

Early Publishing Technology: Scrolls vs. Codices

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Roberts and Skeat assert that Christians embraced codices early, but non-Christians did not:²

- a. $\frac{129}{2067} = 0.5\%$ of non-Christian mss. from centuries i-iii were codices [cf. *BoC*, 37],
- b. $\frac{71}{74} = 96\%$ of NT mss from centuries i-iv were codices [cf. *BoC*, 38],
- c. $= \frac{86}{98}$ 88% of OT mss. from centuries i-iv were codices [cf. *BoC*, 38],
- d. $\frac{83}{118} = 70\%$ of non-biblical Christian mss. from centuries i-iv were codices [cf. *BoC*, 43].

Why did Christians adopt codices early, especially for biblical texts? Why did non-Christians slowly adopt this technology? Why was the percentage of codices for biblical mss especially high? This paper argues that understanding early codex technology answers these questions (and others).

Papyrus Scroll Manufacture

Papyrus sold in standard twenty-sheet rolls, not individual sheets. Pliny's statement, "There are never more than twenty sheets to a roll" (*nunquam plures scapo quam vicenae*),³ refers to new papyrus (as sold by producers). Luke's Gospel (thirty-two feet long and 2½" diameter) requires 3-4 standard rolls.

Bruce Metzger argues from "an accumulation of artistic, archaeological, and literary evidence" that writing desks came late, not becoming popular until the eighth or ninth centuries.⁴ Big scrolls would be hard to inscribe/read in the lap. Writers divided works into scroll-books not exceeding thirty-five feet.⁵

Scribal Practices with Scrolls

Scribes wrote on pre-assembled rolls,⁶ because papyrus was sold in rolls. Rolls were ready for use, right from the factory. Scrolls were simple. Popularity of software scroll-mode shows the user-friendliness of scrolls. Codices are different, complicating manufacture and transcription.

The Manufacture of Codices

The first production step was cutting and folding papyrus sheets. Transcription followed, while binding finished the process. However, binding dramatically affected codex transcription, so we will consider it before transcription. The outline is: 1. Cutting and folding, 2. Binding, 3. Transcription.

Cutting and folding. Blank rolls⁷ required cutting and folding as the first manufacturing step. It was not yet ready for inscription. By contrast scroll-books were immediately ready for inscription as purchased. Codex making was a *value-adding* procedure. Bad codex design or poor cutting and folding could ruin a perfectly good roll. Codices stretched ancient publishing technology.

¹ Appendix 7: "The Synoptics and Scrolls," in J.H. Niemelä, "The Infrequency of Twin Departures: An End to Synoptic Reversibility?" (Ph.D. dissertation: Dallas Theological Seminary, 2000). We will publish a version of it (with appendix on scrolls/codices). Updates on the book (when we secure a publisher) will be on www.TheMessageOfLife.com.

² C.H. Roberts and T.C. Skeat, *The Birth of the Codex* (London: Oxford University Press, 1983), 37-43. Figures from p. 37 are totals for the following centuries: i, i-ii, ii, ii-iii, iii. **2067** = 252 + 203 + 857 + 349 + 406; **129** = 1 + 4 + 14 + 17 + 93.

³ Pliny, *Natural History* 13.77. Longer scrolls exist, so the consensus is that Pliny means units of manufacture, not lengths of inscribed scrolls. See F. Kenyon, *Books and Readers in Ancient Greece and Rome*, 2d ed. (Oxford: Clarendon, 1951), 52, n. 1; N. Lewis, *Papyrus in Classical Antiquity* (Oxford: Clarendon, 1974), 54f; N. Lewis, *Papyrus in Classical Antiquity: A Supplement*, Papyrologica Bruxellensia, ed. J. Bingen, vol. 23 (Brussels, BEL: Fondation Égyptologique Reine Élisabeth, 1989), 26; T.C. Skeat, "The Length of the Standard Papyrus Roll and the Cost-Advantage of the Codex," *ZPE* 45 (1982): 172.

⁴ Bruce M. Metzger, "When Did Scribes Begin to Use Writing Desks?" in *Historical and Literary Studies: Pagan, Jewish, and Christian*, NTTTS, ed. Bruce Metzger, vol. 8 (Grand Rapids: Eerdmans, 1968), 123-34. My dissertation documents further.

⁵ F. Kenyon, "Book Divisions in Greek and Latin Literature," in *William Warner Bishop: A Tribute*, ed. H. Lydenberg and A. Keogh (New Haven: Yale University Press, 1941), 65, argues that book-divisions (e.g., *Antiquities'* 20 books of) kept scrolls manageable. Literary Greek works rarely exceeded thirty-five feet. D. Diringer, *Hand-Produced Book* (New York: Philosophical Library, 1953), 130-33, notes that this yields a diameter of 2½". T.C. Skeat, "Two Notes on Papyrus," in *Scritti in onore di Orsolina Montevecchi*, ed. E. Bresciani, et al. (Bologna: Clueb, 1981), 373-76, could reroll a 35' wallpaper roll in 45 seconds.

⁶ Cf. Diringer, *Hand-Produced*, 134. Writing appears on joins, so gluing scroll-joins preceded inscription.

⁷ B. Metzger, *Manuscripts of the Greek Bible: An Introduction to Greek Palaeography* (New York: Oxford University Press, 1981), 16, n. 29, "The sheets for a papyrus codex were usually obtained by cutting them to a given size from a long roll of papyrus writing material, the roll having been previously manufactured by gluing together sheets of a standard size (*kollemata*)." E.G. Turner, *Typology of the Early Codex* (Philadelphia: University of Pennsylvania Press, 1977), 46, says Scherer shows ". . . that the horizontal fiber continuations from one sheet of the codex to the next at the point where the maker of the codex had cut them out of the roll: and he also traced and found the original joins (*kolleseis*. . .) of single sheets in the roll."

Cutters aimed at uniform page-size, but spaced cuts so that no sheet's central fold coincided with roll-joins,⁸ weakening them. Center-folds convert flat sheets into two-leaf (four-page) folded sheets.⁹ Cutting and folding are two aspects of one process.

For codices, meaning of *sheet* changed from that for scrolls. A roll-sheet is the width between *joins*; a codex-sheet is the width between *cuts*. A leaf is the width between a cut and a fold. The central fold is a *sine qua non* of the true codex. Newspapers illustrate; each sheet folds into four pages. By using both sides, codices required significantly less papyrus.¹⁰ Standard (twenty-sheet) papyrus rolls were costly.¹¹

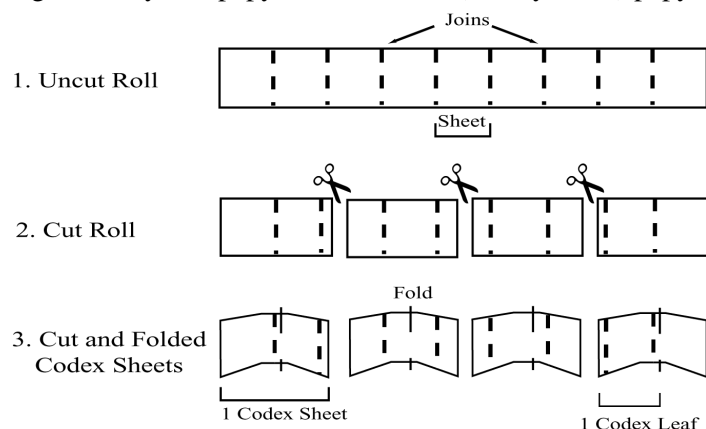


Fig. 1. Cutting a roll and folding codex sheets.

The basic codex binding equation is: 1 sheet = 2 leaves = 4 pages. Newspapers illustrates this codex principle. The central codex-sheet (right side of Figure 2) is the only one containing four pages that remain sequential, even after binding (Sheet 4, containing pages 7-10). See also Figure 3.

One sheet = Two leaves = Four Pages

S-1 = L-1, L-8 = pp. 1-2, 15-16

S-2 = L-2, L-7 = pp. 3-4, 13-14

S-3 = L-3, L-6 = pp. 5-6, 11-12

S-4 = L-4, L-5 = pp. 7-10

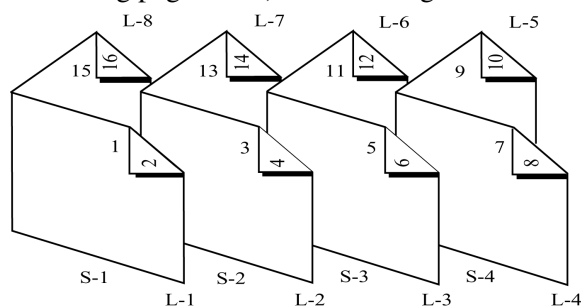


Fig. 2. Four folded-sheets ready to bind into a sixteen-page codex.

Binding distinguishes sheet-order from page-order, yielding correct pagination in a simple reader-sequence. However, sheet-order (prior to binding) is daunting. It is especially difficult, since (as the next page will argue) neither pages nor sheets were numbered at any point in manufacture or inscription. Imagine inscribing four unnumbered sheets to produce sixteen bound pages in proper sequence (Figure 2). After cutting and folding ends, binding needs changed scribal procedures. We will discuss binding next (even though inscription preceded binding), because binding requirements imposed changes in scribal procedures.

⁸ Ibid., 48, notes that joins never coincide with central folds. Folding would weaken joins.

⁹ E.G. Turner, "Towards a Typology of the Early Codex: Third to Sixth Centuries after Christ," in *Éléments pour une codicologie comparée*, vol. 2 of *Codicologica*, ed. A. Gruys and J. Gumbert (Leiden: Brill, 1978), 10, "When folded each sheet will give a sequence of two leaves, four pages. Two sheets laid above each other before folding will give 4 leaves, 8 pages . . ."

¹⁰ Skeat, "Length," 169-75, shows that codices use papyrus 44% more efficiently than scrolls, effecting a 26% overall cost reduction (figuring inscription into total cost).

¹¹ Lewis, *Classical Antiquity*, 133f, notes that standard (twenty sheet) papyrus rolls cost between one and six days' wages for common laborers. Skeat, "Length," 170, calculates the length of manufactured rolls at eleven feet. As a scroll, it could only hold one third of Luke. Economy encouraged codex adoption.

Binding. Although binding created the codex, it was also the weak-link. Early codices were single quire (multiple quires arose two centuries later), drastically limiting the number of pages. Turner notes:

One method, practised for a long time in spite of its disadvantages, was to form a book out of a large number of superimposed sheets [in a single quire]. . . .

A book made up in this way, even if stiffened internally with bands of parchment, is liable to tear or break at the spine. Moreover, it is not easy to see into the middle pages alongside the fold.¹²

The difficulty in photocopying central pages of thick bound-periodicals illustrates this. Near the center margin each page slopes steeply toward the binding, narrowing the margin and distorting characters. Binding gave birth to the codex, but also brought birth pangs for both codex-maker and scribe.

Scribal Practices with Codices

The codex created two new problems for scribes:

1. transcribing material to the wrong sheet (or page) would create transpositions,
2. incorrectly estimating the number of pages would waste papyrus and time.

Scribal practices to avoid transpositions within a quire. Although the arrangement of unbound sheets and pages is logical, it is not intuitive: 16/1 and 2/15; 14/3 and 4/13; 12/5 and 6/11; 10/7 and 8-9. Figure 3 shows rectos and versos of four folded transparencies. See also Figure 2.

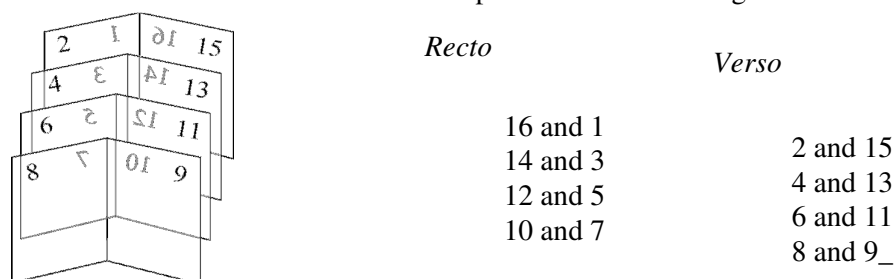


Fig. 3. *Recto and verso of a sixteen-page single-quire transparency.*

Maintaining codex page-sequence requires diligence, because sheet order is not intuitive, unlike scrolls. Theoretically, a scribe could prevent transposition by:

1. binding before inscription,
2. numbering pages (or sheets) during cutting and folding, or
3. carefully stacking the unbound sheets face-down and in order.

One might imagine prebound codices as a simple solution, but three issues say this is not what happened: (1) scribes who ran out of space botched-in extra pages, which can only happen before binding (“Estimating book length” discussed on next page). (2) Prebound codices would have wider central-margins,¹³ but such extra-wide margins did not occur. (3) Binding stitch holes sometimes pierce text, rather than the margin. Thus, the conclusion is that binding followed transcription.¹⁴

¹² E.G. Turner, *Greek Papyri: An Introduction* (Oxford: Clarendon, 1968), 13. R. Kasser and C. Austin. *Ménandre: La Samienne*, Papyrus Bodmer, vol. 25 (Cologne: Bibliotheca Bodmeriana, 1969), 7, argues that this 64 page codex was rebound twice. C. Bonner, ed., *A Papyrus Codex of the Shepherd of Hermas (Similitudes 2-9), with a Fragment of the Mandates*, UMSHS, ed. J. Winter, *et al.*, vol. 22 (Ann Arbor: University of Michigan Press, 1934), 8-10, argues that the outer 6-7 sheets (originally 49-50 sheets) were lost before a scribe numbered remaining pages. The binding failed again. All but 62 pages are lost.

¹³ Turner, *Typology*, 74, asserts, “In P. Bodmer xiv/xv [175] it is not obvious how the second requirement (that of keeping the sheets in the correct order) was met. The manuscript is in excellent preservation, and after the first few leaves the original edges are intact. They show neither pagination nor gathering numbers. Was the book then put together and stitched before the scribe began copying? This is of course a possibility, but one is reluctant to accept it. It is hard to think of any form of book into which it would be harder to write regularly and evenly than a single-quire codex of thirty-six sheets (seventy-two leaves, 144 pages) which had already been stitched together.” Ibid. adds, 74, “I conclude, therefore, that normally the scribe did write these pages when the sheets were still detached (before the volume was stitched), but that not every scribe copying a single-quire codex did so. To keep his pages in order without the help of pagination would have required strict observance of a working routine.”

¹⁴ Turner, *Typology*, 74, “I conclude, therefore, that normally the scribe did write these pages when the sheets were still detached (before the volume was stitched), but that not every scribe copying a single-quire-codex did so.”

Since scribes did not use prebound codices, is it possible that they used prenumbered sheets? No, numbered pages are not normative.¹⁵ When numbering occurs, the handwriting differs from that of the scribe.¹⁶ Numbering often happened after a codex lost pages.¹⁷ Divergent page breaks were the rule, so (for example) saying, “Turn to p. 55,” would not result in everyone looking at the same text.¹⁸

How did scribes maintain page order? They carefully piled transcribed sheets. Turner posits:

. . . [N]ormally the scribe did write these pages when the sheets were still detached (before the volume was stitched), but that not every scribe copying in a single-quire codex did so. To keep his sheets in correct order without help of pagination would have required the strict observance of a working routine: for example, only one sheet might have been removed from the bulk at any one time, and after one leaf, front and back, had been copied, it might have been replaced before the next sheet was taken. It would be possible to verify that the sheets were in the correct order for the binder at the moment that the scribe or the corrector collated the copy against its exemplar.¹⁹

Estimating book length. Assume a scribe estimated a codex needed twenty sheets. Half way through, he recalculates and adds another sheet. He begins inscribing the right side of sheets. Unfortunately, after filling the last page, he still needs more space. He botches in a twenty-second sheet. Turner contends that a scribe

. . . needs to calculate fairly accurately the size of the book he will eventually write so that he can have enough material to contain it; secondly, he must have some means of keeping the written sheets in the correct order.

Once the scribe had passed the central fold of his book it was too late to add another sheet except at the cost of having an empty leaf at the beginning, or of botching-in one or two loose single leaves in the middle or at the end.²⁰

Botching-in was one solution. Others (e.g., $\hat{\imath}$ 75) wrote “progressively smaller”²¹ near the end.

Comparison of Scrolls and Early Codices

Codices reduced papyrus costs by using both sides,²² but required great sophistication by those producing them. In turn, this increased the specialization of labor and additional improvements in codex technology. William Harris argues that years of codex making finally attained the hoped-for efficiency.

This cost advantage probably did play a significant part in bringing about the conversion to the codex, but it is unlikely to be the sole explanation. For a long time the cost advantage had very little effect on ordinary non-Christian book-users. Initially, when copyists and craftsmen lacked experience with codices, those concerned may have found it difficult to realize, in either sense of the word, the full savings that were possible.²³

While the codex was *reader-friendly*, based on relative cost and ease of use, it never became *transcriber-friendly*. Copyists adopted the codex, but did authors create codex-autographs?

Copyist versus Author

Clearly, copyists adopted the codex, despite difficulties. Yet, would authors create codex autographs? If copyists failed to ascertain copy midpoints, how would authors know (in advance) the mid-point of their books? After inscribing the left half of fifteen sheets, how would an author know whether to: (a) add another sheet or to (b) start inscribing the right halves? This difficulty renders the codex a publishing tool, not an authorial one.

¹⁵ Turner, *Typology*, 75, “Running pagination may have been invented as early as the codex form itself. There are certainly examples of it continuously applied as early as the early third century. But it would not seem to have been integral with the invention of the codex; otherwise one would have expected to find it as a part of every codex.”

¹⁶ Turner, *Typology*, 74, “... pagination, when it occurs, is often written in a hand different from that of the original scribe... it was not running pagination utilized by the scribe to keep his sheets in order, but was added subsequently (e.g. by a librarian).”

¹⁷ Bonner, *Shepherd*, 8f, proves the original scribe did not paginate it. Numbering was after it lost twelve (or fourteen) pages.

¹⁸ Cf. H.Y. Gamble, *Books and Readers in the Early Church: A History of Early Christian Texts* (New Haven: Yale University Press, 1995), 56. Illustration: if we all simultaneously read aloud p. 500 of our Bibles, few would read in unison.

¹⁹ Turner, *Typology*, 74.

²⁰ Turner, *Typology*, 73.

²¹ Turner, *Typology*, 73f.

²² Note 11 of this paper discusses the exorbitant cost of papyrus.

²³ W.V. Harris, “Why Did the Codex Supplant the Book-Roll?” in *Renaissance Society and Culture: Essays in Honor of Eugene F. Rice, Jr.*, ed. J. Monfasani and R.G. Musto (New York: Italica, 1991), 73f.

Is it likely that NT authors knew of the codex? No, Martial's apparent reference (ca. A.D. 85) comes out of the blue.²⁴ Even if they knew of the codex, it is not author-friendly. None of its advantages accrue to an author, unless he knew exactly when he reached the midpoint of his work. It is true that Christianity quickly adopted the codex, but as a publishing tool. The idea of codex autographs lacks foundation.

NT Evidence Consistent with Scroll Autographs

The issues are: the original format of Luke-Acts, synoptic order and content, and Mark's ending.

The Original Format of Luke-Acts

Luke-Acts is one complete work in two volumes. H. Cadbury argues, They [Luke-Acts] are not merely two independent writings from the same pen; they are a single continuous work. Acts is neither an appendix nor an afterthought. It is probably an integral part of the author's original plan and purpose. To the modern English reader its opening words are misleading. The first account (τὸν πρώτον λόγον) which they mention is not a "former treatise," but simply "volume one."²⁵

B. Metzger says the need for reasonably sized rolls led Luke to separate Luke and Acts,

The length of such a papyrus roll was limited by considerations of convenience in handling the roll; the normal Greek literary roll seldom exceeded 35 feet in length. The two longest books in the New Testament—the Gospel of Luke and the Book of Acts—would each have filled an ordinary papyrus roll of 31 or 32 feet in length. Doubtless this is one of the reasons that Luke-Acts was issued in two volumes instead of one.²⁶

Synoptic Order and Content

The following does not depend upon scroll autographs, but they would be a plausible explanation for the remarkable pattern of Matthew and Luke alternately agreeing with Mark's order and content (whether Mark was first, second, or third). From Griesbach's day, many have noted that Mark's order is never alone. Most also perceive danger of a Lachmannian fallacy in formal (order-only) arguments.

William Farmer proposed an integrated order-and-content test of the Marcan Hypothesis. He proposes looking for (what I call) *twin departures* of order and/or content by Matthew and Luke. An analogy will clarify: A study of birth order and gender of twins corresponds to twin departures:

<i>Birth order and gender of twins</i>	≈	<i>Matthew and Luke's twin order and/or content departures</i>
1. Both are boys,	≈	1. Both Matthew and Luke transpose,
2. The older is a boy; the younger a girl,	≈	2. Matthew transposes; Luke omits,
3. The older is a girl; the younger a boy,	≈	3. Matthew omits; Luke transposes,
4. Both are girls.	≈	4. Both omit.

Farmer wondered why "Neither" and "Either" are common, but not "Both." Why it is common for either Matthew or Luke to depart, but rare for both to do so. A chart follows his words:

The fact that both Matthew and Luke frequently deviate from Mark, either in order or by omission of Marcan material, raises the question of their failure to deviate from Mark's order or to omit his material more often at the same place than they do.

.....
Why *does* Matthew usually support Mark [in order and content] when Mark is deserted by Luke? And . . . why should Luke, in a similar way support Mark [in order and content] when Mark is deserted by Matthew?²⁷

	<i>Matthew agrees with Mark</i>	<i>Matthew departs from Mark</i>
<i>Luke agrees with Mark</i>	Neither departs (frequent)	Only Matthew departs (frequent)
<i>Luke departs from Mark</i>	Only Luke departs (frequent)	Twin departures (rare)

C. Tuckett wrongly charges that Farmer "is guilty of the Lachmann fallacy in a slightly different form."²⁸ The rarity of twin departures is a problem for the Marcan Hypothesis, but naturally results under the Two Gospel Hypothesis. Non-reversibility will disprove Tuckett's neo-Lachmannianism charge.

²⁴ Cf. Roberts and Skeat, *Birth*, 24-29. The NT mentions scrolls (e.g., Rev 5:1), but not codices.

²⁵ H.J. Cadbury, *The Making of Luke-Acts* (London: SPCK, 1958), 8f.

²⁶ B. Metzger, *The Text of the New Testament: Its Transmission, Corruption, and Restoration*, 3d ed. (London: Oxford University Press, 1992), 5f.

²⁷ W.R. Farmer, *The Synoptic Problem: A Critical Analysis* (New York: Macmillan, 1964), 213. His italics; my underlines.

²⁸ C.M. Tuckett, *The Revival of the Griesbach Hypothesis: An Analysis and Appraisal*, SNTSMS, ed. R. McL. Wilson, vol. 44 (Cambridge: University Press, 1983), 28.

Farmer's order and content argument perceives Matthew and Luke each to have three pertinent options: retain Mark's order and content, omit Mark's content, or transpose Mark's order. This yields the following 3 × 3 grid (which evidence four potential types of twin departures):

	Mat Retains Mark's O & C	Mat Omits Mark's Content	Mat Transposes Mark
Luk Retains Mark's O & C	Mat-R/Luk-R	Mat-O/Luk-R	Mat-T/Luk-R
Luk Omits Mark's Content	Mat-R/Luk-O	Mat-O/Luk-O	Mat-T/Luk-O
Luk Transposes Mark	Mat-R/Luk-T	Mat-O/Luk-T	Mat-T/Luk-T

Farmer observed that the overall category of twin departures (shaded cells in lower right) was under-represented. Twin departures where one (or both) transpose Mark are almost non-existent. The following chart shows Aland's pericopes between Mark 4:26 and 6:52 in which Mark is a lead Gospel. In other words, Marcan pericopes between §126 and §147 appear in Mark's order. Shaded cells represent departures from Mark's order (transpositions) or content (omissions). This section has only one twin departure, Mark 4:26-29.

	§126	§128	§130	§136	§137	§138	§139	§142	§143	§144	§145	§146	§147
Mat	—	13 ³¹⁻³²	13 ³⁴⁻³⁵	8 ²³⁻²⁷	8 ²⁸⁻³⁴	9 ¹⁸⁻²⁶	13 ⁵³⁻⁵⁸	9 ^{35ff}	14 ¹⁻²	14 ³⁻¹²	—	14 ¹³⁻²¹	14 ²²⁻³³
Mar	4 ²⁶⁻²⁹	4 ³⁰⁻³²	4 ³³⁻³⁴	4 ³⁵⁻⁴¹	5 ¹⁻²⁰	5 ²¹⁻⁴³	6 ^{1-6a}	6 ^{6b-13}	6 ¹⁴⁻¹⁶	6 ¹⁷⁻²⁹	6 ³⁰⁻³¹	6 ³²⁻⁴⁴	6 ⁴⁵⁻⁵²
Luk	—	13 ¹⁸⁻¹⁹	—	8 ²²⁻²⁵	8 ²⁶⁻³⁹	8 ⁴⁰⁻⁵⁶	4 ¹⁶⁻³⁰	9 ¹⁻⁶	9 ⁷⁻⁹	3 ¹⁹⁻²⁰	9 ^{10a}	9 ^{10b-17}	—
	Twin	Luk	Luk	Mat	Mat	Mat	Luk	Mat	None	Luk	Mat	None	Luk
2 None	= 0	+ 0	+ 0	+ 0	+ 0	+ 0	+ 0	+ 0	+ 1	+ 0	+ 0	+ 1	+ 0
5 Mat	= 0	+ 0	+ 0	+ 1	+ 1	+ 1	+ 0	+ 1	+ 0	+ 0	+ 1	+ 0	+ 0
5 Luk	= 0	+ 1	+ 1	+ 0	+ 0	+ 0	+ 1	+ 0	+ 0	+ 1	+ 0	+ 0	+ 1
1 Twin	= 1	+ 0	+ 0	+ 0	+ 0	+ 0	+ 0	+ 0	+ 0	+ 0	+ 0	+ 0	+ 0

Let us chart this section of Mark. It is not a representative section, because the number of non-departures is extremely low. Even so, it illustrates the feature that caught Farmer's attention.

	<i>Matthew agrees with Mark</i>	<i>Matthew departs from Mark</i>
<i>Luke agrees with Mark</i>	2	5
<i>Luke departs from Mark</i>	5	1

Why is the rarity of twin departures non-reversible? There are two reasons:

- (1) When considering the book of Mark as a whole (from a Marcan Hypothesis standpoint), statistics predict a higher number of twin departures than actually occur. When done for the book of Mark as a whole, initial P values are right on the edge of being statistically significant.
- (2) When considering the book of Mark as a whole from a Two-Gospel Hypothesis standpoint, one would expect those types of twin departures that involve transposition to be quite rare. This is because Mark's procedure (under the 2GH) is normally to follow the order of Matthew or the order of Luke. As long as he follows one or the other consistently, no twin departures involving transposition will occur. With regard to Marcan singular attestation (so-called twin omissions by Matthew and Luke), those would happen whenever Mark added content not in Matthew or Luke.

Thus, this is not an example of neo-Lachmannianism. The Marcan Hypothesis (*ceteris parabus*) would be expected to create more twin departures than exist. The point is not that it would be impossible for the MH to explain this. The point is that the under-representation of this category is an issue that the MH needs to address. Unless it explains this satisfactorily, the phenomenon is problematic. By contrast, the 2GH has a ready explanation: Mark's normal procedure was to follow a predecessor sequentially.

Mark's Ending

Some attempt to implicate the codex for the loss of Mark's ending (whether the ending would be Mark 16:9-20 or an alternate ending). The problem is that one expects the loss of whole sheets (containing four pages), not single leaves. In other words, any such postulation should be based on a consideration of codices that have lost central or outer sheets. This is simply urging caution here.

Conclusion

Codex-autographs seem unlikely. It was a cost-cutting publishers' tool, not an authorial one. Difficulty in ascertaining the mid-point of a work is a key difficulty for positing codex autographs. Scrolls may account for the division of Luke-Acts and for the rarity of twin departures from Mark.