THE DATE OF MS 193 IN THE SCHØYEN COLLECTION: NEW RADIOCARBON EVIDENCE[1]

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Abstract. — MS 193 in the Schøyen Collection, also known as the Crosby-Schøyen Codex, is a unique Coptic papyrus codex that has previously been dated by scholars from the second to the sixth centuries CE. This article presents the results of recent radiocarbon analysis of a fragment of one of the leaves of the codex, while discussing the radiocarbon dating method itself and the remaining uncertainties relating to the interpretation of the results of such analysis.

Keywords: Crosby-Schøyen Codex, Radiocarbon dating, Dishna Papers, Bodmer Papyri, Early Christian studies, Egyptian monasticism

A Unique Coptic Manuscript

The Coptic manuscript MS 193 in the Schøyen Collection, the so-called Crosby-Schøyen Codex,[2] contains a broad variety of texts, both biblical and patristic. It opens with Melito of Sardis' *On the Passover*, followed by 2 Macc 5:27–7:41 (entitled "The Jewish Martyrs"), 1 Peter (entitled "The Letter of Peter"), Jonah, and a concluding untitled text, possibly a hymn, that is fragmentarily preserved and has so far not been identified with any

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[2] For an introduction to the manuscript and critical editons of the texts it contains, see J.E. Goehring (ed.), *The Crosby-Schøyen Codex MS 193 in the Schøyen Collection* (Leuven 1990). Fragments of an additional folio, now in the Chester Beatty Library in Dublin, have been published by A. Pietersma and S. Comstock, "Two More Pages of Crosby-Schøyen Codex MS 193: A Pachomian Easter Lectionary?" *BASP* 48 (2011) 27–46.

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previously known writing.[3] The codex originally consisted of 136 pages, and was penned by a single scribe, who used a two-column layout for the first four texts, and a single-column format for the final, unidentified one.[4]

In all likelihood, MS 193 derives from the so-called Dishna Papers discovery, unearthed in 1952 in the vicinity of the Jabal Abu Mana, close to the village of Dishna in Upper Egypt.[5] While there is continued uncertainty regarding the full extent of the discovery, a significant number of the manuscripts that have been associated with it, including MS 193, are likely to have been owned, and perhaps also manufactured, by one of the nearby Pachomian monastic communities that were active in this area from the first half of the fourth century onwards.[6] The bulk of what is now known as the Crosby-Schøyen Codex was originally acquired in 1955 by Margaret Reed Crosby for the University of Mississippi, while a number of smaller fragments ended up in the Bodmer and Chester Beatty libraries. Today most of the codex, including most of the fragments first acquired by Martin Bodmer, but excluding the Chester Beatty fragments, reside in the collection of Dr. Martin Schøyen, outside Oslo, Norway, where it is designated MS 193.[7]

This codex is in several respects unique among our early Coptic manuscripts. Its almost square format is quite distinct from the tall rectangular format most common among our earliest Coptic codices, and its two-column layout is similarly rare in early Coptic codices. MS 193 indeed finds its closest parallels among other manuscripts from the Dishna Papers discovery.[8] A comparison with the Greek manuscript known as the Bodmer Miscellaneous – or Composite – Codex, is especially intriguing.[9] Not only

[3] Pietersma and Comstock (n. 2) suggest that the unidentified text could be Pachomian and that the whole codex may have been a Pachomian Easter Lectionary.

[4] J.M. Robinson, "The Manuscript's History and Codicology," in Goehring (n. 2) xvii–xlvii.

[5] On the discovery of the Dishna Papers, see esp. J.M. Robinson, *The Story of the Bodmer Papyri: From the First Monastery's Library in Upper Egypt to Geneva and Dublin* (Eugene, OR 2011).

[6] On the provenance and contents of the Dishna Papers discovery, see esp. Robinson (n. 5); H. Lundhaug, "The Dishna Papers and the Nag Hammadi Codices: The Remains of a Single Monastic Library?" in H. Lundhaug and L. Jenott (eds.), *The Nag Hammadi Codices and Late Antique Egypt* (Tübingen 2018) 329–386; B. Nongbri, *God's Library: The Archaeology of the Earliest Christian Manuscripts* (New Haven, CT 2018). On the Pachomian monasteries in the area, see L.-Th. Lefort, "Les premiers monastères Pachômiens: exploration topographique," *Le Muséon* 52 (1939) 379–407.

[7] On the acquisistion history, see Robinson (n. 4) xxxiii–xli.

[8] See Robinson (n. 4) xxxv–xxxvii.

[9] *P.Bodmer* V+X+XI+VII+XIII+XII+XX+IX+VIII. The codex has been published in several volumes (see the *Checklist*).

are the two codices practically identical in size and format,[10] but the similarities even extend to the textual contents, as both codices feature a peculiar assortment of texts in a single volume, and even share two texts between them, Melito of Sardis' *Peri Pascha* and 1 Peter.[11] Yet with regard to quire structure and complexity of construction the two codices are significantly different. While MS 193 is a single-quire codex inscribed by a single scribe, the Miscellaneous Codex is highly complex, consisting of fifteen quires inscribed by multiple scribes, and even seems to have been added to over time.[12]

Previous Datings

Because of its relative uniqueness among Coptic manuscripts, and the problematic nature of palaeography as a dating tool,[13] especially of Coptic manuscripts,[14] assessing the date of Schøyen MS 193 has not been easy. Scholars have come to markedly different conclusions, dating it anywhere from the second to the sixth centuries.[15] Colin Roberts dated it to the late second or early third century,[16] William H. Willis preferred the third century,[17] Allen Cabaniss thought the codex was a little bit later and settled

[10] See, e.g., E.G. Turner, *The Typology of the Early Codex* (Philadelphia, PA 1977) 22, 79–81, 137. For a physical description of MS 193, see Robinson (n. 4) xliii–xlvii.

[11] The Bodmer Miscellaneous Codex contains *The Nativity of Mary* (*P.Bodmer* V), apocryphal correspondence between Paul and the Corinthians (*P.Bodmer* X), an *Ode of Solomon* (*P.Bodmer* XI), Jude (*P.Bodmer* VII), Melito of Sardis, *On the Passover* (*P.Bodmer* XIII), a fragment of a hymn (*P.Bodmer* XII), the *Apology of Phileas* (*P.Bodmer* XX), Psalms 33:2–34:16 LXX (*P.Bodmer* IX), and 1–2 Peter (*P.Bodmer* VIII). *P.Bodmer* VII (Jude) and VIII (1–2 Peter) are commonly known as $\mathfrak{P}^{72}$, although recent research indicates that *P.Bodmer* VIII originally existed separately, as a part of a different codex, being bound with *P.Bodmer* VII only at a later stage (see esp. B. Nongbri, "The Construction of P.Bodmer VIII and the Bodmer 'Composite' or 'Miscellaneous' Codex," *NovT* 58 [2016] 394–410).

[12] On the construction of the Miscellaneous Codex, see esp. B. Nongbri, "Recent Progress in Understanding the Construction of the Bodmer 'Miscellaneous' or 'Composite' Codex," *Adamantius* 21 (2015) 171–172; Nongbri (n. 11); B. Nongbri and S.G. Hall, "Melito's *Peri Pascha* 1–5 as Recovered from a 'Lost' Leaf of *Papyrus Bodmer* XIII," *JTS* 68 (2017) 576–592.

[13] See, e.g., B. Nongbri, "The Limits of Palaeographic Dating of Literary Papyri: Some Observations on the Date and Provenance of P. Bodmer II (P66)," *Museum Helveticum* 71 (2014) 1–35; Nongbri (n. 6).

[14] C. Askeland, "Dating Early Greek and Coptic Literary Hands," in Lundhaug and Jenott (n. 6) 457–489.

[15] Robinson (n. 4) xxxiii.

[16] Robinson (n. 4) xxxiii.

[17] W.H. Willis, "The New Collection of Papyri at The University of Mississippi," in L. Amundsen and V. Skånland (eds.), *Proceedings of the IX International Congress of Papyrology: Oslo, 19th-22nd August, 1958* (Oslo 1961) 381–392.

for a date around 300,[18] Eric G. Turner suggested the slightly wider designation of a date within the third or fourth centuries,[19] Kurt and Barbara Aland preferred the end of that spectrum and proposed that it was probably made around 400,[20] while, according to Stuart G. Hall, Tito Orlandi tentatively suggested a date as late as the sixth century, or at least not before the fifth.[21]

Radiocarbon Dating[22]

Thanks to the generosity of Dr. Martin Schøyen it is now possible to present an additional piece of evidence for the date of MS 193, in the form of radiocarbon analysis of a papyrus-fragment from one of the pages of the codex. On the 9th of April 2014, Dr. Schøyen, together with Dr. Lance Jenott and myself,[23] selected an uninscribed half of a papyrus fragment of the manuscript, and Schøyen personally took a sample piece of approximately two square centimeters in size.[24] The sample was taken from unplaced fragment no. 23, which is among the forty-one fragments originally acquired by Martin Bodmer and only reunited with the rest of the codex in 1990.[25] (See Figure 1, which shows the fragment after it was cut in half for sampling.)

[18] A. Cabaniss, "The University of Mississippi Coptic Papyrus Manuscript: A Paschal Lectionary?" *NTS* 8.1 (1961) 70–72.

[19] Turner (n. 10) 36, 81, 137.

[20] K. and B. Aland, *The Text of the New Testament: An Introduction to the Critical Editions and to the Theory and Practice of Modern Textual Criticism* (2nd ed.; Grand Rapids, MI 1989) 201.

[21] S.G. Hall (ed. and trans.), *Melito of Sardis:* On Pascha *and Fragments* (Oxford 1979) xvii, n. 8, xlv. According to Hall, Orlandi made this judgment on the basis of a photocopy of the manuscript.

[22] The radiocarbon dating was facilitated by the DFG-ANR-Project "*Coranica*" (see n. 1). For details on this project, see M.J. Marx and T.J. Jocham, "Zu den Datierungen von Koranhandschriften durch die ^{14}C-Methode," *Frankfurter Zeitschrift für islamisch-theologische Studien* 2 (2015) 9–43; M.J. Marx and T.J. Jocham, "Radiocarbon (^{14}C) Dating of Qur'ān Manuscripts," in A. Kaplony and M.J. Marx (eds.), *Qur'ān Quotations Preserved on Papyrus Documents, 7th-10th Centuries* (Leiden 2019) 188–221.

[23] Dr. Jenott worked at the time as a postdoc in the NEWCONT project at the University of Oslo.

[24] Samples were also taken from the leather cover of Nag Hammadi Codex I and a papyrus fragment used as cartonnage in that cover. These were part of the same batch analyzed at the ETH together with the sample from MS 193. The results of the analysis of the samples from NHC I are forthcoming in a separate publication.

[25] See W.H. Willis and J.E. Goehring, "Unplaced Fragments," in Goehring (n. 2) 277–284 (frag. 23 on p. 283).

Figure 1: Schøyen MS 193, fragment no. 23, after it was cut in half for sampling. The uninscribed left half is the tested sample.

I delivered the sample in person to Tobias J. Jocham of the DFG-ANR-project *Coranica* at the Berlin-Brandenburgische Akademie der Wissenschaften, in Berlin, and he subsequently took it to the radiocarbon laboratory at the ETH in Zürich.[26] The lab in Zürich divided the sample in three and completed their first test run, using accelerated mass spectrometry, in November 2014, and the second and third runs in December 2014.[27] The test results can be seen in Table 1.

Targets	**^{14}C age (BP)**	**±1σ**	**F14C**	**±1σ**	**δC13**	**±1σ**	**mg C**	**C/N**
1	1801	27	0.79900	0.00300	-10.6	1.1	0.99	117.5576856
2	1797	19	0.799593981	0.001873843	-10.32928189	1		
3	1784	15	0.800812162	0.001518795	-11.50426321	1		

Table 1: Sample results, raw data, ETH-57863[28]

[26] The DFG-ANR-Project "*Coranica*" selected ETH as their ^{14}C laboratory of choice, having made a preliminary comparison of several laboratories. See Marx and Jocham, "Zu den Datierungen" (n. 22) 18, n. 27.

[27] On the test procedure, see Marx and Jocham, "Zu den Datierungen" (n. 22) 18–20.

[28] The first row shows the results of the first test run (one target); the second row shows the results of the first two test runs combined (two targets); and the third row shows the combined results from all three test runs (three targets).

To properly evaluate the significance of the measured results, however, it is important to understand the fundamental principles behind the ^{14}C dating method and the procedure by which the ^{14}C measurements are converted into calendar date ranges.[29] The reason why the measurement of the ^{14}C isotope can be used to assess the date of a sample in the first place is the fact that plants and animals absorb ^{14}C from their environment while they are alive, but at the moment they die, they no longer replenish their supply of ^{14}C, and this carbon isotope starts to decay at a constant rate. What is measured in the laboratory is the remaining ^{14}C in the sample of organic material, and by comparing this with the modern level of ^{14}C in standard material, the organism's date of death, in this case the harvesting of the papyrus plant from which the manuscript leaf of MS 193 was made, can be calculated.[30] The result of the laboratory measurement is commonly given as a date "Before Present" (BP), where "present" is defined as 1950.

However, since the level of ^{14}C in the atmosphere has not remained stable over time, but has fluctuated, it is also necessary to calibrate the final measurement results (the BP date), on the basis of what we know about the level of ^{14}C in the atmosphere over time, in order to convert them to actual calendar date ranges. The procedure by which we get from measured radiocarbon results to a calendar date range is therefore not as simple as subtracting the BP (Before Present) number from 1950 (the definition of "Present"). Instead, the BP result must be converted to calendar date ranges using a calibration curve generated primarily on the basis of dendrochronology (I have used the IntCal13 Northern Hemisphere atmospheric radiocarbon calibration curve, which represents the current state of the art).[31] This is done by running the BP result, and its measurement accuracy, through a calibration tool (here I have used OxCal),[32] which gives us a graphic rendering of the calibrated calendar date ranges and their probabilities (as will be seen in the figures below).

[29] On the development of the dating method, see esp. W.F. Libby, *Radiocarbon Dating* (2nd ed.; Chicago 1955). The description below is based on M. Walker, *Quaternary Dating Methods* (Chichester 2005) 17–33.

[30] The ^{14}C method can therefore only be used to date organic materials, and what is calculated is an organism's time of death.

[31] On the IntCal13 calibration curve, see P.J. Reimer et al., "IntCal13 and Marine13 Radiocarbon Age Calibration Curves 0–50,000 Years Cal BP," *Radiocarbon* 55 (2013) 1869–1887. See also Walker (n. 29) 32–33. Together with Marine13 and SHCal13, IntCal13 replaces previous calibration curves and was ratified in July 2012 at the International Radiocarbon conference.

[32] On OxCal version 4.3.2, used here, see C. Bronk Ramsey, "Methods for Summarizing Radiocarbon Datasets," *Radiocarbon* 59 (2017) 1809–1833. On earlier developments, see also C. Bronk Ramsey and S. Lee, "Recent and Planned Developments of the Program Oxcal," *Radiocarbon* 55 (2013) 720–730.

Results

As mentioned above, the laboratory at the ETH in Zürich was able to make three test runs on the sample, and the combined result of the three test runs[33] yielded a ^{14}C BP age of 1784±15.[34] As seen in Figure 2, calibration of this result using the OxCal calibration tool provides the following calendar date ranges with 95.4% probability (2σ): 144–155 CE (1.5%), 168–195 CE (4.9%), 210–262 CE (54.9%), 277–328 CE (34.2%). It is useful, however, to include practically the entire range of probability, 99.7% (3σ), which gives us the following results: 135–265 CE (64.7%), 270–333 CE (35.0%).[35]

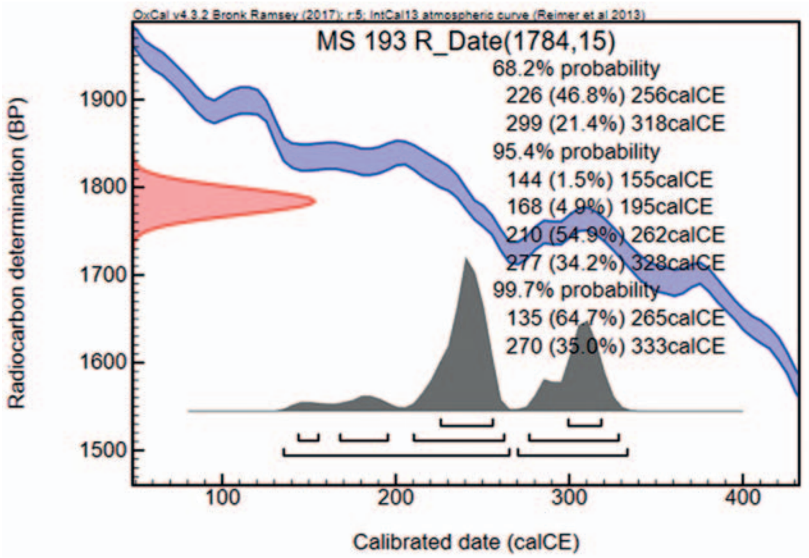

Figure 2: MS 193 calibrated radiocarbon results (based on the combined measurement results of all three test runs, 1784±15 BP) generated by OxCal v.4.3.2 using IntCal13 atmospheric curve. The red bell curve shows the ^{14}C measurement result in BP; the IntCal13 atmospheric curve is shown in blue; and the calibrated calendar date ranges in gray.

[33] This is what is represented by the third row of Table 1.

[34] F14C 0.800812162±0.001518795.

[35] The results most commonly given are the 2σ results, but taking the uncertainties of the radiocarbon dating method, described below, into consideration, the 3σ results are useful to keep in mind throughout the analysis. If we limit the results only to the ranges with the greatest probability, the 1σ result, we get the following date ranges with 68.2% probability (1σ): 226–256 CE (46.8%), 299–318 CE (21.4%). However, the 1σ results are not regarded as particularly valuable, since they exclude a significant percentage of the possible calendar date range for the sample.

The red bell curve on the vertical axis here shows the normal distribution of the ^{14}C measurement result in BP, reflecting the measurement accuracy of ±15 BP;[36] the blue curve that extends from the top left to the bottom right corner of the figure is the IntCal13 calibration curve; and the gray plot on the horizontal axis[37] shows the calibrated calendar date results that emerge when the BP result is calibrated using the IntCal13 calibration curve. The 1σ, 2σ, and 3σ calendar date ranges, which are shown in numbers and as horizontal bars underneath the gray plot, represent the calendar dates emerging from considering one, two, or three standard deviations from the mean BP result.

If the IntCal13 calibration curve (the blue curve in the figure) had been accurate for the geographical area where the sample comes from, what is seen in Figure 2 would have been the end result of the radiocarbon analysis. There is reason to believe, however, that this is not the case, and that we must reckon with a significant radiocarbon offset in samples from the Nile Valley. Due to a number of radiocarbon dating results of ancient Egyptian materials that have yielded surprisingly old dates,[38] a team led by Michael W. Dee has investigated whether the nature of the Nile and the periodical flooding of the Nile Valley before the building of the high dam may have created a so-called reservoir effect, which could produce samples that have less remaining ^{14}C activity than we would expect in our Egyptian samples, which ultimately results in radiocarbon dates that are too old.[39] Dee and his team found that the dates yielded by securely dated plant samples from the Nile Valley, gathered in the eighteenth and nineteenth centuries, were indeed too old.[40] On average the offset was found to be 19±5 BP between the measured results and the real dates of the samples.[41] While Dee et al. concluded that this offset was too small to be significant with regard to the dating of materials from Ancient Egypt,[42]

[36] Note that for this bell curve the numbers on the x-axis of the figure are irrelevant.

[37] Note that for this gray plot the numbers on the y-axis of the figure are irrelevant.

[38] See, e.g., D.J. Keenan, "Why Early-Historical Radiocarbon Dates Downwind from the Mediterranean are too Early," *Radiocarbon* 44 (2002) 225.

[39] M.W. Dee et al., "Investigating the Likelihood of a Reservoir Offset in the Radiocarbon Record for Ancient Egypt," *Journal of Archaeological Science* 37 (2010) 687–693. On the so-called "reservoir effect," see, e.g., B. Philippsen, "The Freshwater Reservoir Effect in Radiocarbon Dating," *Heritage Science* 1.24 (2013) 1–19.

[40] They measured 66 botanical samples, now kept at the University of Oxford Herbaria and the Natural History Museum in London. The dates when the samples were gathered, and thus their true age, was known with a ±2 year accuracy. The samples were of different plants, including three samples of papyrus (Dee et al. [n. 39] 688).

[41] Dee et al. (n. 39).

[42] Dee et al. (n. 39).

which was the primary focus of their investigation, this offset is certainly *not* insignificant when applied to the dating of late antique manuscripts.[43] Since the study of Dee et al. showed a clear tendency for the measured BP in their samples to be older than the BP predicted by IntCal13 on the basis of the secure dates for when the botanical samples were actually gathered, it is important to take a radiocarbon offset into account when dating organic materials from the Nile Valley.

If we take the study of Dee et al. into account and adjust our measured result of MS 193 by subtracting 19±5 BP, we get a ^{14}C BP age of 1765±15.8. This yields the following calibrated results (see Figure 3).[44]

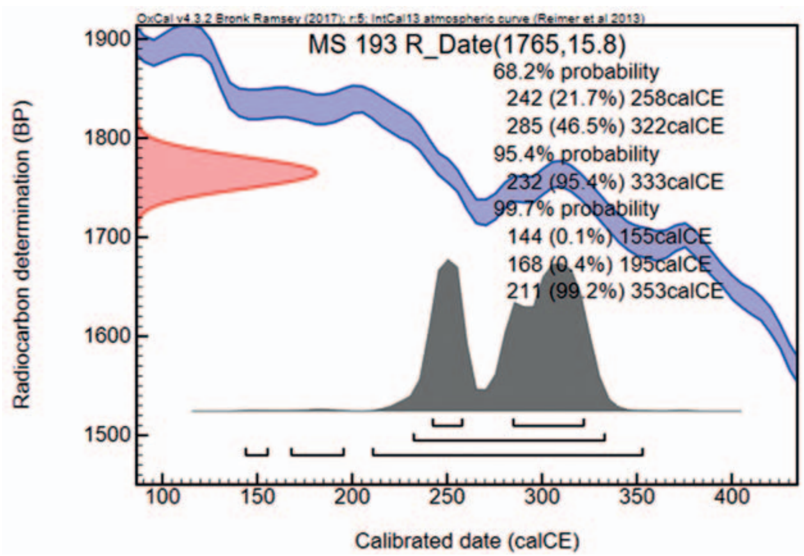

Figure 3: MS 193 calibrated radiocarbon results (based on the combined measurement results of all three test runs) generated by OxCal v.4.3.2 using IntCal 13 atmospheric curve, applying an offset of 19±5 BP based on the findings of Dee et al. (n. 39). The red bell curve shows the ^{14}C measurement result in BP with offset applied (1765±15.8 BP); the IntCal13 atmospheric curve is shown in blue; and the calibrated calendar date ranges in gray.

43 See J.K. Dru, "A Complex Pondering of Probabilities: How Can a Single Radiocarbon Test Contribute to Dating a Manuscript?" in Z.J. Cole (ed.), *Interdisciplinary Dating: Dialogues between Manuscript Studies and Material Sciences* (Leiden forthcoming). This point was also made in J.K. Dru, "Radiocarbon Dating for Manuscripts on Papyrus or Parchment: Improving Interpretation Through Interdisciplinary Dialogue" (poster presented at manuSciences'17, 12 September 2017, Fréjus, France).

44 1σ: 242–258 CE (21.7%), 285–322 CE (46.5%); 2σ: 232–333 CE (95.4%); 3σ: 144–155 CE (0.1%); 168–195 CE (0.4%); 211–353 CE (99.2%).

As we can see from Figure 3, the calibrated results are now significantly different.[45] It is important to remember, however, that the offset of 19±5 BP applied here is only an average offset based on the 66 samples measured in Dee et al.'s study. The margin of error was not constant. In the twelve separate years of collection over which the samples were split, the average results in nine of these years were too old compared to the IntCal13 prediction, but the average offset in each of these individual years ranged from -40±22 to +56±18 BP.[46] So while I have applied the average offset of 19±5 BP, the actual offset for our particular sample may theoretically be different by a significant margin.

This conclusion is supported by a recenty study by a team lead by Sturt W. Manning based on samples of juniper trees from the southern Levant (South Jordan), securely dated based on dendrochronology,[47] which shows that one has indeed to reckon with a fluctuating radiocarbon offset in this region. In their study of samples ranging from the seventeenth to the twentieth century, Manning et al. found that there was an average combined offset of 18.6±2.5 BP between the measured results and the results predicted by IntCal13,[48] which is almost exactly the same average offset noted by Dee et al. on the basis of their study of Egyptian plants. However, the study by Manning et al. adds the important insight that that not only does this offset fluctuate, and that 18.6±2.5 BP only represents the average offset, but there is a substantially greater offset in periods where the IntCal13 calibration curve has plateaus or reversals (i.e. when it rises rather than falls). In these cases they found the average offset to be approximately 24±5 BP. Importantly, Manning et al. do not ascribe these fluctuations to a reservoir effect, however, but attribute it rather to seasonal variation, and the greater offsets during periods in which there are plateaus or reversals in the calibration curve they attribute to periods of significantly warmer regional climate, which accounts for the similarities of their findings from the southern Levant with those of Dee et al. from Egypt. We would not expect such similarities if the offset based on the Nile valley plant samples were caused by a reservoir effect.

[45] While we still cannot completely exclude calendar dates in the second century CE for MS 193 on the basis of this radiocarbon analysis alone (there remains a miniscule 0.1% probability of 144–155 CE and a 0.4% probability of 168–195 CE), the present result is certainly most consistent with a date between 211–353 CE (with 99.2% probability).

[46] Dee et al. (n. 39) 689.

[47] S.W. Manning et al., "Fluctuating Radiocarbon Offsets Observed in the Southern Levant and Implications for Archaeological Chronology Debates," *PNAS* 115 (2018) 6141–6146.

[48] Manning et al. (n. 47) 6142.

Since the average offset noted by Manning et al. almost exactly matches that found by Dee et al. for Egypt, it is relevant to also apply to our sample from MS 193 the additional findings of Manning et al. regarding the higher offset in periods when the IntCal13 calibration curve has plateaus and reversals. The IntCal13 calibration curve in fact displays a major rise around the turn of the fourth century, a condition for which it is justified to apply the larger average offset of 24±5 BP that Manning et al. found to apply to these regions of the IntCal13 calibration curve. When we apply this offset to the measurements of MS 193 we get the calibrated calendar date results seen in Figure 4.[49]

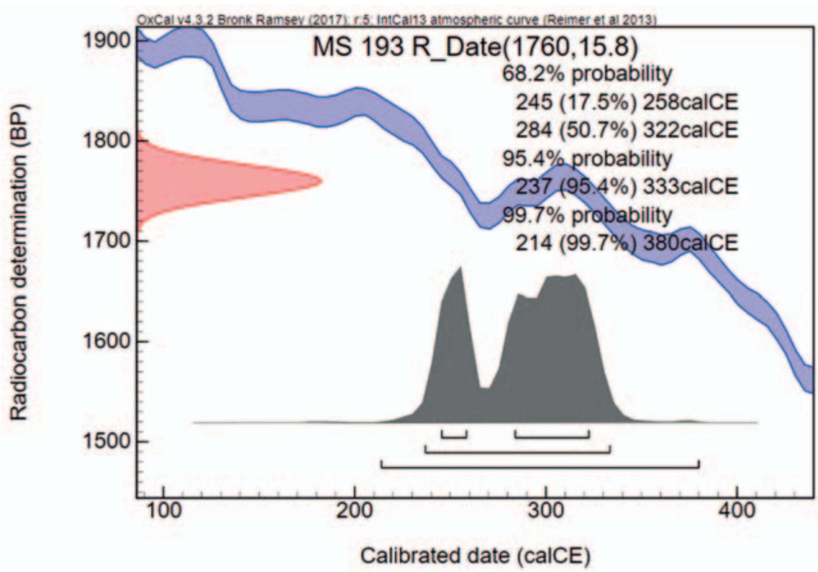

Figure 4: MS 193 calibrated radiocarbon results (based on the combined measurement results of all three test runs) generated by OxCal v.4.3.2 using IntCal 13 atmospheric curve, applying an offset of 24±5 BP based on the findings of Manning et al. (n. 47). The red bell curve shows the ^{14}C measurement result in BP with offset applied (1760±15.8); the IntCal13 atmospheric curve is shown in blue; and the calibrated calendar date ranges in gray.

As we can see, with this offset applied we can completely eliminate the possibility of a second-century date for MS 193, while the *terminus*

[49] 1σ: 245–258 CE (17.5%), 284–322 CE (50.7%); 2σ: 237–333 CE (95.4%); 3σ: 214–380 CE (99.7%).

ante quem (based on the 3σ result) also rises compared to the analysis based on the 19±5 BP offset (seen in Figure 3).[50]

The most important implications of Dee et al.'s and Manning et al.'s studies are the following: (1) IntCal13, the current atmospheric calibration curve for the northern hemisphere, which for the relevant time period is based on botanical samples from central and northern Europe and North America,[51] does not seem to accurately represent the levels of ^{14}C in this part of the world (Egypt and the Southern Levant), and we need to take into account the reality of a fluctuating radiocarbon offset, the magnitude of which we cannot be absolutely certain, that significantly impacts the results and accuracy of radiocarbon analyses of materials from this geographical area; (2) the radiocarbon level in the atmosphere in this part of the world fluctuated to such a degree that we may in reality be confronted with significantly larger offsets than the average offsets I have applied here, which again implies that even the calibrated results presented here, with offsets applied, may be less accurate than they appear. Moreover, when applying the findings of Dee et al. and Manning et al. to our Late Antique Egyptian materials, one important caveat needs to be highlighted, namely the fact that the securely dated botanical samples they tested derive from significantly later times, and thus we cannot be certain that the same offset applies to our materials. Nevertheless, while recognizing the possibility that the real offset may be different for our time period from Dee et al. and Manning et al.'s numbers, applied here, the impact of their findings when applied to the calibration of our Late Antique Egyptian samples are certainly too significant to be ignored, and currently represent the best starting points for reconsidering the calibration of radiocarbon results of samples from this area also for our time period.

Evaluation

The properly calibrated results of the present radiocarbon test of a sample of papyrus from MS 193 are consistent with a mid-third to mid-fourth-century date for the harvesting of the papyrus plant that was used to make the sheet of papyrus from which our sample was taken. If we take for granted that the papyrus was used to make MS 193 shortly after the

[50] If we count only the 2σ result, however, the *terminus ante quem* stays exactly the same, at 333 CE with both a 19±5 BP offset and with a 24±5 BP offset.

[51] Manning et al. (n. 47) 6142.

harvesting of the papyrus plant, this date range is also the date range for the production of the codex.

But how do we place the manuscript within this rather long date range? We have seen that in order to properly evaluate the results of ^{14}C testing it is crucial to understand the effects of the calibration curve on the final results of any radiocarbon dating analysis. First of all, the long date ranges in our final calibrated results have little to do with the accuracy of the measurement of ^{14}C in the sample. Indeed, even if it had been possible to increase the measurement accuracy to a theoretically almost completely accurate ±1 BP year (rather than ±15), the effects on the final calibrated calendar date results would be negligible. We can see this well illustrated by running the impossibly accurate measurement result of, e.g., 1765±1 BP through the OxCal calibration tool (see Figure 5).[52]

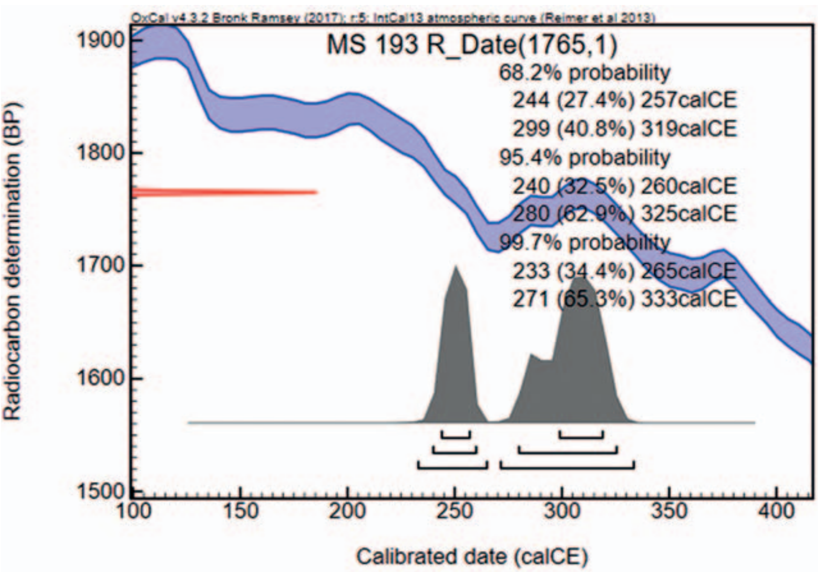

Figure 5: Calibrated results of a hypothetically (and impossibly) accurate measurement result of 1765±1 BP, generated by OxCal v.4.3.2 illustrating the impact of the shape of the IntCal13 calibration curve on the final calibrated calendar date results.

[52] 1σ: 244–257 CE (27.4%), 299–319 CE (40.8%); 2σ: 240–260 CE (32.5%), 280–325 CE (62.9%); 3σ: 233–265 CE (34.4%), 271–333 CE (65.3%).

It is therefore especially important to note the consequences of the fact that the IntCal13 calibration curve *rises* in the calendar date range of approximately 270–320 CE. This fact has serious consequences for the interpretation of the results of radiocarbon measurements. In fact, *any* measurement that yields calibrated 2σ results in the first third of the fourth century (before 332) *automatically* produces results in the third century too. In order to get 2σ results with calendar dates in the fourth century that do not also include results in the third century one needs values lower than 1683 BP for measurements with ±15 BP accuracy (and 1700 BP with a theoretically absolute accuracy), which is in fact a BP result that yields a 2σ calibrated range with 332 CE as its *lower* border value: 332–405 CE (95.4%). This implies that radiocarbon measurements that give calibrated 2σ results that include calendar dates in the first third of the fourth century (the years 300–331) will *never* exclude calendar dates in the third century. Radiocarbon analysis should therefore not be the only method of dating, and especially not in periods in which the calibration curve rises or plateaus. In these periods we get the longest date ranges, and thus the least useful results, and as we have seen from the recent study of Manning et al., these are also the periods in which the IntCal13 calibration curve appears to be the least trustworthy for our region.

The conclusion we may draw from this analysis is that radiocarbon analysis does not provide us with a silver bullet for manuscript dating. We therefore need to supplement our radiocarbon analysis with other indications of the manuscript's date of production. Among the internal features of MS 193, which may be taken into account, is the title of 1 Pet, which only states "The Letter of Peter." The fact that it is not referred to as the *first* letter of Peter may perhaps indicate that the Coptic scribe, or the Coptic translator, or the Greek *Vorlage*, only knew one letter of Peter,[53] which may again indicate an early date for the manuscript, although how early is open to question. On the other hand, the scribe may simply have left out the number since he or she only copied the first letter of Peter and therefore might not have felt the need to number it, or the scribe may perhaps have know about the existence of 2 Peter, but not recognized it as canonical.

It has also been suggested that the final hymnic text of the codex is of Pachomian origin.[54] If correct, this would indicate a date no earlier than

[53] See D.G. Horrell, "The Themes of 1 Peter: Insights From the Earliest Manuscripts (the Crosby-Schøyen Codex ms 193 and the Bodmer Miscellaneous Codex Containing P^{72})," *NTS* 55 (2009) 504.

[54] Pietersma and Comstock (n. 2).

the third decade of the fourth century, but the Pachomian identification of this text can only be regarded as tentative.[55] Perhaps more importantly, the similarities in contents and format between MS 193 and the Bodmer Miscelleaneous Codex, and the likelihood that these codices were discovered together, and thus have a common late-antique provenance, render a comparison between MS 193 and the Bodmer Miscellaneous Codex relevant. We know that the Miscellaneous Codex, in its final form as a complete codex, has a *terminus post quem* in the early fourth century due to its inclusion of the hagiographical *Apology of Phileas* (*P.Bodmer* XX), a martyr of the early fourth century. If we draw the conclusion that MS 193's many similarities with the Bodmer Miscellaneous Codex, and possible common provenance, would tend to indicate that they were probably not produced far apart in time, MS 193's date of production should fall within the later part of the calibrated calendar date range of the current radiocarbon analysis, i.e., in the fourth rather than the third century. However, it should be noted that it is only those parts of the Miscellaneous Codex that were originally part of the codicological unit to which the *Apology of Phileas* belongs (*P.Bodmer* XX and IX) whose production can be securely dated to no earlier than the fourth century, which notably excludes at least *P.Bodmer* VIII, the part of the codex that contains 1–2 Peter, which seems to have been a later addition with a previous existence as part of a different codex.[56]

Conclusion

While the new radiocarbon evidence does not provide us with a silver bullet to definitively resolve the dating of MS 193, the results of the present ^{14}C analysis are not compatible with the earliest and latest previous suggestions of the manuscript's date. Since the nature of the calibration curve is such that we cannot exclude dates as early as the first half of the

[55] While the context of authorship for this text and the context of this codex's production remain uncertain, it seems likely due to its inclusion among the Dishna Papers that it was eventually owned by a Pachomian monastery. On the Pachomian nature of the Dishna Papers, see Robinson (n. 5); Lundhaug (n. 6).

[56] See Nongbri (n. 11); Nongbri (n. 12). It is impossible to establish with certainty whether the codex to which *P.Bodmer* VIII previously belonged was originally produced prior to or after the rest of the Miscellaneous Codex. What is certain is that it cannot have been bound together with *P.Bodmer* XX (the *Apology of Phileas*) prior to the fourth century. Doubts have been expressed, however, whether *P.Bodmer* XX and IX were ever bound together with the rest of the Miscellaneous Codex (*P.Bodmer* V, X, XI, VII, XIII, XII, and VIII) at all (Nongbri [n. 12]).

third century, we are nevertheless still left with a very long date range within which it may have been produced. When we add to this the probability that the IntCal13 calibration curve is not reliable for materials from Egypt, it is clear that it remains important to take other methods of dating into consideration when assessing the significance of these radiocarbon results. It is to be hoped that in the future, radiocarbon analyses of securely dated papyri from Egypt may shed additional light on the degree to which the current calibration curve reflects the actual historical ^{14}C levels in this region, so that we may calibrate the present measurements with a greater degree of certainty and accuracy.

In any case, even if the actual date of the manuscript falls within the later part of the calibrated calendar date range, after the application of a radiocarbon offset based on the recent study of Manning et al., Hans-Gebhard Bethge's assessment that MS 193 deserves "eine ganz besondere Aufmerksamkeit" not least due to "seines außerordentlich hohen Alters" still stands.[57] It may be concluded that MS 193 at least constitutes one of the oldest manuscripts of 1 Peter, rivaled only by $\mathfrak{P}^{125}$ (*P.Oxy*. 4934) and $\mathfrak{P}^{72}$ (*P.Bodmer* VIII).[58] It is also among the very earliest Coptic codices in existence. Indeed, if it was in fact produced in a Pachomian monastery, as suggested by Robinson, Goehring, and Pietersma and Comstock, it must be among the earliest preserved books produced in an Egyptian monastery.

[57] H.-G. Bethge, "Der Text des ersten Petrusbriefes im Crosby-Schøyen-Codex (Ms. 193 Schøyen Collection)," *ZNW* 84 (1993) 258.

[58] On the textual differences between the Greek text of 1 Peter in $\mathfrak{P}^{72}$ and the Coptic of MS 193, see W.H. Willis, "The Letter of Peter (1 Peter)," in Goehring (n. 2) 135–215.