F. M. Cross, "The Oldest Manuscripts from Qumrân," *JBL* 74 (1955): 147–72, esp. fig. 6 and fig. 2, line 2.

Line 5. An Archaic proto-Jewish formal hand of ca. 200 B.C.E. From a manuscript of Jeremiah from Qumrân (4QJer^a). See E. Tov, "The Jeremiah Scrolls from Qumrân," *RevQ* 14 (1989): 189–205, esp. pl. 3.

Line 6. An Archaic or Early Hasmonaean semiformal script of ca. 175–150 B.C.E. From a manuscript of Qohelet from Qumrân (4QQoh^a). Cf. J. Muilenberg, "A Qoheleth Scroll from Qumrân," *BASOR* 135 (1954): 20–28.

Line 7. An Archaic or early Hasmonaean semiformal script of ca. 175–150 B.C.E. From a manuscript published by M. Baillet, *Qumran Grotte 4•II (DJD VII)*: 4Q504, 4QDibHam^a, pp. 137–77, pls. 49–53.

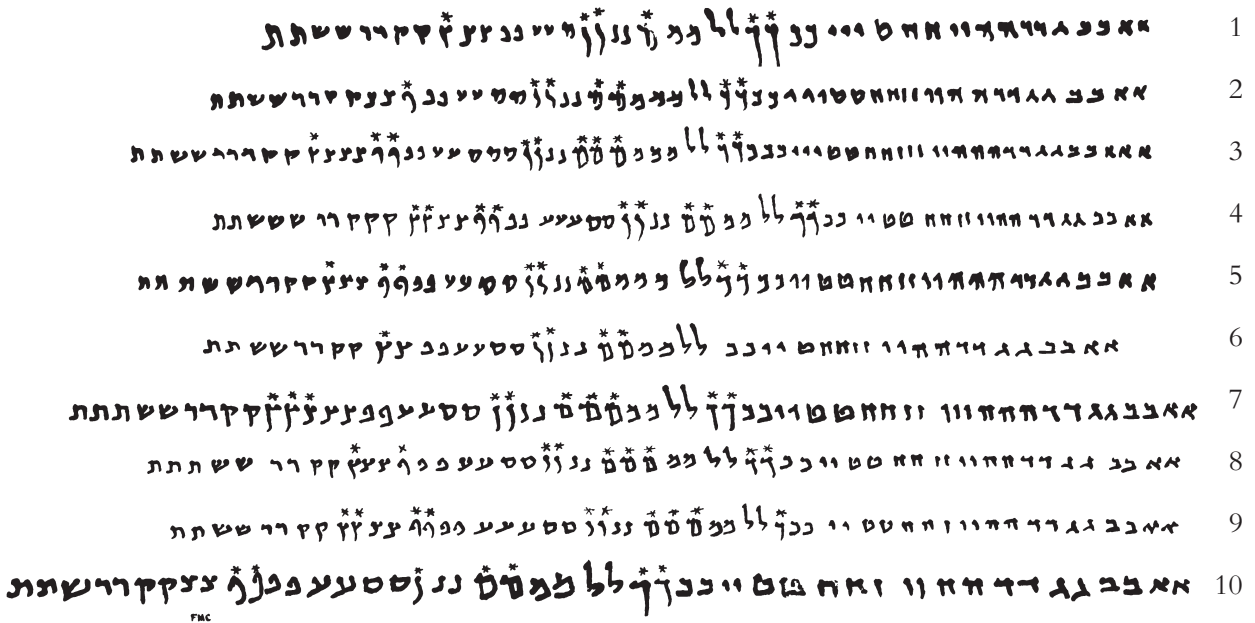


Fig. 2. The evolution of the formal hand in the Hasmonaean and Herodian Periods. Reproduced with permission from F. M. Cross, *Leaves from an Epigrapher's Notebook* (Harvard Semitic Studies 51; Winona Lake, IN: Eisenbrauns, 2003) 8–9.

- Line 1. A script transitional between the Archaic (Proto-Jewish) and Hasmonaean periods (ca. 175–150 B.C.E.). From a manuscript of Deuteronomy from Qumrân (4QDeut^a). Published by Sidnie White in *Qumran Cave 4•IX (DJD XIV)*: 7–8 and pl. 1.
- Line 2. A typical Hasmonaean script (ca. 125–100 B.C.E.). From a manuscript of Deuteronomy (4QDeut^c) published by Sidnie White in *Qumran Cave 4•IX (DJD XIV)*: 15–34, pls. 3–9. Compare the hand of the great Isaiah scroll (1QIsa^a) of about the same date.
- Line 3. A late Hasmonaean or Early Herodian hand (ca. 50–25 B.C.E.). From a manuscript of Samuel (4QSam^a). Cf. F. M. Cross, “A New Biblical Fragment Related to the Original Hebrew Underlying the Septuagint,” *BASOR* 132 (1953): 15–26.
- Line 4. A typical Early Herodian formal script (ca. 30–1 B.C.E.). From a manuscript of the Order of the War (1QM [1Q33]).
- Line 5. An Early Herodian ‘Round’ semiformal hand (ca. 30 B.C.E. 20 C.E.). From a manuscript of Numbers (4QNum^b) published by Nathan Jastram in *Qumran Cave 4•VII (DJD XII)*: 205–67 and pls. 38–49.
- Line 6. A developed Herodian formal script (ca. 20–50 C.E.). From a manuscript of Daniel (4QDan^b). Cf. E. Ulrich, “Daniel Manuscripts from Qumran, Part 2: Preliminary Editions of 4QDan^b and 4QDan^c,” *BASOR* 274 (1989): 3–26.
- Line 7. A Late Herodian formal script (ca. 50–68 C.E.). From a manuscript of Deuteronomy (4QDeut^t). Published by J. A. Duncan in *Qumran Grotte 4•XI (DJD XIV)*: 75–91 and pls. 20–23.
- Line 8. A Late Herodian formal script (ca. 50–68 C.E.). From a manuscript of Psalms from Qumrân (4QPs^b). published by P. W. Skehan, *CBQ* 26 (1964): 313–22. This script represents the classic book hand of the First Jewish Revolt, the prototype of the post-Herodian biblical hand.
- Line 9. A post-Herodian biblical hand (ca. 75–100 C.E.). From a manuscript of Psalms from the Naḥal Hever (NH Ps).
- Line 10. A formal Jewish script from a Hebrew contract (Mur 24) dated in 133 C.E. Published by J. T. Milik, *Les grottes de Murabbaʿat (DJD II)*: 122–34 and pls. 35–37.

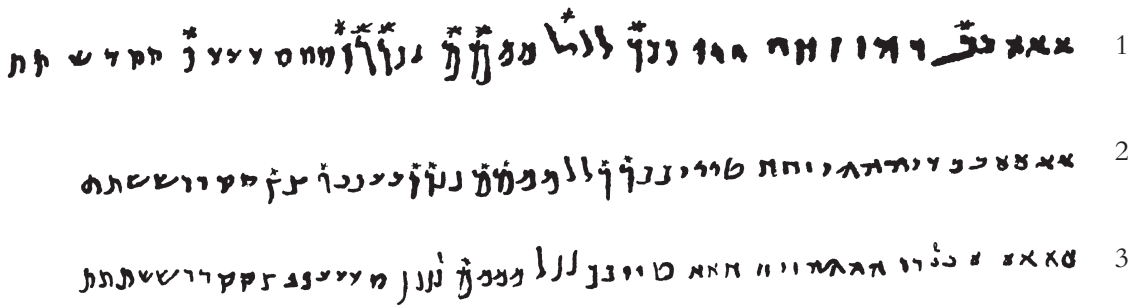


Fig. 3. Early semicursive scripts. Reproduced with permission from F. M. Cross, *Leaves from an Epigrapher's Notebook* (Harvard Semitic Studies 51; Winona Lake, IN: Eisenbrauns, 2003) 15.

- Line 1. The script of an ostracon dated to 176 B.C.E. published by Esther Eshel and Amos Kloner, "An Aramaic Ostracon of an Edomite Marriage Contract from Maresha, dated 176 BCE," *IEJ* 46 (1996): 1–22.
- Line 2. An early Jewish semicursive, or mixed, hand from Egypt (ca. 150 B.C.E.). From the Nash Papyrus. Published by S. A. Cook, *PSBA* 25 (1903): 34–56; see especially W. F. Albright, "A Biblical Fragment from the Maccabean Age: The Nash Papyrus," *JBL* 56 (1937): 145–76.
- Line 3. A Jewish semicursive script from the Judean Wilderness (ca. 125–100 B.C.E.). From a Murabba'at ostracon (Mur 72). Published by J. T. Milik, *Les grottes de Murabba'at* (*DJD* II): 172–74 and pl. 52.

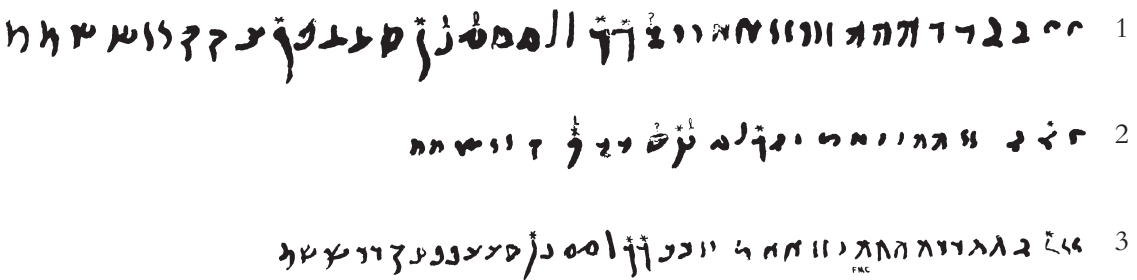


Fig. 5. Herodian and Post-Herodian Cursive Scripts. Reproduced with permission from F. M. Cross, *Leaves from an Epigrapher's Notebook* (Harvard Semitic Studies 51; Winona Lake, IN: Eisenbrauns, 2003) 21.

- Line 1. A cursive hand from an Aramaic contract found at Murabba'at (Mur 18) dated in the second year of Nero (55/56 C.E.). The papyrus was published by J. T. Milik, *Les grottes de Murabba'at* (*DJD* II): 100–104 and pl. 29.
- Line 2. A cursive hand from an Aramaic marriage contract, probably dating to the year 117 C.E. (Mur 20). Published by J. T. Milik, *Les grottes de Murabba'at* (*DJD* II): 109–14 and pls. 30–31.
- Line 3. A semicursive hand from an Aramaic contract of sale (Hēv/Se 8a). It is dated in 134 C.E.). Published by J. T. Milik, "Deux documents inédits du Désert de Juda," *Biblica* 38 (1957): 264–68 and pl. 4.

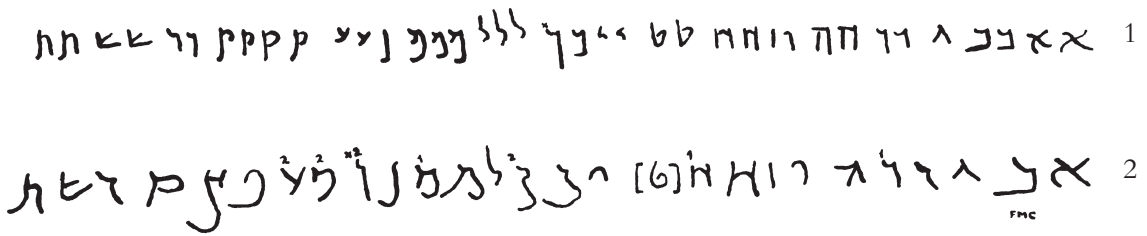


Fig. 6. Early Nabataean and Palmyrene Scripts. Reproduced with permission from F. M. Cross, *Leaves from an Epigrapher's Notebook* (Harvard Semitic Studies 51; Winona Lake, IN: Eisenbrauns, 2003) 24.

Line 1. The script of the Aşlah Inscription (ca. 95 B.C.E.). Published by G. Dalman, *Neue Petra-Forschungen* (Leipzig, 1912), Abb. 68, No. 90 (p. 99).

Line 2. The script of the earliest dated Palmyrene inscription (44 B.C.E.), published by J. Starcky, *IAP*, p. 510, pl. 1. The siglum ¹ refers to letters taken from a contemporary inscription dedicated to Bêl, Bêlhammân, and Manawât (*ibid.*); the siglum ² refers to an inscription published by Mesnil du Buisson (*Inventaire des inscriptions palmyréniennes de Doura-Europos* [Paris, 1939]), dated 33 B.C.E.

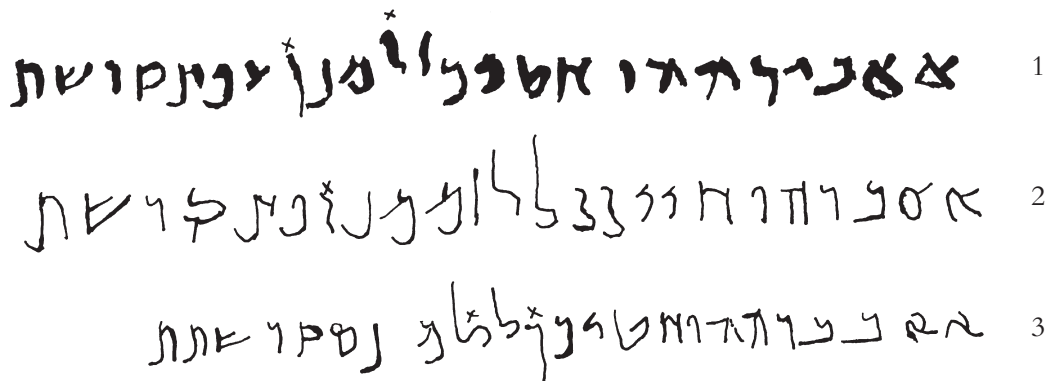


Fig. 7. Early Nabataean Scripts. Reproduced with permission from F. M. Cross, *Leaves from an Epigrapher's Notebook* (Harvard Semitic Studies 51; Winona Lake, IN: Eisenbrauns, 2003) 26.

Line 1. The script of the Ḥorbat Raqiq Incantation published by Joseph Naveh, *IEJ* 29 (1979): pl. 14. It may be dated to ca. 100 B.C.E.

Line 2. The script of the 'El-Kutbā' Inscription published by Clermont-Ganneau, *RAO* 8, pl. 7. It may be dated provisionally to 77 B.C.E.

Line 3. The script of the Rabb'el Inscription (*CIS* II, Tab. 45, no. 349) from ca. 66 B.C.E.

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