

Radiocarbon (^{14}C) Dating of Qurʾān Manuscripts

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According to ^{14}C measurements, the four Qurʾān fragments University Library Tübingen Ma VI 165, Berlin State Library We. II 1913 and ms. or. fol. 4313, and University Library Leiden Cod. or. 14.545b/c are older than had been presumed due to their paleographical characteristics. Within the framework of the joint German-French project *Coranica*, Qurʾān manuscripts and other texts of Late Antiquity (Syriac Bible manuscripts, Georgian manuscripts, dated Arabic papyri, etc.) have been dated for comparison and turn out to be reliable according to dating by ^{14}C measurement. This article emphasizes the importance of combining ^{14}C measurements with paleographical characteristics and orthography when dating Qurʾān fragments. The archaic spelling that appears within the four fragments (e.g., of the words *Dāwūd*, *ḏū*, or *šayʾ*) demonstrates that Arabic orthography in the text of the Qurʾān was still developing during the 7th and 8th centuries. The fact that the long vowel /ā/ was—in the early manuscripts—spelled using *wāw* or *yāʾ* in the middle of a word, rarely using *alif* whose original phonetic value is the glottal stop (*hamza*), led to spellings that are now obsolete. Alongside orthographic and paleographical questions, the large number of fragments in Ḥiǧāzī spelling urges us to reconsider the role that written transmission plays within the textual history of the Qurʾān.

1 Introduction

In the last years, several manuscripts of the Qurʾān and other texts of Late Antiquity have been dated by ^{14}C measurement within the framework of the joint German-French project *Coranica*.¹ The measuring results of the manu-

1 *Coranica* was a joint German-French project conducted from 2011 until 2014 by the project Corpus Coranicum of the Berlin-Brandenburgische Akademie der Wissenschaften (BBAW), Berlin/Potsdam, by UMR 8167 “Orient et Méditerranée—Mondes sémitiques” of the Centre National de la Recherche Scientifique (CNRS), Paris, and the Académie des Inscriptions et Belles Lettres (Paris), and was headed by François Déroche, Michael Marx, Angelika Neuwirth, and Christian Julien Robin; see www.coranica.de/computatio-radiocarbonica-de (last accessed 16 September 2016). We would like to thank the Deutsche Forschungsgemeinschaft (DFG) and the Agence Nationale de la Recherche (ANR) for their generous funding.

scripts University Library Tübingen Ma VI 165,² University Library Leiden Cod. or. 14.545b/c,³ and Berlin State Library ms. or. fol. 4313⁴ have sparked a big media response. A press release by the University Library Leiden⁵ on the dating of three Qur'ān fragments and a Qur'ān papyrus was picked up by Dutch media⁶ and triggered a debate about the authenticity of the Qur'ān during which the University of Leiden organized a study day on short notice on 12 December 2014⁷ to clarify the situation. The press release of the University of Tübingen⁸ on the dating of manuscript Ma VI 165 also garnered wide attention and reached the news program *Tagesschau* (ARD) on 11 November 2014⁹ via *Südwestfunk* (SWR) regional news (Henning 2014), from where it reached other media. Arabic,¹⁰ Persian,¹¹ Russian,¹² and Turkish¹³ media reports showed the worldwide interest, and within social media networks there was speculation about possi-

- 2 We would like to express our gratitude to the director of the University Library Dr. Marianne Dörr, the head of the Oriental department Kerstin Strotmann, and former director Dr. Walter Werkmeister for their kind permission and cooperation to carry out the sample taking.
- 3 Special thanks to the director of the University Library Dr. Arnoud Vrolijk, who helped to speed up the start-up phase of the dating project immensely due to his quick consent to sample taking, as well as to the restorer Dr. Karin Scheper, who facilitated a successful cooperation in the sample taking process.
- 4 Our thanks to Christoph Rauch, the head of the Oriental department of the Staatsbibliothek zu Berlin, for his commitment concerning the rather time-consuming sample taking of the manuscripts of Berlin State Library, which e.g. required removing the glass of ms. or. fol. 4313.
- 5 Anon. "Oldest Quran Fragments in Leiden," n.d. For full details on internet media reports, see the Bibliography.
- 6 E.g., Vlasbom 2014.
- 7 Measurement results obtained by the laboratory of ETH Zurich were presented by Tobias J. Jocham and discussed with Hans van der Plicht, Center for Isotope Research, University Groningen in a workshop organized by the University of Leiden; see hum.leidenuniv.nl/lucis/past-events/quran-study-day.html (last accessed 30 April 2015).
- 8 See <https://www.uni-tuebingen.de/aktuelles/pressemitteilungen/newsfullview-pressemitteilungen/article/raritaet-entdeckt-koranhandschrift-stammt-aus-der-fruehzeit-des-islam.html> (last accessed 12 November 2018).
- 9 *ARD Tagesschau* of 10 November 2014, 8:00 pm, accessed under tagesschau.de/multimedia/sendung/ts-5347.html (last accessed 12 November 2018); the report runs from minutes 11:42 to 12:10.
- 10 Salāma, Khālid. "Aqdam maḥṭūṭa li-aḡzā' min al-Qur'ān tastaqṭib al-aḡwā' fī Barlin," 18 April 2015. www.dw.de/p/1F9zU (last accessed 12 November 2018).
- 11 www.mashregnews.ir/fa/mobile/365829 and bbc.co.uk/persian/world/2014/12/141209_sam_koran (both last accessed 12 September 2016).
- 12 tass.ru/obschestvo/1563280 (last accessed 12 November 2018).
- 13 haberciniz.biz/almanyada-14-asirlik-kuran-i-kerim-sayfalari-korunuyor-3382078.htm (last accessed 12 November 2018).

ble scribes or owners of the manuscript, e.g., ‘Alī b. Abī Tālib (Husain 2014). The University of Birmingham Library had been asked by our project in 2013 to give permission for carbon dating of an ancient fragment of the Qur’ān (M 1572). The university took samples of that fragment to send them to the laboratory of Oxford University. The obtained measurement dated the carbon of M 1572a (a fragment containing 2 fol.) to be from the interval between 568 and 645 CE. In what appeared to be a kind of competition, Birmingham turned out to hold the most ancient Qur’ānic manuscript although precise rankings are impossible to give. The university had launched the press release in a professional way, so that the discovery of the “Birmingham Qur’ān” was echoed in media around the globe.

Why the manuscripts had been dated and what problems might result from the dating were not part of the news coverage; the mere existence of old Qur’ān text fragments apparently was enough to make the story newsworthy. At a conference of the Frankfurt Institute for Islamic Theology¹⁴ held in September 2014, Michael Marx and Tobias J. Jocham presented a paper on the importance of using material evidence for the textual history of the Qur’ān. Of special importance to the discussion was the fact that alternative and counter-arguments about the emergence of the Qur’ān, such as the one by John Wansbrough (1928–2002; see Wansbrough 1977), were definitely refuted. Enthusiasm, emotion, and fascination must not mislead one into thinking that the conducted dating has ended the debates on Qur’ān textual history, even though they make the hypothesis of Islam emerging in the 8th century highly unlikely. Much more significant is probably the fact that the dating will contribute new findings to the research of textual history, although the limits of dating by ¹⁴C measurement have also to be kept in mind.¹⁵

In order to be able to analyze the history of the Qur’ān text systematically, an online database (“Manuscripta Coranica”)¹⁶ was set up for the project Corpus Coranicum of the Berlin-Brandenburg Academy of Sciences, founded in 2007, offering an overview of the oldest available textual witnesses. For its work on the textual history of the Qur’ān, the Potsdam-based project sees its research work as a continuation of the “Apparatus Criticus” project on the text of the Qur’ān that the Commission of Semitic Philology of the Bavarian Academy of

14 Conference “Horizonte der Islamischen Theologie”; see www.uni-frankfurt.de/48320986/kongress?legacy_request=1 (last accessed 12 November 2018).

15 See the objection by François Déroche: “the contribution of C14 [sic] dating to the overall history of the handwritten transmission of the Qur’ān in Umayyad times should not be neglected, but the results of such analysis need (...) to be taken cautiously” (Déroche 2014: 11).

16 See corpuscoranicum.de/handschriften (last accessed 12 November 2018).

Sciences and Humanities established in 1930. That project was initiated and led first by Gotthelf Bergsträßer (1886–1933), professor of Arabic studies at the University of Munich, and after his death was continued by Otto Pretzl (1893–1941)¹⁷ until World War II. The photo archives of the Munich project, containing some 450 Agfa film rolls with some 11,000 images of Qur'ānic manuscripts from collections in Egypt, France, Morocco, Spain, and Turkey that had survived the war, were the starting point of the online database. Bergsträßer saw his research as being complementary to the project to produce a huge documentation on variant readings on the Qur'ān registered in the Muslim scholarly tradition run by the Australian researcher Arthur Jeffery (1892–1959). The Munich project had ceased to exist before the first pages of its scheduled critical apparatus on the text of the Qur'ān were ever published; what was scheduled, according to Bergsträßer's description (*Plan eines Apparatus Criticus*),¹⁸ was a kind of catalogue of variant spellings that could be referred to for what Bergsträßer considered an almost perfect text edition of the Qur'ān in the Egyptian print (Cairo 1924) that was produced on the orders of the Egyptian king Fu'ād (1868–1936). Research on Qur'ānic manuscripts at that time was still a new discipline in which a reliable paleographical system was lacking, as were comparative studies that would compare Qur'ānic fragments with dated materials like papyri, such as the studies that Adolf Grohmann (1887–1977) would produce thirty years later.¹⁹ Bergsträßer's appraisal of the Egyptian print is based on his observation that this new print, quite distinct in orthography from Qur'ānic codices of the Ottoman empire, to which Egypt had belonged since the 16th century, would strictly follow sources of reference works of Muslim scholarship for orthography and verse separation system.²⁰

Bergsträßer had to admit that manuscripts of the Qur'ān were unfortunately not used for the spelling of the Cairene print which is in fact, as he states, a kind of "*Umschreibung des Textes der beiden älteren offiziellen ägyptischen Ausgaben in die othmanische Orthographie mit Hilfe jüngerer Schriften über diese*" (p. 391), i.e., a kind of transposition of the text of two older official Egyptian editions into 'uṭmānic orthography, a style of spelling attributed to the caliph 'Uṭmān, who is considered in a large number of Muslim narratives to be the political leader who established a unified text of the Qur'ān by sending reference copies to the important cities of the Arab empire.

17 See Bergsträßer 1930; Pretzl 1934. On the conception and the realization of the academic project in Potsdam that has been carried out so far, see Marx 2015a: 253–278.

18 Bergsträßer 1930: 395–396.

19 Grohmann 1958.

20 Bergsträßer 1930: 391.

Concerning the chronological classification of manuscripts, our project is based on the paleographic system deployed by François Déroche on the classification of the Qurʾānic fragments kept by the French National Library.²¹ The so-called Ḥiǧāzī style of writing of the earliest Qurʾān manuscripts strikes us as a rather uncalligraphic style that can also be recognized in dated papyri of the 7th century.²² Some letters resemble the late Nabatean ones from which the Arabic alphabet evolved.²³ The rightward-leaning ascender of *alif*, the occasionally widely drawn-back final bow of *yāʾ*, and the *qāf* that reminds one of the letter *šād*—all these are typical of the Ḥiǧāzī style of writing. The term “Ḥiǧāzī” itself (i.e., “in a style of writing of the Ḥiǧāz”) goes back to the Italian scholar Michele Amari (1806–1889), who drew upon the research on the origin and formation of the Arabic script by Antoine-Isaac Silvestre de Sacy (1758–1838).²⁴ Silvestre de Sacy had consulted a short paragraph from Ibn an-Nadīm’s *Fihrist* (d. 995 or 998) on the oldest style in Arabic,²⁵ a description of a script style that Amari had identified in the writing of the Paris manuscript Arabe 328 (Bibliothèque nationale de France) as “the script of Mecca and Medina,”²⁶ followed by Josef Karabacek,²⁷ Gotthelf Bergsträßer (“ḥiǧāzenisch”),²⁸ and Nabia Abbott.²⁹

Study of the written transmission of the Qurʾān in the West goes back to the theologian Jakob Georg Christian Adler (1756–1834), the first scholar to pursue the idea of studying Arabic paleography and the history of Arabic

21 Déroche 1983, vol. 1: 19–22.

22 Grohmann 1958: 213–231; 1959: 272–273.

23 On the emergence of the Arabic scripture from the late Nabatean scripture, see Nehmé 2010: 47–88. Nehmé speaks about “écriture tardo-nabatéenne,” i.e., late-Nabatean scripture as precursor of the Arabic script. Letter shapes in the pre-Islamic Arabic inscriptions (without diacritical signs, without vowel signs, and without *alif* in a middle position for the long vowel /ā/) are easily found in the evidence given by her. The hypothesis (e.g., Starcky 1964) that the Arabic script originates from the Syriac one seems less plausible, despite the fact that Arabic and Syriac script share similar aesthetics, such as the unitary baseline. On the development of Arabic script, see the fundamental article by Robin 2006.

24 Silvestre de Sacy 1808: 247–440; 253–254.

25 *Qāla Muḥammad b. Iṣḥāq fa-awwalu l-ḥuṭūṭi l-ʿarabīyati l-makkī wa-baʿdahu l-madanī tumma l-baṣrī tumma l-kūfī fa-ammā l-makkī wa-l-madanī fa-fī alifātihī taʿwīḡun ilā yum-nati l-yadi wa-aʿlā l-aṣābīʿi wa-fī šakliḥi nḍiǧāʿun yasīrun ...*; Ibn an-Nadīm 2006: 6. The English translation reads: “Thus saith Muḥammad ibn Iṣḥāq [an-Nadīm]: the first of the Arab scripts was the script of Makkah, the next of al-Madīnah, then of al-Baṣrah, and then of al-Kūfah. For the alifs of the scripts of Makkah and al-Madīnah there is a turning of the hand to the right and lengthening of the strokes, one form having a slight slant.” Dodge 1970, 10.

26 On Amari’s “script of Mecca and Medina,” see Amari/Derenbourg 1908.

27 Von Karabacek 1891: 323.

28 Bergsträßer 1938: 251–256.

29 Abbott 1939.

script by means of Qur'ān manuscripts. At the time he had only consulted Qur'ān manuscripts of the Royal Library of Copenhagen which are all written in Kufic.³⁰ His small study on the history of the Arabic script prompted a discussion (Adler 1780) among scholars, and Adler's presentation of the history of Arabic script was adopted by Silvestre de Sacy and substantially enhanced by Amari, who was in charge of cataloguing the Bibliothèque royale's extensive collection of Qur'ānic manuscripts acquired in Cairo.³¹ The first groundbreaking, systematic paleography of Qur'ānic manuscripts was presented almost 150 years later, in 1983, by François Déroche with his catalogue of Qur'ān scriptures of the Bibliothèque nationale de France (Paris). It specifies the following four types of the Ḥiǧāzī style (Déroche 1983, vol. 1), classified as the most ancient script style.

Déroche's typology is based on the largest accessible collection of ancient Qur'ānic manuscripts, and probably the classification of the 263 Parisian Qur'ān fragments (classified in 26 paleographic groups, four Ḥiǧāzī, 22 Kūfī) will not suffice to classify fragments to be discovered in the future. The scripts of some manuscripts, like *Arabe 330g* (19 fol.),³² have no place ("non-classé")³³ in the typology, and manuscripts like *Ma VI 165* (Tübingen) and *We. II 1913* (Berlin)³⁴—despite their age—are to be classified as a script of the style known as Kufic B. Seven sheets of Berlin State Library ms. or. fol. 4313 are considered Ḥiǧāzī, although it is not clear if they are to be classified as type I or type II. Due to the fact that a much larger number of Qur'ān manuscripts is accessible by now, the paleographical types as they were described broadly by Déroche in his catalogue need to be in some respects adjusted, extended, and perhaps slightly modified. Figs. 6.1–6.4 give four examples of script styles still difficult-to-classify in the existing typology, illustrated with the text of the Basmala introduction formula of Surahs, which are written in the early manuscripts always in the same ink as the Qur'ān text itself.

Because paleographical identification and the chronological classification of these four manuscripts showing features of an ancient script style remain unclear, ¹⁴C measurements are of particular interest. So far, ¹⁴C has only occasionally been used for dating Oriental manuscripts. In the field of Qur'ānic philology, results were published in three cases i.e., by Yassin Dutton, by Beh-

30 See ms. Cod. Arabe. 36–42 of the Danish National Library in Copenhagen.

31 On the discussion of the oldest Qur'ān fragments, see Déroche 1999: 563–576.

32 There are four pages of the fragment's manuscript Is. 1615 II belonging to the Chester Beatty Library in Dublin.

33 Déroche 1985, vol. 1: 143–150.

34 Apparently the six folios of *Arabe 6087* (Paris) belong to the same codex.

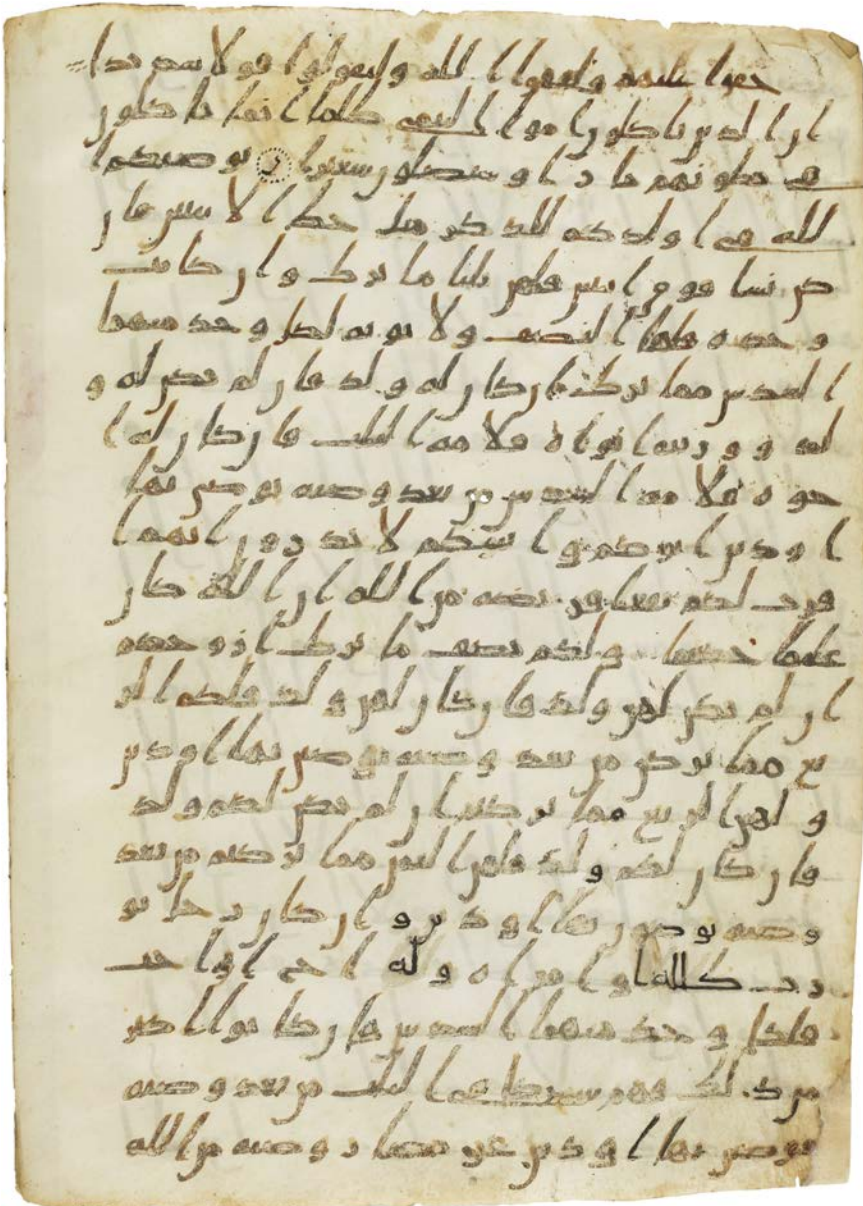


FIGURE 6.1 Qur'ān in Hīḡāzī Type I (Arabe 328a, fol. 10v)

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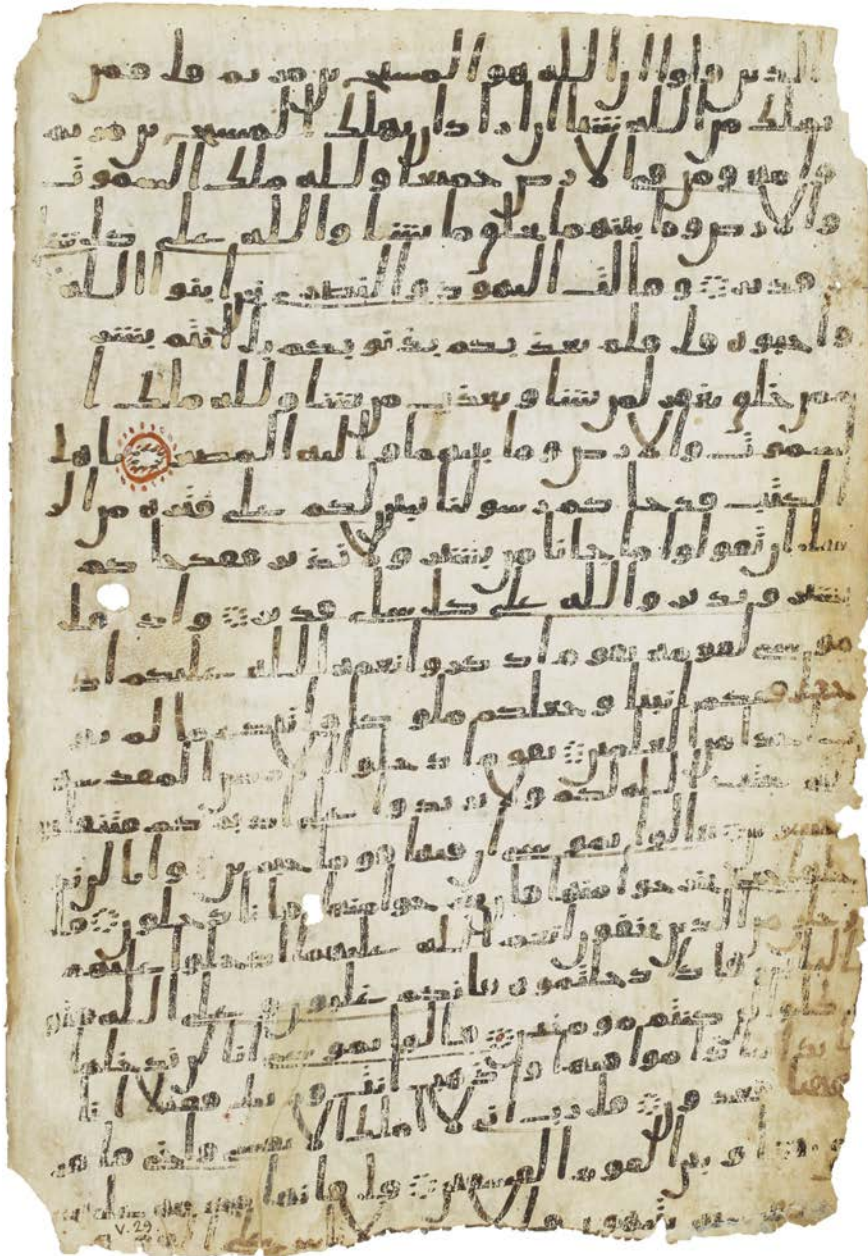


FIGURE 6.2 Qur'ān in Hifāzi Type II (Arabe 328e, fol. 90v)
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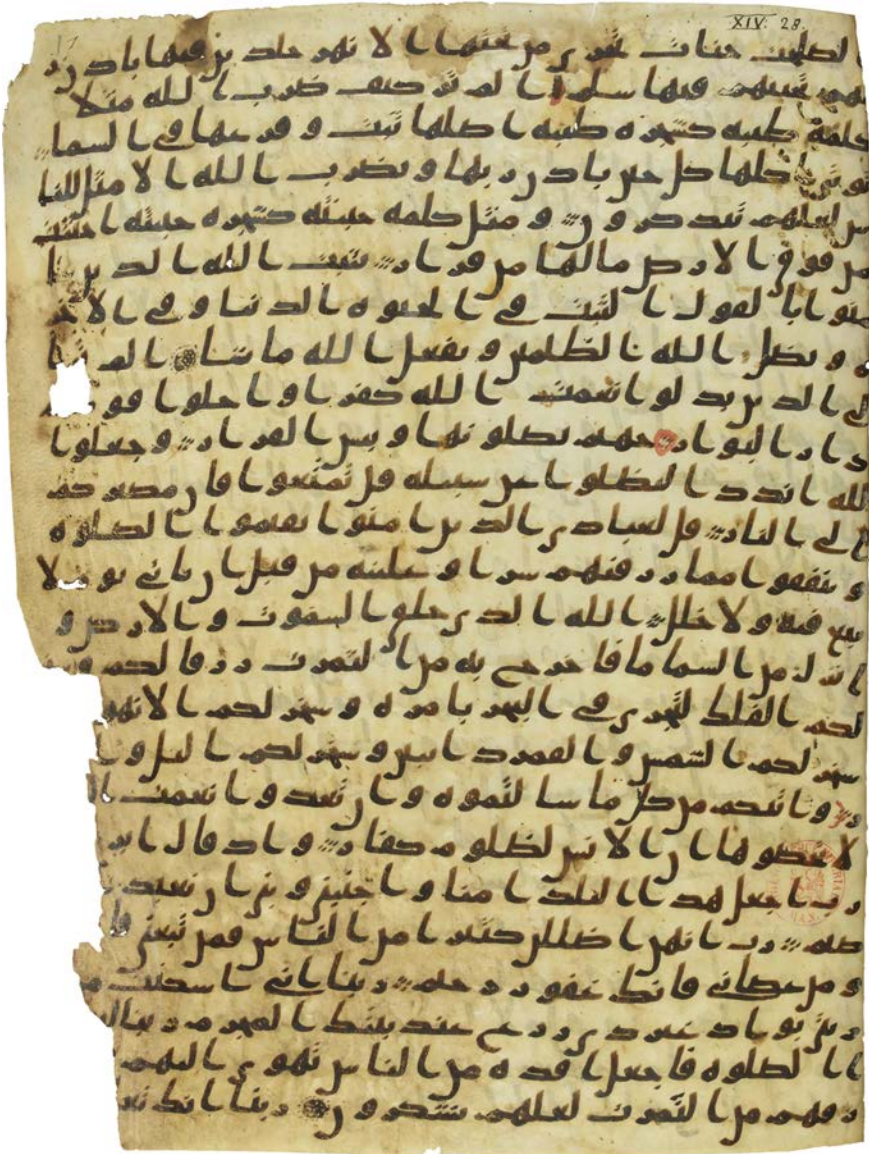


FIGURE 6.3 Qur'an in Hifazi Type III (Arabe 330a, fol. 1r)

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FIGURE 6.4 Qur'ān in Hijāzi Type IV (Arabe 334c, fol. 41r)

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nam Sadeghi, and by Efim A. Rezvan;³⁵ the time span of the result, but not the exact measurement, was stated in another two instances, in von Bothmer's article on a Sanaa Qur'ān and in the catalogue of the auction house Christie's (Lot 225).³⁶ François Déroche arranged for the dating of two Qur'ān fragments from Kairouan, through a lab in Lyon: the so-called *muṣḥaf al-ḥāḍina* ("codex of the nurse", with colophon, according to which the manuscript was copied in 1020 CE), and another manuscript with a note of a foundation (*waqfiya*) from 907 CE. The results (1130 BP \pm 30 for the "*muṣḥaf al-ḥāḍina*" and 1205 BP \pm 30 for the other ms.) still require a thorough evaluation, though.³⁷ Contamination of

35 Dutton 2007: 57–87, especially 63 ff.; Sadeghi/Bergmann 2010: 343–436, especially 348–354; Rezvan 2000: 19–22.

36 von Bothmer/Ohlig/Puin 1999: 45; Christie's 1992: 88. ^{14}C datings should at least include the absolute measurement value in radiocarbon years and its measurement's accuracy, information about the laboratory entrusted with the measurements, the number of measurements, and possibly further data such as the isotope fractionation.

37 Déroche 2013: 11–13.

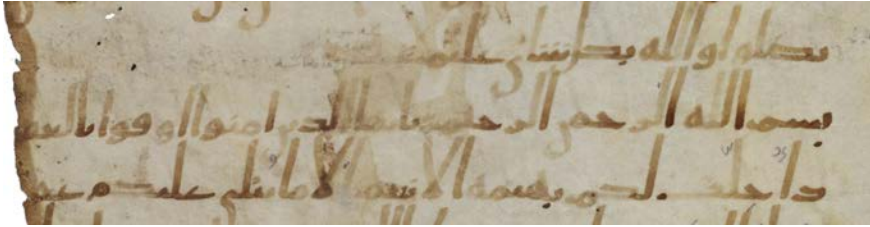


FIGURE 6.5 Basmala of Surah 5 (ms.or.fol. 4313, fol. 2r)

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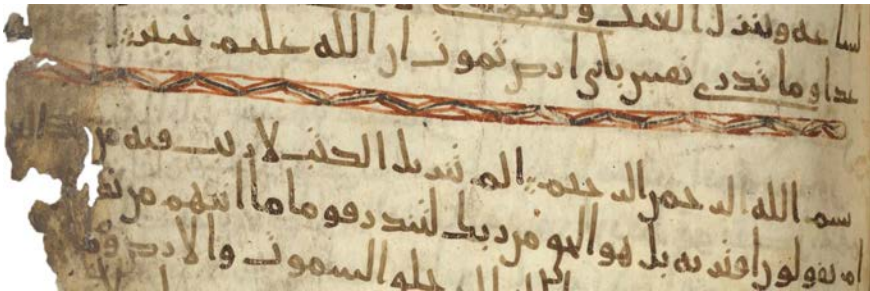


FIGURE 6.6 Basmala of Surah 32 (Is. 1615 I, fol. 7r)

Note: See the facsimile edition of the manuscript by Tobias J. Jocham in the series “Documenta Coranica,” *Is. 1615 I* (Chester Beatty Library) + *fragments* (Museum of Islamic Art et al.). In preparation.

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the material may be the reason for these “odd results,” but also technical failures of the machines could be a reason.

Within the framework of *Coranica*, carbon dating³⁸ was applied to more than 50 documents, among others, the four manuscripts Ma VI 165, ms. or. fol. 4313, We. II 1913, and Cod. or. 14.545b/c. Since this procedure entails the removal of testing material, this is not entirely unobjectionable from the point of view of conservation. As compared to the first measurements at the discovery of the method,³⁹ the required sample amount has been reduced to 1–2 mg pure carbon and still offers great precision in measurement, thanks to technical development and the usage of *Accelerated Mass Spectrometry* (AMS). In order to obtain this amount of pure carbon the removal of about 20 mg is suf-

38 After a first comparison between different laboratories, we decided on the laboratory of the ETH Zurich where all *Coranica* datings were carried out; for the ETH Zurich lab, see www.ams.ethz.ch (last accessed 12 November 2018).

39 Arnold/Libby 1949: 678–680.



FIGURE 6.7 Basmala of Surah 18 (Ma VI 165, fol. 5r)

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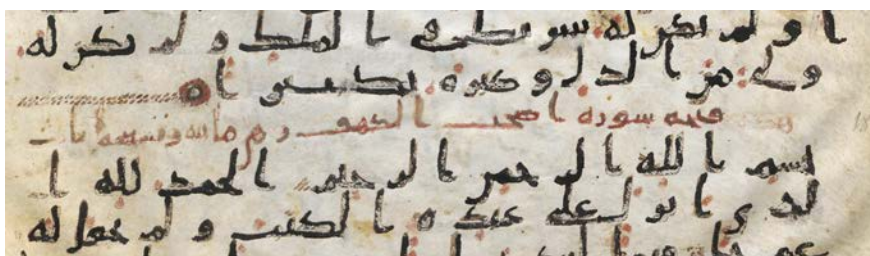


FIGURE 6.8 Basmala of Surah 18 (We II 1913, fol. 111v)

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ficient, depending on the initial substance, which in the case of parchment and papyrus corresponds to a surface of approximately 1cm^2 . This sample has to undergo an extensive, multi-level chemical cleaning process before it is transformed into graphite by burning. This material is fixed to a metal core together with other samples (including blank samples to control the accuracy of measurement). By means of AMS the percentage of the radioactive carbon isotope ^{14}C can then be determined in the sample.

Dating organic material is based on the Nobel-Prize-winning research (1960) conducted by Williard F. Libby (1908–1980), which shows that living organisms absorb through their metabolism not only the non-radioactive carbon isotope ^{12}C but also the aforementioned ^{14}C , which evolves due to cosmic radiation in the atmosphere and forms only to an astonishingly small degree (1–10%) part of the air's carbon content. Because of the radioactive decay⁴⁰ of ^{14}C , its percentage in the carbon content of organic material decreases continually, so that

40 The originally calculated radioactive half-life by Libby of 5,568 years for ^{14}C was later corrected to 5,715.

in tenfold radioactive half-life (= ten times the period of time of about 5,600 years) the remaining ^{14}C -percentage falls underneath the detection limit: dating organic material therefore is only possible until approximately 55,000 BCE. All in all, the ^{14}C method has assisted research considerably in pre- and proto-history and is considered a reliable dating technique, applied by numerous specialized laboratories worldwide (see Arnold/Libby 1949: 77–123). This method is rarely used to date written sources, however, most likely due to already existing and well-established forms of dating through paleography and glossary techniques, such as have been used with texts of the European Middle Ages. With the help of a mass spectrometer the percentage proportion of the particular parts of ^{12}C and ^{14}C are elaborated, and the result is then converted into the so-called radioactive carbon age before it can be stated together with the precision of measurements in terms of standard deviation. This radioactive carbon age is expressed in “years BP (= before present)”, “present” having been fixed as being the year 1950.⁴¹ The following diagrams reflect these data in the captions within brackets, e.g., the Tübingen manuscript has a radioactive carbon age of 1,357 years BP with a measurement precision of ± 14 years BP. Therefore it is necessary to convert the measurement result into the dates of the Gregorian calendar. This in turn limits the precision of the measurements, because the nonlinearity of the ^{14}C concentration in the atmosphere has to be considered, which is expressed in the so-called calibration curve. This is depicted by a light-blue band spanning from the top left to the bottom right within the diagrams (see below) and is based upon dendrochronological data.⁴² The y-axis shows the abovementioned radioactive carbon age as a red sine curve which is exposed through folding above the calibration curve on the x-axis as dates in the Christian calendar. Here, a grey curve depicts the probability of the distribution of these dates, whereas the written part of the diagrams indicates the span of possible data from the σ_2 -confidence interval (95.4 % probability).⁴³

41 The unit “radioactive carbon age” could also be expressed as a percentage of the still extant ratio of ^{14}C in the sample, but this rather unclear term was historically determined and kept until now.

42 Here the comparative data were found by the ^{14}C method in continuous annual ring calendars which reach back to the year 12,000 BCE via overlapping comparisons of slices of trees. These comparative data were solid for the project’s time scale and do not exhibit any variations. Only concerning the pre-Christian time period the data situation has not yet been settled; see Creasman 2014: 85–92.

43 Partly occurring “voids” in the time periods (see the datings of We. 11 and Cod. or. 14.545b/c) are due to the re-rise of ^{14}C content within the atmosphere between 735 and 760 CE.

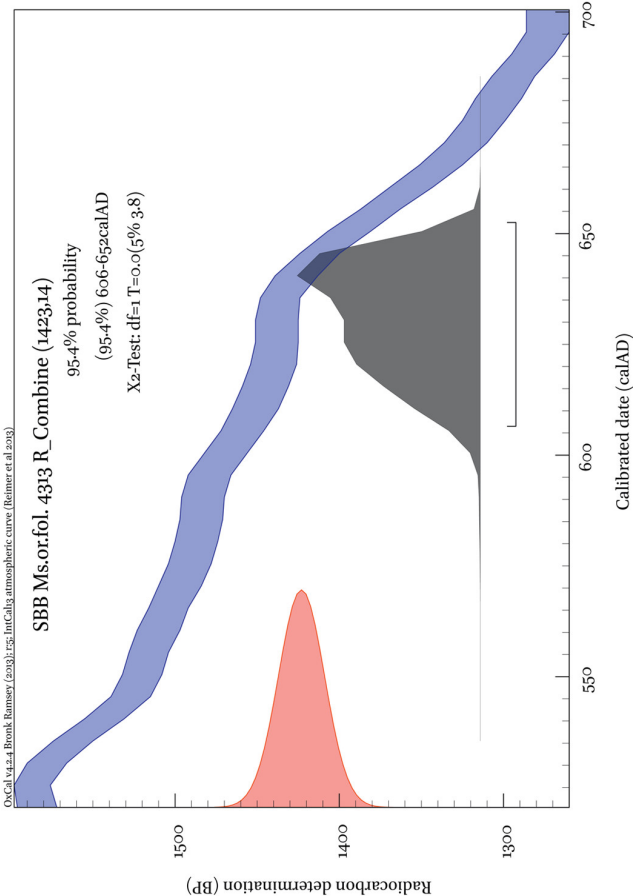


FIGURE 6.9 OxCal Combined plot and sample image (ms.or.fol. 433; fol. 2r)
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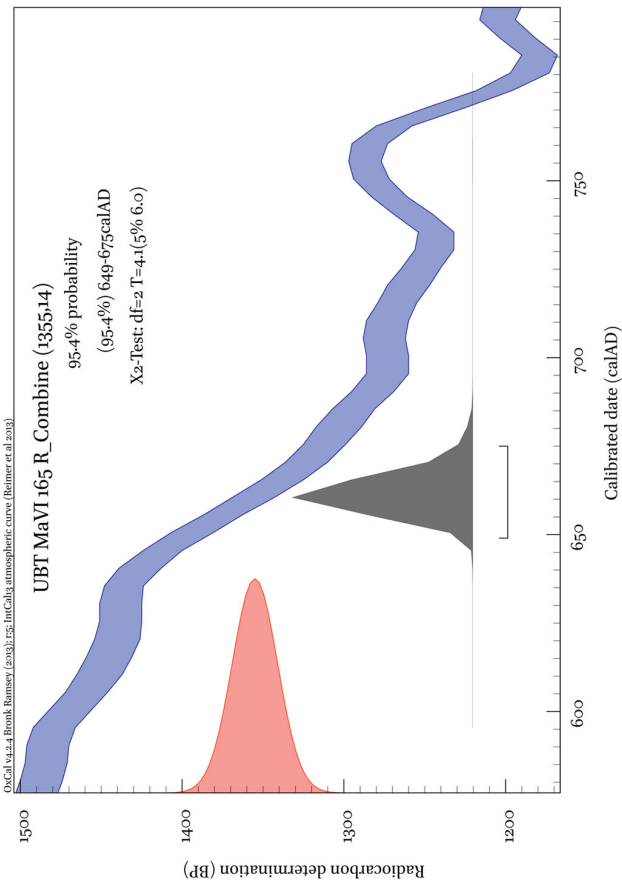


FIGURE 6.10 OxCal Combined plot and sample image of the manuscript (Ma vi 165, fol. 23r)
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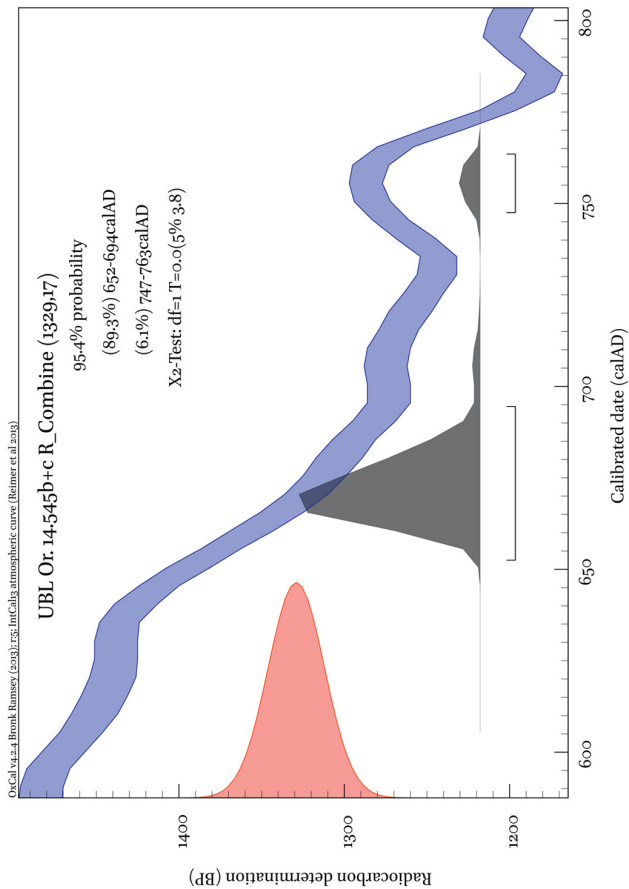


FIGURE 6.11 OxCal Combined plot and sample image of the manuscript (Cod.or. 14.545b, fol. 1v)
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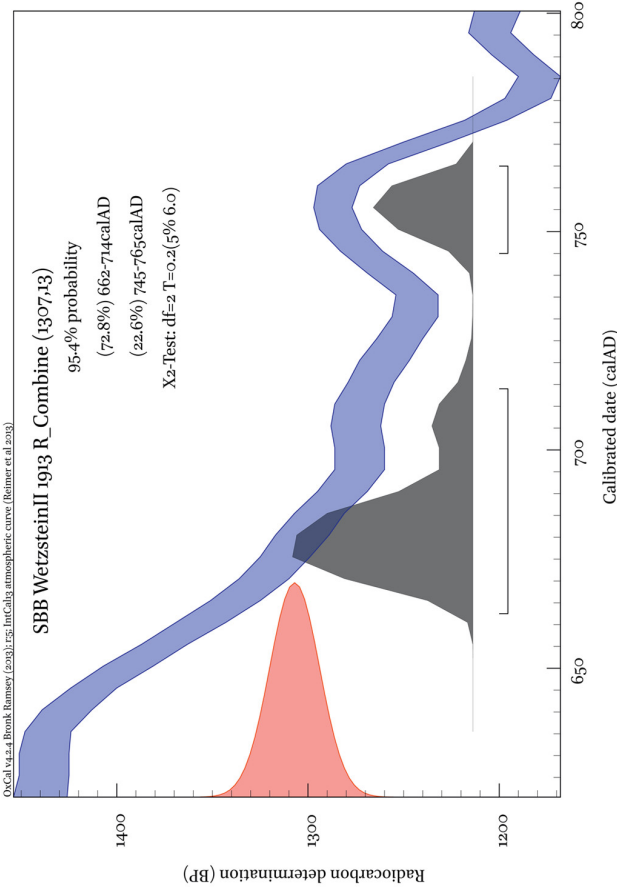
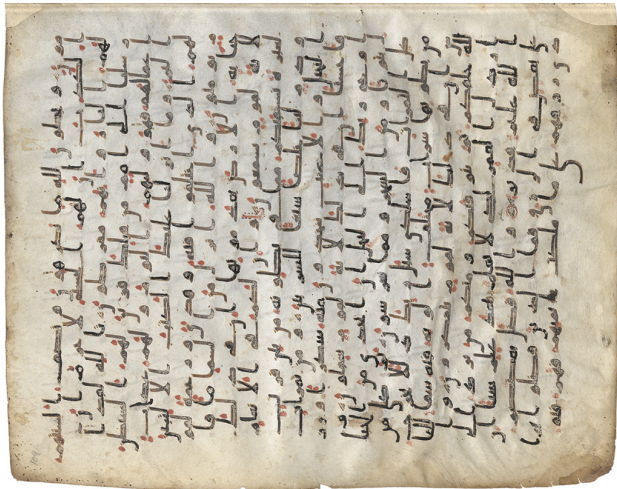


FIGURE 6.12 OxCal Combined plot and sample image of the manuscript (We 11 1913, fol. 104r)
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In order to narrow down the results, all measurements in Figs. 6.9–6.12 have not only been taken from the very same material (a singular folio of a manuscript) but also double as well as triple samples of different pages have been combined. This is due to the underlying assumption that in order to produce a codex, parchment of the same or of only slightly differing age was used. Therefore, from a statistic point of view, a merge of the individual results is permitted, which in light of the amount of time needed to produce the manuscript partially means a substantial improvement of precision.⁴⁴

For the purpose of comparison alongside early Qur'ān fragments, *Coranica* also dated other texts of the first millennium,⁴⁵ i.e., Arabic papyri in cooperation with Eva-Mira Youssef-Grob (Zurich),⁴⁶ numerous wooden sticks with Ancient South Arabian texts in cooperation with Peter Stein (University of Jena),⁴⁷ Georgian manuscripts of the National Manuscript Center (Tbilisi), and Coptic texts together with Hugo Lundhaug (University of Oslo).⁴⁸ The method was confirmed by ^{14}C datings of papyri from Leiden and Heidelberg (see Youssef-Grob's contribution in this volume) as well as three Syriac parchment manuscripts from Berlin.⁴⁹ The ^{14}C study of three Kufic Qur'ān fragments—Berlin State Library We. 11 1919,⁵⁰ University Library Leiden Or. 6814,⁵¹ and a privately owned folio⁵²—clearly demonstrated that Kufic text fragments

44 This statistical procedure was developed by Tobias J. Jocham in consultation with Irka Hajdas (Zurich) and Oliver Hahn (Berlin/Hamburg), although it reaches its limit at an accuracy of measurements of approximately ± 10 years BP: at this point the accuracy of the calibration curve—demonstrated by the “thickness” of the light-blue line in the displayed diagram—is reached.

45 For the dating of early Qur'ān fragments, see also Marx/Youssef-Grob/Jocham/Hajdas 2014.

46 On Youssef-Grob's ^{14}C -based dating of Arabic papyri, see her contribution to this volume.

47 See Stein/Jocham/Marx 2015.

48 See Hugo Lundhaug, “The Date of MS 193 in the Schøyen Collection: New Radiocarbon Evidence” (forthcoming).

49 The manuscripts are ms. or. quart. 528 (Syriac New Testament, *Pshitta*), Sachau 321 (Syriac church fathers), and Codex Philippi 1388 (Syriac New Testament, *Pshitta*), the data of which were measured through ^{14}C -analysis and matched paleographical datings by Eduard Sachau (Sachau 1899: 10–18; 94–100); on this also see Michael Marx, “The Dating of Three Syriac Manuscripts of the Berlin State Library by Means of ^{14}C -Analysis” (in preparation).

50 corpuscoranicum.de/handschriften/index/sure/12/vers/100/?handschrift=453 (last accessed 12 November 2018).

51 Witkam 2007, vol. VII: 311.

52 Special thanks to Professor Mark Mersiowsky (Stuttgart) for his kind permission to take samples of a Kufic Qur'ān fragment, Sig. Isl. 18 (1 fol.) in his possession.

are to be chronologically situated after the Ḥiǧāzī fragments.⁵³ Merely due to the paleography of the four early Qurʾān parchments, a chronological order would result that cannot be confirmed by the ¹⁴C results:

François Déroche classifies the writing of Arabe 331 as Kufic B 1 a, considering as type of script related to Ḥiǧāzī.⁵⁴ Due to the fact that no colophons of early Qurʾān parchments have survived (or because early manuscripts may have had no colophons), the exact dating of Qurʾān manuscripts remains controversial. Because of ¹⁴C dating the question remains whether the paleographical typology of Ḥiǧāzī and Kufic writing types, as formulated by Déroche on the basis of the Parisian manuscripts, can be understood as being chronological. Here it looks as if the dating of the writing types within the Ḥiǧāzī group and within Ḥiǧāzī-similar writings will have to be constituted in a new way, in case further dating confirms the result.

Even though the conducted dating of papyri from Heidelberg and Leiden, as well as of three Syriac manuscripts (parchments) from Berlin, has demonstrated that the ¹⁴C method offers reliable results, there are measurements such as the one of the Qurʾān parchment DAM 01-27.1 (Dār al-Maḥṭūṭāt, Sanaa) that offer odd results. It has to be kept in mind, however, that the scientific method can only date the material that was written upon—not the actual time of writing the text. It is highly possible that the parchments for the manuscripts Ma VI 165, ms. or. fol. 4313, We. II 1913, and Cod. or. 14.545b/c were bought by a writing workshop and that a certain amount of time passed before they were used as writing material. Nevertheless, it does not make sense to assume that the manufacturer would wait a long time with the production of a manuscript. For economic reasons, it seems unlikely that the time span between the production of the parchment and its acquisition by the producing atelier, on the one hand, and the moment the scribe began to produce the manuscript, on the other, would have encompassed decades. The studied manuscripts show no signs of having been inscribed twice, therefore these are no palimpsests.⁵⁵

53 See Jocham/Marx: “Studie zum Vergleich von vier kufischen und vier *ḥiǧāzī*-Handschriften: Orthographie, Paläographie und ¹⁴C-Datierung” (Study on the Comparison of Four Kufic and Four *ḥiǧāzī* Manuscripts: Orthography, Paleography and ¹⁴C-Datings; in preparation).

54 “On palaeographic grounds, a *ḥiǧāzī* style, B 1a, was included in Group B because a diachronic continuity could be recognized in this case between the early period and the third/ninth century. On the other hand, I made it clear from the beginning that the styles were overlapping and that there were possibly ‘local schools’ and ‘regional peculiarities’” (Déroche 2013: 10).

55 After all, dating of the manuscript DAM 01-27.1 from Sanaa is problematic. In addition to the partly very early datings already conducted within the framework of the ANR-project

So far, the dating of ink that is not based on soot is not yet possible by scientific techniques, and a measurement of soot inks is very likely to fail due to the amount that needs to be extracted. The text of the four manuscripts Ma VI 165, ms. or. fol. 4313, We. II 1913, and Cod. or. 14-545b/c that is visible nowadays shows—to all appearances—the very first layer of text. Manuscripts Ma VI 165 and We. II 1913 underwent changes through a different ink, additions and corrections that still need to be studied in depth, as well as the vowel signs that have been added to the manuscripts later with red ink.

Because Qur'ān manuscripts can be dated precisely neither by paleography nor ^{14}C analysis, additional features such as their orthography must be taken into consideration;⁵⁶ codicological features and ornaments (e.g., forms of verse markers, ornaments marking the transition between two Surahs, etc.) may also offer additional evidence.⁵⁷ The scientific study of the ink's composition cannot contribute much to their dating, and then possibly only indirectly; yet in a large number of early Qur'ān manuscripts, it may be possible to draw conclusions from the applied ink about the age of the inks or the order of their application within a manuscript. The four manuscripts in concern use—as do most Ḥiḡāzī manuscripts—a dark-brown ink for the first layer, which was probably even darker, if not black, 1,400 years ago. The brown ink is clearly different from the deep-black ink of many of the Kufic manuscripts (e.g., We. II 1919, Or. 6814). Ma VI 165 also uses such a black ink for corrections and vowel signs, as does the almost complete (210 fol. that contain 85 % of the text of the Qur'ān) Berlin codex We. II 1913, where most of the dark-brown ink has been overwritten with black ink. Possibly, scientific ink analyses will one day be able to provide an informative basis on its point of origin—provided there are by then a larger number of analyses available, from which conclusions can be drawn about different ink compositions in different regions.

Even without an ink analysis, the orthography gives important indications about a manuscript's age: Archaic writing forms in the manuscripts Ma VI 165, ms. or. fol. 4313, and We. II 1913—such as *dw'd* for *Dāwūd*, *š'y* for *šay'* ("thing, issue"), or the variant readings (see Fedeli 2012, vol. III: 403–440) in Ma VI 165—

"De l'Antiquité tardive à l'Islam" (Christian J. Robin), the *Coranica* project conducted complementary research; see Robin 2015; coranica.de/computatio-radiocarbonica-de (last accessed 12 November 2018).

56 See, e.g., the orthographical comparison of the "Codex Parisino-petropolitanus" with five other manuscripts, Déroche 2013:47.

57 See the study on a monumental manuscript DAM 20-33.1 (Sanaa), von Bothmer 1989: 4–20, who proposed a convincing suggestion for its dating in the first decades of the 7th century, based on the similarity of ornaments in the Surah headings and in ornaments in Umayyad architecture.



FIGURE 6.13 Comparison chart for key words in different Qur'anic manuscripts
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can be considered indications for being older. Also, the frequency of the spelling *qāf-alif-lām* for *qāla*, i.e., with *alif* for the long vowel /ā/, as compared to the spelling *qāf-lām*, can serve as an indicator for the dating together with other keywords; yet it is also conceivable, of course, that the scribe had copied an archaic spelling. Figure 6.13 contains six keywords, each with an image section of the four manuscripts: (1) *qāla* spelled *ql* (without the *alif*) or *q'l*; (2) *ḡannāt* generally with *alif* for the long vowel /ā/; (3) *Dāwūd* in the archaic orthography *dw'd*; (4) archaic spelling of *šay'* as *šy*; (5) *Qur'ān* often without *alif*; (6) *dū* spelled *dw'*, but interestingly in Tübingen sometimes with *dāl-alif*.

The long vowel /ā/ in old texts sometimes being written with an *alif* (as in *ḡannāt*) and sometimes not yet (as in *qāla* written with *qāf* and *lām*), is not a usual phenomenon in papyri documents. For the word *šay'* with the letters *šin-alif-yā'* a number of papyrus documents are known, such as in PERF

600.10, in the letter P.SijpesteijnArmyEconomics.5, in P. Khalili I 14, and in P. Khalili II 34.7—all four being papyri that are datable before 800 CE—and in two letters dated to 710 CE (P.BeckerNPAF 1.13 = P.Cair.Arab. 146.13; P.Cair.Arab. 158.17). Also in documents after 800, this spelling occurs (P.David-WeillLouvre II.recto 23; P.RagibLettres 19 verso.4). It is mentioned in ad-Dānī's treatise on Qur'ānic orthography, entitled *al-Muqni' fī rasm al-maṣāḥif*, only for *li-ṣay'in* (Q 18:23). In the Cairene print of 1924, whose spellings follow ad-Dānī's work, the word *ṣay'* is spelled without an alif following the ṣīn more than 280 times; interestingly, in one verse, 18, 23, it is spelled in the Cairene print (1924) لَشَائِيْء with the letter *alif*. This spelling appears today as an odd spelling; in the Cairene print, against the predominant spelling *ṣīn-yā'* (e.g., in Q 18:33; 18:45; and 18:54).

It is interesting to see that archaic spellings such as the one of *Dāwūd* were overwritten and changed in the manuscripts Tübingen and We. II 1913 from *dw'd* to *d'wd*. Since the long vowel /ā/ in early times was written by the letter *alif*—and apparently *yā'*—at the end of the word on a regular basis, for a long vowel in the middle of the word the letters *yā'* and *wāw* were used. Yet even the oldest manuscripts contain the letter *alif* as a sign for the long vowel in a center position, as seen in the spelling of *ḡannāt* ("gardens"), i.e., in the early manuscripts *alif* in the central position of a word is used as a long vowel. In Qur'ānic Arabic the spelling of the long vowel /ā/ in words such as *ṣalāt* and *zakāt* still shows the old spelling, which noted the long vowel through a *wāw* (see Spitaler 1960), as attested in Nabataean. The spelling *dw'd* could be understood as an archaic spelling of the name *Dāwūd*, in which the *wāw* notes the long vowel /ā/ and the *alif* the guttural sound (*hamza*), which the form *Dā'ūd* contains according to some grammarians. The spelling *dw'd* is well documented in the early manuscripts Dublin Is. 1615 1, Bibliothèque nationale Arabe 328a/b, British Library Or. 2165, and St. Petersburg E-20. The fact that in Ma VI 165 *Dāwūd* is constantly spelled *dw'd* could indicate a high age; Arabe 331, in contrast, contains the name once and in the common form: *d'wd*. It remains striking that in We. II 1913, as well as in Ma VI 165, the archaic form of the name *dw'd*, the common spelling of the name, almost constantly appears "corrected" into *d'wd*. All four dated manuscripts contain archaic spellings: Ma VI 165 contains, next to the archaic spellings of *Dāwūd*, the spellings *qāla* and *ṣay'*—also variant readings that are not to be found within the canonical readings—to a greater extent than does ms. or. fol. 4313.

The scribe of We. II 1913 often—but not always—writes *alif* in the central position for a long ā, more often than can be found in the other three manuscripts, e.g., in the case of *qāla* or *qālū*, yet shows other features of archaic

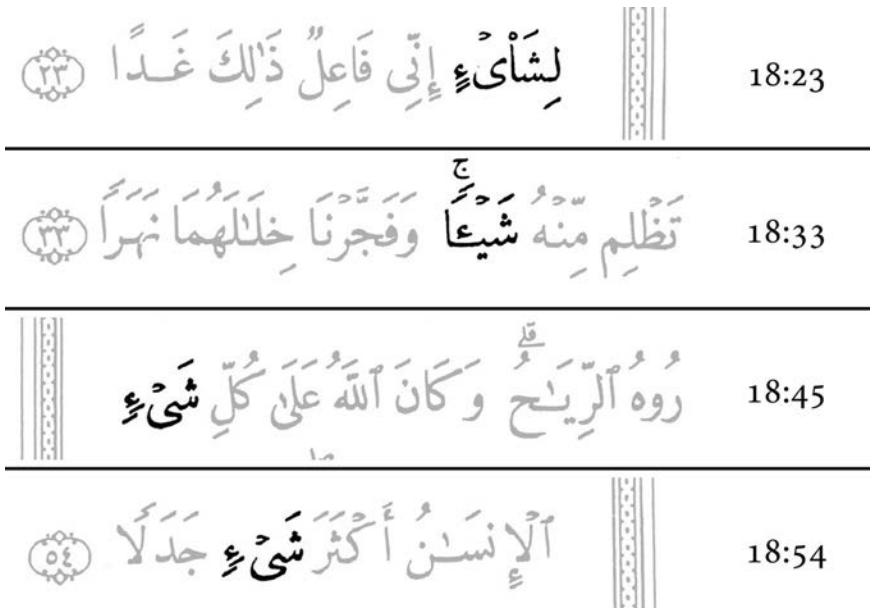


FIGURE 6.14 Two ways of spelling the word *šay'* in Surah 18 of the Egyptian print of the Qur'an (Cairo 1924)

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writing such as *dw'd* or *dw'*. Arabe 331, however, contains an orthography quite similar to the Egyptian print (Cairo 1924), but also includes archaic spellings such as *dw'*. The Egyptian print for its part refers, in its epilogue, to the two authorities ad-Dānī (d. 1053/1054) and Ibn Nağāh (d. 1102/1103). The question whether the manuscripts consulted by ad-Dānī⁵⁸ were the oldest ones probably has to be answered in the negative. One cannot exclude the possibility that he had seen old manuscripts, but it is doubtful that he was in the position to understand the chronological order of scripts and spelling. The spelling of the Egyptian print of 1924, which lives on in the nowadays very widespread text output of the King Fahd Glorious Quran Printing Complex (Medina), apparently does not always include the oldest verifiable spelling, for it never writes *dw'd*, and only once *šay* with an *alif* after the *šin*.

All in all, ¹⁴C datings could confirm the high age of manuscripts, so far only dated by paleographic classification, especially those in Ḥiğāzī script. The observations on the four manuscripts can be summarized as follows: (1) Tübingen Ma VI 165, in a Kufic script, although paleographically located in the

58 See ad-Dānī's *al-Muqni' fi rasm maṣāḥif al-amṣār ma'a Kitāb an-Naqt* (1932).

8th century CE, belongs according to the ¹⁴C datings, and as confirmed by orthography, in the 7th century. The additions and modifications of the first ink layer through the use of a similar ink can be seen with the naked eye (in the word *Qur'ān*, originally just *qrn*, an *alif* was added) and this should be supported through scientific ink-analyses. Moreover, the manuscript includes archaic spellings and variant readings that are not mentioned in later exegetical literature. (2) Berlin ms. or. fol. 4313, difficult to classify paleographically, shows similarities to the Ḥiḡāzī style of writing, yet according to its orthography and ¹⁴C dating it belongs to the oldest textual witnesses preserved. The simple handwriting of the manuscript, without any vowel dots and ornamentation, appears to be among the oldest. (3) The fragments of Leiden Cod. or. 14.545b/c—sheets from a codex to which originally the fragment Paris Arabe 331 (56 fol.) and Marcel 3 (26 fol.) had belonged—are paleographically to be classified as Kufic B 1a and, according to ¹⁴C, to be dated in the 7th century, although the orthography shows only very few archaic spellings. In this case the ¹⁴C dating questions the fragments' classification as Kufic, because such a high age would better match a parchment in the Ḥiḡāzī style, with its upright format and its slightly uncaligraphic appearance. (4) The ¹⁴C measurement results of the Berlin codex We. II 1913 (210 folios that comprise about 85 % of the Qur'ān text, perhaps the oldest next-to-complete codex of the Qur'ān existing today)—together with the six folios of Arabe 6087 (Paris)—range over a long period of time, due to the calibration curve. Its orthography shows archaic forms such as *dw'd* for *Dāwūd*, but also spellings of the letter *alif* to note the long /ā/ in a central position, which is generally a feature of later manuscripts. All in all, the further philological evaluation of Berlin We. II 1913 will hardly be possible without the analyses of the different layers of ink—*inter alia* through the usage of ultraviolet images and scientific ink analyses.

By means of ¹⁴C measurements, four Qur'ān fragments of vast text size (see Table 6.1) have turned out to be manuscripts of the 7th and the early 8th centuries. Without the radiocarbon dating procedure, the Tübingen manuscript and the Leiden fragment (together with Bibliothèque nationale Arabe 331) would most probably have been classified as manuscripts of the 8th century. The Berlin fragment, namely, the seven pages of ms. or. fol. 4313—together with the fragment Cairo *Qāf* 47, a large fragment⁵⁹—seems to contain old spellings,

59 Pictures of the manuscript with the shelf mark *Qāf* 47 from the photo archive of Gotthelf Bergsträßer (Munich) can be accessed via the online-publication of the Corpus Coranicum by now, see corpuscoranicum.de/handschriften/index?sure=2&vers=269&handschrift=73&anzeigen=Anzeigen (last accessed 12 November 2018).

pointing to an old-layer orthography; the fact that this fragment nevertheless actually belongs in the 7th century could only be determined due to ¹⁴C dating.

Qurʾānic manuscripts are, in the light of scientific dating, a rather large corpus of primary sources that, in their physical shape in the form of a codex, precede scholarly exegetical literature by two or three centuries. This rediscovery of written transmission could help us to get a more precise idea of the historical development of the text of the Qurʾān: In an article written in 1954, Rudi Paret referred to a “void in the transmission on Urislam,”⁶⁰ and certainly rightly so, since the first Islamic century remains to this day an unknown epoch in fields such as law and exegesis. Due to a quite impressive number of textual witnesses—a first list of fragments from European collections, without consideration of auction sales, and the still-unknown manuscript collection of Sanaa count more than 2,000 folios (= 4,000 pages)—the Qurʾān is presumed to be a historically rather well-documented text.⁶¹ We know that the first generations of Islamic scholars used writing materials but did not publish their writings, simply handing them on as written texts to their pupils. Up to the mid-8th century the transmission of knowledge was apparently oral, from teacher to student.⁶² The early Qurʾān manuscripts indicate that the written form of the Qurʾān text played an important role, and—assuming that merely a part of the Qurʾān codices of the first century has been conserved—that the written text existed in numerous codices. This will have to be taken into account regarding the early textual history of the Qurʾān, especially when determining the crucial relationship between oral and written transmission. Many variant readings that have been documented by Islamic tradition show that single letters, oftentimes ambiguous, were interpreted in different ways, and that this was how variant readings emerged: many verses have variant readings due to the different interpretation of one and the same undotted letter. Most variant readings apply to the vocalization, however; for more than half of all Qurʾān verses, despite ambiguities in the spellings, a homogeneous text stock has been transmitted. Therefore it would be exaggerated to claim that the written transmission was stronger than the oral one, although it must be said that the track of transmission was apparently persistently influenced by the particularities of the written transmission. The seven canonical readings, implemented by

60 Paret 1954: 147–153.

61 For a first overview of fragments that can be dated back to about 750 CE, see Marx 2015b: 430–435.

62 See the research by Gregor Schoeler on transfer of knowledge in early Islam, e.g. Schoeler 2002.

Shelf mark	1		2		3		4	
	Ma VI 165	We II 193	Arabe 6087	Qaf 47	ms.or.fol. 433	Arabe 331	14-545 b	14-545 c
Collection	Universitätsbibliothek Tübingen	Staatsbibliothek zu Berlin	Bibliothèque nationale de France	Egyptian National Library Cairo	Staatsbibliothek zu Berlin	Bibliothèque nationale de France	Leiden University Library	National Library of Russia
Provenance	Damasqus		al-Fustāt (Old-Cairo)					
Purchased / discovered by	Johann G. Wetzstein (1815–1905)		Charles Schefer (1820–1898)	Bernhard Moritz (1895–1939)		Asselin de Cherville (1772–1822)	C. Jorissen 1979, Beirut, Dutch ambassador	
¹⁴ C-dating C.E.	649–675	662–765		606–652			652–763	
Extent (fol.)	77	210	6	31	7	56	1	1
Script	kūfī B 1a	kūfī B 1a	kūfī B 1a	ḥijāzī II		kūfī B 1a	kūfī B 1a	
Range of the Qur'anic text (Sura:Verse)	17:35–36:57	2:30–21:112; 22:18–24:33; 24:51–27:84; 34:47–74:1; 78:35–90:18	31:23–34:6	2:269–3:14; 3:56–78; 3:100–4:137; 6:45–51:6; 53–79; 81–53; 99:4–11:42; 11:92–120; 14:32–15:6; 21:37–45; 21:55–66; 63:8–64:14	4:138–155; 4:172–5:87	2:125–191; 2:201–258; 7:162–9:35; 14:9–16:64; 6:114–17:4; 17:78–18:6; 25:165–26:19; 43:81–44:28; 45:9–46:8; 46:21–47:16; 47:36–53:62; 54:41–60:1	63:1–64:4	4:92–5:5; 6:25–6:153; 70:44–85:10

TABLE 6.1 Four large fragments of Qur'ānic Codices on parchment before 770 CE.

the Baghdadi scholar Ibn Muğāhid (d. 936), most probably cannot be detected within the early manuscripts at hand in their exact wording. At least to date, no manuscript before 800 CE has been found that would perfectly match one of the canonized seven readings.

The broad material evidence gives us the possibility to go farther back into textual history than had been deemed possible until now—at least fragmentarily. The euphoric media coverage of the ^{14}C dating is understandable, however, since the Islamic religion and the Qurʾān are still considered to be historically controversial. The fact that the examination of some of the oldest manuscripts raises so many new questions—some of which could challenge the historicity of the presently used way of spelling in modern print editions—could also raise further questions. Based on a corpus of ancient manuscripts, one could ask, for example, why many modern print editions—such as Cairo 1924, prints from the Medina based King Fahd Complex, or the modern Iranian edition—still rely on the descriptions of ancient manuscripts given by the Andalusian scholar ad-Dānī (d. 1053/1054). Since many features, described by ad-Dānī and his pupil Ibn Nağāḥ seem to correspond only to some degree to evidence gained today from manuscripts and their spellings that are believed to originate from the time of ʿUtmān, these might have to be counterchecked again.

After our look into four manuscripts, we may extend our approach to other early Qurʾānic manuscripts. Meanwhile, the results of carbon dating of fourteen Qurʾān manuscripts—thirteen fragments on parchment and one papyrus, displayed in the following Table 6.2—suggest a correlation between script style and carbon age. Arranged in numerical order of the obtained measurements, starting with the highest date on top, the Ḥiğāzī script is attested to as being oldest, followed by Kūfī, with a period where manuscripts of both styles would mingle. The Ḥiğāzī DAM 01-27.1 (palimpsest) shows in the lower layer considerable deviations from the Qurʾān text as we know it today, recalling to us variations types known from the reports about non-canonical variant reading in Muslim exegetical sources. The fragments of Leiden, two of them Kufi, the other one Ḥiğāzī, show both less frequent “variant spellings and readings” compared to the mainstream text of today. Kufi We. 11 1913 and Ma VI 165, and the Ḥiğāzī-style manuscript ms. or. fol. 4313, show more odd spellings, indicators of their rather high age.

If we accept the dates obtained by the analysis of radiocarbon, we see that different spellings were developing at a different pace. Of course we know still very little about the places where these manuscripts were produced—two of them (the Leiden parchments and Berlin ms. or. fol. 4313) can be retraced to Cairo, whereas Tübingen Ma VI 165 and Berlin We. 11 1913 were bought by

the Prussian diplomat Johann Wetzstein (1815–1905) in Damascus—so the features we were discussing might have been caused by regional variations of pronunciation and regional spelling conventions. If the spellings according the Nabataean style (long /ā/ written by *wāw* or *yā'*) were still practiced in the middle of the 7th century, as becomes evident by words like *ṣalāt* (“prayer”) or *zakāt* (“alms”) spelled with a *wāw* for /ā/,⁶³ as the two words and some others appear in Qur'ānic manuscripts as well as in the orthography of the Cairene print, then one could imagine that the “odd” spelling for *Dāwūd* (or, according to some grammarians, the name has a glottal stop: *Dā'ūd*) could be explained by the usage of the letter *wāw* for /ā/.

All of our manuscripts show the usage of *alif* for the long vowel /ā/, e.g., *ġannāt* (“gardens”) or *qāla* (“he has said”), perhaps because there was some need to distinguish these words from *qul* (“say!”) and *ġanna(t)* (“garden” in its singular form, with the feminine ending *tā'* in context form). A spelling without *alif* could have caused misunderstandings at that early period, since *ġanna(t)* could be easily confused with *ġannāt*, and analogously *qul* with *qāla*, so the scribe could opt for an explicated spelling by writing the *alif*.

Even today, the complex function of the letter *alif* remains obscure in some respects. Spellings like *dū* with *dāl-wāw-alif* occur frequently in manuscripts of the 7th and 8th century, although we do not understand clearly the motivation behind it. If *wāw* in continuous script of the old codices was ambiguous, in the sense that it would in most cases belong to the following word, then the combination of *wāw* and *alif* could be seen as a way to avoid confusion when writing down a long vowel /ū/. Other words, such as the third-person plural *kānū*, spelled in modern orthography *kāf-alif-nūn-alif*, seem to be another case of a “more precise spelling” in a sign system that had not yet fully developed. The spelling for *ṣay'* with the *alif* in middle position remains a strange case, too. Generally speaking, it appears that the frequency of *alif* denoting /ā/ increased over time: manuscripts of the 7th century show fewer *alifs* denoting a long vowel in middle position than do manuscripts of the 8th century. The opposite seems to be true for the spelling of the word *ṣay'* (with more than 280 occurrences in the text), for manuscripts of the 8th century show this feature less frequently than those of the 7th.

Since we have reason to believe that we have an important corpus of early witnesses on parchment for what is believed to be the oldest Arabic book—at least some 2,000 fol., stretching over the first two centuries in accessible collections—historical research into the development of Arabic script and its paleo-

63 Spitaler 1960.

TABLE 6.2 Fourteen carbon-dated manuscripts, listed according to the calculated time span in increasing chronological order

No.	Collection	Manuscript	Radioactive carbon age in BP (= years before 1950)	Time span to which the carbon was dated in CE	Script (Déroche 1983)
1	Birmingham* (Oxford laboratory)	1572a	[1456, 21], fol. 1 or fol. 7	568–645	<i>ḥiǧāzī</i> I
2	Sanaa	DAM 01-27.1	1440, 16 (fol. 2), 1404, 16 (fol. 11), 1439, 16 (fol. 13)	606–649	<i>ḥiǧāzī</i> I
3	Berlin	ms. or. fol. 4313	1422, 19 (fol. 2) 1424, 19 (fol. 5)	606–652	<i>ḥiǧāzī</i> II
4	Sanaa	DAM 01-29.1	1378, 16 (fol. 7/8) 1400, 16 (fol. 13)	633–665	<i>ḥiǧāzī</i> I
5	Tübingen	Ma VI 165	1357, 24 (fol. 23), 1388, 24 (fol. 28), 1319, 24 (fol. 37)	649–675	<i>kūfī</i> B Ia
6	Leiden	Cod. or. 14.545a	1335, 24 (fol. 4) 1322, 24 (fol. 2/3)	652–763	<i>kūfī</i> B Ib
7	Leiden	Cod. or. 14.545b Cod. or. 14.545c	1327, 24 (fol. 1) 1331, 24 (fol. 1)	652–763	<i>kūfī</i> B Ia
8	Leiden	Or. 8264 (papyrus)	1324, 24	653–766	close to <i>kūfī</i> B II
9	Berlin	We. II 1913	1300, 27 (fol. 21), 1313, 19 (fol. 104), 1305, 19 (fol. 151)	662–765	<i>kūfī</i> B Ia
10	Berlin	We. II 1919	1288, 19 (fol. 13)	670–769	<i>kūfī</i> C III
11	Leiden	Or. 6814	1247, 24 (fol. 6) 1256, 24 (fol. 28)	680–798	<i>kūfī</i> B II
12	Stuttgart	Sig. isl. 18	1233, 21 (fol. 1)	690–877	<i>kūfī</i> B Ib
13	Munich	Cod. arab. 2569	1227, 21 (fragment 1) 1211, 24 (fragment 2)	720–880	<i>kūfī</i> D IV
14	Munich	Cod. arab. 2817	1210, 21 (fol. 9)	725–886	<i>kūfī</i> D IV

graphy can be applied in a new way. It seems crucial to develop an approach and a perspective independently of the narratives of later sources. As we have tried to show, in the case of the history of Qur'ānic spellings and scripts, we seem to be in a position to look at the textual sources with the glasses of the historian. Comparison with the spellings observed in dated papyri could enhance an historical approach in that field. Also the study of so-called Middle Arabic and the question of the development of Arabic grammar could benefit from these inquiries.

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