A Genealogical History of the Greek Text of the New Testament

Volume 1

A Genealogical History of the Greek Text of the Gospel of Matthew

By

James D. Price

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Preface

My interest in textual criticism was first aroused when I studied the subject in seminary in the 1950s, and my interest in tree-diagraming (also called *stemmatics*) was first awakened when, in the 1960s, I learned to apply it to grammatical analysis and to computer aids for translation. I learned that the method works best when applied always to the most deeply imbedded unanalyzed element—that is, the element at the lowest hierarchic level. When I began using tree-diagraming techniques to teach Hebrew grammar and syntax in the 1970s, it occurred to me that the same analytic principles would logically apply to textual criticism, and that just as these principles could be implemented by computer programs for grammatical and syntactical analysis of language, so also they could be implemented for the genealogical analysis of textual criticism. So began a lifetime of research and experimentation to create a computer program for reconstructing the genealogical history of an ancient text based on genealogical principles and tree-diagraming.

Earlier textual scholars had determined that the key to the genealogical history of a text lies in those places in the text where its manuscript copies differ, and that the percentage of agreement between two manuscript copies at those places of variation is a measure of their genealogical affinity. I call that percentage of agreement *quantitative affinity*. Gradually over time I realized that the variant readings in a manuscript are a record of its genealogical history; its variant readings are the accumulation of the inherited genetic mutations of all its ancestor exemplars, and its variants constitute a kind of genetic DNA code. One must learn to read the history of a manuscript from its genetic code. Quantitative affinity was one of the leading principles guiding my earlier research and computer implementation.

Eventually I also realized that a manuscript inherits the unique mutant variants of its parent exemplar and only its sibling sister manuscripts share those same variant readings. That collection of variants peculiar to sibling sister manuscripts serves as their genetic marker—a kind of sibling gene. Every manuscript has a marker by which its sister manuscripts may be

identified. For lack of a better term I call that marker a *sibling gene*. Now I am not naïve enough to suppose that in a collection of extant manuscripts every *sibling gene* marks real sister manuscripts, although it often does; but what it actually marks are nearest relative manuscripts having a recoverable nearest common ancestor exemplar. The presence of the sibling gene assures true genetic relationship and a consistent line of genealogical descent.

This work brings together both quantitative affinity and the sibling gene, working in harmony with tree diagraming methodology, to reconstruct parent exemplars one at a time, always for the most remote unreconstructed branch—that is, the most deeply imbedded branch, being at the lowest hierarchy or the most recent generation—to reconstruct the genealogical history of the text of an ancient document one branch at a time. The principles and analytical methods of this theory have been implemented and tested on computer software which I call Lachmann-10. That is what this work is all about.

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CHAPTER 1
INTRODUCTION

The study of ancient literature is interesting and significant in that most of the knowledge of human history is recorded therein. An important aspect of such study is the history of the ancient documents themselves, because before the invention of the printing press, all books were written and copied by hand and were victims of copyist error. Beginning with the initial document[1] that emanated from the pen of an author, subsequent copies were made by copyists. Some copyists were amateurs while others were professional scribes. Some copies were transcribed with more haste than care, while others were produced with meticulous attention to detail and artistic beauty. Ancient books were expensive because of the many man-hours of skilled labor invested in their production. They were the prized possession of those who could afford them.

The books of the Bible had the same kind of origin. Each book of the Bible originated from the pen of a prophet or apostle[2] or at least from the pen of his secretary to whom he dictated the words to be written.[3] At first, copies of these sacred books were circulated individually among the churches and private persons, but eventually they became assembled into a collection containing the content of modern Bibles. These ancient Bibles, which scholars call manuscripts,[4] were treasured as the divinely inspired Word of God and the source of all ecclesiastical truth and authority. Martyrs gave their lives to protect and preserve them. But most ancient believers were unaware that the words in their Bibles occasionally differed from

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[1] Often called the original autograph or the autographic text.

[2] Mark was the literary companion of the Apostle Peter and Luke was the literary companion of the Apostle Paul.

[3] Jeremiah and Paul are known to have used secretaries.

[4] A manuscript is a handwritten copy of a text; in this case a copy of one or more books of the Bible.

one another due to minor scribal variations that arose in the copying process.[5] Only scholars paid attention to such details.

The Work of Textual Scholars

Particularly in the last one hundred and fifty years, textual scholars have uncovered a number of interesting facts concerning the Greek manuscripts of the New Testament. Take, for example, the Greek manuscripts of the Third Epistle of John. It is now known that some ancient copies have the word "for" in verse 3 while others do not;[6] some have the word "the" in verse 4 where others do not; some have the words "truth and" in verse 6 where others do not; some have the word "his" in verse 7 where others do not; some have the word "truth" in verses 8 and 12 where others have "church"; some have the word "against" in verse 10 where others do not; some have the words "out of" in verse 10 where others do not; some have the word "friends" twice in verse 15 where others have "brothers"; and some have the word "amen" at the end of verse 15 where others do not. Differences in wording like this are called textual variants, or variant readings. The presence of textual variants is of interest not only to textual scholars but also to expositors, translators, and theologians. They need to know the original words written by the apostles before beginning careful theological study. This book discusses how textual scholars determine what the author's original words were; particularly it describes a genealogical method developed by the author and implemented on computer software that reconstructs the textual history of any New Testament book in an effort to recover the words actually written by the inspired authors. This book covers the textual history of the Gospel of Matthew and to a lesser degree that of the text of the Greek translation of the Old Testament Book of Ecclesiastes.

Textual scholars have recorded thirty places of variation in the text of the Third Epistle of John[7] where the differences may affect meaning and are of interest to expositors and

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[5] The same is true today. Most believers are unaware that the various modern editions of the King James Bible differ in hundreds of minor textual details.

[6] The original language was Greek; I have used the English translation here for initial simplicity. In subsequent discussions I use the Greek text.

[7] For purposes of illustration and simplicity I temporarily discuss the text of the Third Epistle of John, one of the shortest books of the New Testament. The full treatment of the textual history of Third John will appear in a subsequent book.

translators. Table 1.1 lists the places of variation,[8] the associated reference, and the different variant readings occurring there.

Table 1.1
List of Textual Variants in the Third Epistle of John

Place of Variation	Reference	Variant 1	Variant 2	Variant 3	Variant 4
1	1:3	γαρ	omit		
2	1:3	μαρτυρουντων	μαρτυρουν		
3	1:4	μειζοτεραν τουτων	μειζονα τουτων	μειζοτερον ταυτης	μειζοτεραν ταυτης
4	1:4	οὐκ εχω χαραν	Χαραν οὐκ εχω	ουκ εχω χαριν	
5	1:4	τη	omit		
6	1:5	ἐαν ἐργαση	αν ἐργαζη		
7	1:5	τουτο	εις τους	τους	
8	1:6	οι	ὅ		
9	1:6	omit	αληθεια και		
10	1:6	ποιησεις προπεμψας	ποιησας προπεμψεις		
11	1:7	omit	αυτου		
12	1:7	ἐθνικων	εθνων		
13	1:8	υπολαμβανειν	απολαμβανειν		
14	1:8	τη ἀληθεια	της ἀληθειας	τη εκκλησια	
15	1:9	Εγραψα τι	Εγραψα	εγραψα αν	εγραψας τι
16	1:10	omit	εις		
17	1:10	βουλομενους	επιδεχομενους		
18	1:10	ἐκ	omit		
19	1:11	omit	δε		
20	1:12	ἀληθειας	εκκλησιας	εκκλησιας και της αληθειας	
21	1:12	οιδας	οιδατε	οιδαμεν	
22	1:13	γραψαι σοι	γραφειν		
23	1:13	οὐ θελω	ουκ εβουληθην		
24	1:13	σοι γραφειν	γραφειν σοι	σοι γραψαι	
25	1:14	σε ἰδειν	Ἰδειν σε		
26	1:14	λαλησομεν	λαλησωμεν	λαλησαι	
27	1:15	φιλοι	αδελφοι		
28	1:15	ἀσπαζου	ασπασαι		
29	1:15	φιλους	φιλους σου	αδελφους	
30	1:15	omit	αμην		

[8] The textual information in Table 1.1 is derived from the textual footnotes in *Nestle-Aland Novum Textamentum Graece*, 27th edition (Stuttgart: Deutsche Bibelgesellschaft, 1993); hereafter abbreviated NA-27. Abbreviations used in NA-27 have been expanded in order to facilitate easier understanding.

I do not discuss the technical details of these variations at this time, because they are of secondary importance to the task now at hand—that of discussing how scholars try to determine which words were written by the original author. In the material that follows and throughout this book, I have assumed that readers possess at least a knowledge of the Greek alphabet, because this book contains so much Greek that transliteration of the Greek texts into English characters would be impractical.

The same textual scholars also have recorded a list of the providentially preserved ancient Bibles (manuscripts) that contain the textual variations recorded in Table 1.1. For purposes of illustration, Table 1.2 lists the manuscripts that contain the variant readings at the first seven places of variation in the Third Epistle of John.[9]

The first vertical column contains a decimal number. The number to the left of the decimal point indicates the sequential order of each place of variation in the text of the Third Epistle of John; it corresponds to the number in the first column of Table 1.1. The number to the right of the decimal point indicates the number of the variant at that place of variation, and corresponds with the number in the variant columns of Figure 1.1. For example, 7.3 refers to the seventh place of variation and the third variant reading at that place—τους. The second vertical column lists the reference (chapter and verse) where the variation occurs; a chapter number is provided for the Third Epistle of John in order to maintain consistency with the data format needed for other NT books. The third vertical column lists the variant reading, and the fourth column lists the names of the manuscripts that contain the associated variant.[10]

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[9] Table 1.2 presents the variant readings in the order required by the computer software. Because the computer must have the reading preferred by the NA-27 editors always in first position, but the textual apparatus of NA-27 always places the preferred reading last, that is, sometimes second, sometimes third, sometimes fifth depending on how many variant readings occur at a particular place of variation. Consequently, the order of the readings has been automatically rearranged to accommodate the computer, that is, the NA-27 reading is moved to first position and the others are moved down one position. For example, in the NA-27 apparatus, the reading τουτο (7.1 in Table 1.2) occurs third and last in NA-27 order marked by "*txt*" as the preferred reading, the reading εις τους (7.2 in Table 1.2) occurs first in NA-27 order, and τους (4.3 in Table 1.2) occurs second in NA-27 order. This may be confusing at first, but it makes the computer very happy to have a consistent order for the variants.

[10] The manuscript information in the fourth column has been unpacked and expanded from the condensed form found in the NA-27 apparatus. Also some of the manuscript symbols have been changed to accommodate the software requirements. Attention is directed to Chapter 4 for a full explanation of these changes.

These data are the kinds of information textual scholars work with in order to decide which of the variant readings at a particular place of variation is what the Apostle John actually wrote in his original letter to Gaius. The work textual scholars do is called *textual criticism*.

The Methods of Textual Scholars

Textual scholars employ one of several methods for determining the readings of the original autograph.[11] The method used for recovering the original text of the ancient Greek and Latin classics is the family-tree method, also known as *stematics*. This method is intuitively fundamental and is still used for the classics. It was initially used for the texts of the Greek New Testament, but was soon found to be impractical for the complex state of the New Testament manuscripts; so alternate methods were developed. Some textual scholars use the democratic method—the majority vote wins. Others use the republican method—consensus among best representatives wins. Still others use the method of tradition—the text of the Reformation wins. Some use the authoritarian method—the variant readings underlying the Authorized Version wins. Of course, this is an over simplification of the various textual theories discussed in more detail in Chapter Two, but it is sufficient for now.

All these current approaches focus on individual variant readings at some place of variation[12] without due regard for the effect of what has taken place at all the other places of variation in the manuscripts. Each variant is considered independently. My thesis is that manuscripts have genealogical history, not readings. It goes without saying that the scribes copied *manuscripts*, not merely individual readings. They had the text of a standard exemplar[13] before them copying it page for page, line for line, word for word, and letter for letter. While an individual variant reading does have some kind of genealogical history, whatever history it has is inseparably linked with the genealogical history of the manuscripts in which it occurs.

Table 1.2
List of Variants with Supporting Manuscripts

Place of variation	Reference	Variant	Manuscripts that contain the associated variant reading

[11] The word *autograph* is used by scholars to refer to the original text written by the hand of its author or his secretary.

[12] A place in a text where copies of the text read differently.

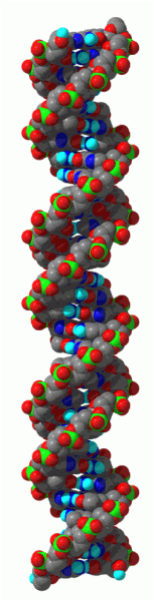
[13] An exemplar was a Greek Bible (manuscript) that scribes regarded as a reliable copy they could use as a standard for copying.

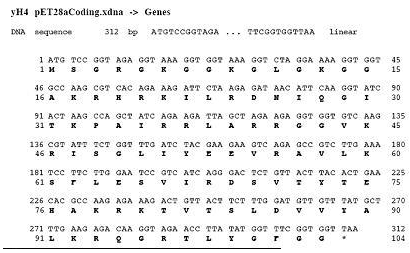
1.1	1:3	γαρ	A* A^c B* C* C^2 K* L020* P025* 044* 048 049* 322 323* 614* 630 945 1241* 1243 1505* 1611* 1739* 1846 1852 1881* 2143 2298 pm^a pm^b TR HF RP it-d sy^h sy^ph sa^a sa^b bo^a bo^b 1 131* 131^c 209 1582 13 69 346 543 788 826 828 983
1.2	1:3	omit	01* 01^2 33* 81* 623* 2464* 2495 l^249 l^846 vg^a vg^b vg^cl vg^s vg^st vg^ww
2.1	1:3	μαρτυρουντων	01* 01^2 A* A^c C* C^2 K* L020* P025* 044* 048 049* 33* 81* 322 323* 614* 623* 630 945 1241* 1243 1505* 1611* 1739* 1846 1852 1881* 2143 2298 2464* 2495 pm^a pm^b TR HF RP vg^a vg^b vg^cl vg^s vg^st vg^ww it-d sy^h sy^ph sa^a sa^b bo^a bo^b l^249 l^846 1 131* 131^c 209 1582 13 69 346 543 788 826 828 983
2.2	1:3	μαρτυρουν	B*
3.1	1:4	μειζοτεραν τουτων	01* 01^2 A* A^c B* C* C^2 K* L020* P025* 044* 048 049* 33* 81* 623* 945 1241* 1611* 1852 2143 2298 2464* 2495 pm^a pm^b TR HF RP vg^a vg^b vg^cl vg^s vg^st vg^ww it-d sy^h sy^ph sa^a sa^b bo^a bo^b l^249 l^846 1 131* 131^c 209 1582 13 346 543 788 826 828 983
3.2	1:4	—ζονα τ.	614* 630 1505*
3.3	1:4	—ζοτερον ταυτης	322 323* 1739* 1881*
3.4	1:4	—ζοτεραν ταυτης	69 1243 1846
4.1	1:4	οὐκ εχω χαραν	01* 01^2 A* A^c K* L020* P025* 044* 048 049* 33* 81* 623* 630 945 1241* 1505* 1611* 1846 1852 2143 2464* 2495 pm^a pm^b TR HF RP it-d sy^h sy^ph sa^a sa^b l^249 l^846 1 131* 131^c 209 1582 13 346 543 788 826 828 983
4.2	1:4	χαραν οὐκ εχω	C* C^2 69 322 323* 614* 1739* 1881*
4.3	1:4	ουκ εχω χαριν	B* 1243 2298 vg^a vg^b vg^cl vg^s vg^st vg^ww bo^a bo^b
5.1	1:4	τη	A* A^c B* C* 33* 81*
5.2	1:4	ομιτ	01* 01^2 C^2 P025* 044* 1739* pm^a pm^b TR HF RP K* L020* 049* 322 323* 614* 623* 630 945 1241* 1243 1505* 1611* 1846 1852 1881* 2143 2298 2464* 2495 l^249 l^846 1 131* 131^c 209 1582 13 69 346 543 788 826 828 983 bo^a bo^b
6.1	1:5	ἐαν ἐργαση	01* 01^2 B* C* C^2 K* L020* P025* 048 049* 33* 81* 322 323* 614* 623* 1241* 1243 1611* 1739* 1846 1852 1881* 2143 2298 2464* 2495 pm^a pm^b TR HF RP vg^a vg^b vg^cl vg^s vg^st vg^ww it-d sy^h sy^ph sa^a sa^b bo^a bo^b l^249 l^846 1 131* 131^c 209 1582 13 69 346 543 788 826 828 983
6.2	1:5	αν —ζη	A* A^c 044* 630 945 1505*
7.1	1:5	τουτο	01* 01^2 A* A^c B* C* C^2 044* 048 33* 323* 1241* 1739* l^249 l^846 vg^a vg^b vg^cl vg^s vg^st vg^ww sy^h
7.2	1:5	εις τους	P025* pm^a pm^b TR HF RP K* L020* 049* 322 614* 623* 630 945 1243 1505* 1611* 1846 1852 1881* 2143 2298 2464* 2495 1 131* 131^c 209 1582 13 69 346 543 788 826 828 983
7.3	1:5	τους	81*

Only manuscripts have genealogical history; individual variant readings have secondary history. So the textual history of an ancient book is found in the genealogical history of its surviving manuscripts.

It is well known that the science of human genetics now has the capability of identifying parentage by comparing DNA genetic codes (Figure 1.1).[14] The genetic code of a child has strong affinity to the genetic code of its father; the code of the father has strong genetic affinity to that of the grandfather; the code of the grandfather has strong genetic affinity to that of the great grandfather, and so on back to Adam. In fact, the genome of a child contains the sum total of all the genetic mutations inherited from all its ancestors.

Figure 1.1
Small Segment of DNA With
Associated DNA Code





Model of Small Segment of DNA

Now the question is this: can the variant readings of manuscripts be used as a kind of genetic code to identify their genealogical relationships? The answer comes in two parts: (1) Yes, the variant readings can be represented by numbers and configured like genetic codes; and (2) yes, the codes can be used to identify genetic relationships and reconstruct genealogical history. In fact, it may be safely said that, just as the genome of a child contains the sum total of all the genetic mutations inherited from all its ancestors, so also the variant readings in a manuscript contain the sum total of all the uncorrected textual mutations inherited from all its

[14] The small chart in Figure 1.1 is for illustration purposes only. It is not important for this study that one be able to clearly read it.

ancestors. Subsequent discussion shows how the textual variants can be configured like genetic codes. Chapter Two shows how these codes can be used satisfactorily to reconstruct the genealogical history of the texts of the Greek New Testament.

Configuring a Genetic Code for Manuscripts

The textual data of Table 1.2 may be electronically reconfigured to form a list of the individual manuscripts together with their sequence of variants. A variant code may be obtained from Table 1.2 column 1 which provides a unique decimal number associated with each variant reading. This variant code may be linked to the manuscripts listed in the horizontal row next to the code itself. For example, for previously mentioned variant reading 4.3, the table lists the following manuscripts that contain that variant: B*, 1243, 2298, vg^a, vg^b, vg^cl, vg^s, vg^st, vg^ww, bo^a, and bo^b. Now by searching vertically through the complete form of Table 1.2, Manuscript B* (Codex Vaticanus) is found to contain the following sequence of variant codes— 1.1, 2.2, 3.1, 4.3, 5.1, 6.1, 7.1, 8.1, 9.1, 10.1, 11.1, 12.1, 13.1, 14.1, 15.4, 16.1, 17.1, 18.1, 19.1, 20.1, 21.1, 22.1, 23.1, 24.1, 25.1, 26.1, 27.1, 28.1, 29.1, 30.1. However, the numbers to the left of the decimal point (which specify sequential place of variation) correspond with the sequential position of each code. Consequently, the sequential position of the code may be used to specify the place of variation instead of the number to the left of the decimal point; only the number to the right of the decimal point (which specifies which variant the manuscript contains at that place) needs to stand at that place. Therefore, the numbers to the left of the decimal point and the decimal point itself may be eliminated, leaving only the following sequence of numbers that bears the same information as the longer one above:

1213111111111141111111111111.

This sequence of numbers identifies the variants of Codex Vaticanus (B*) and may be used as a genetic code for that manuscript of the Third Epistle of John. Table 1.3 is a partial list of the manuscripts that contain the text of Third John together with their date, language, and genetic code.[15]

Table 1.3
List of Manuscripts of the Third Epistle of John With Genetic Code

Name	Date	Lang.	Genetic Code
01*	350	Greek	2111211111111311121111111211211

[15] Zero represents a place where the manuscript is missing part of the text due to deterioration.

01^2	650	Greek	2111211111111131121111111211211
A*	450	Greek	1111121111111311111121122112111
A^c	550	Greek	1111121111111311111111122112111
B*	350	Greek	1213111111111141111111111111111
C*	450	Greek	1112111112111122211131111111111
C^2	550	Greek	1112211112112122211131111111111
K*	850	Greek	1111212211122121111112213221111
L020*	850	Greek	1111212111122121111212213211112
P025*	850	Greek	1111212111122121111112213211111
322	1450	Greek	1132212111122121111112213211111
323*	1150	Greek	1132211111121131211111112111111
614*	1250	Greek	1122212121222231121112132111 12
623*	1037	Greek	2111212111122221111112213211111
630	1300	Greek	1121222221212231121121122211131
945	1050	Greek	1111222111122131111112113211111
1241*	1150	Greek	1111211111122111211112121211111
1243	1050	Greek	1143212111122121221122132211111
1505*	1150	Greek	1121222121112231121121122211131
1611*	950	Greek	1111212111122121111112213211131
1739*	900	Greek	1132211111111111122111112111111
1846	1050	Greek	1141212111222121111112213211111
1852	1250	Greek	1111212111122121111212213211112
1881*	1350	Greek	1132212111112121211112213211111
2143	1150	Greek	1111212111122121111113213211111
2298	1150	Greek	1113212111122121211112213211111
2464*	850	Greek	2111212111122121111112213211111
2495	1450	Greek	2111212111222121111112213211111
pm^a	850	Greek	1111212111122121111112213211111
pm^b	850	Greek	1111212111122121111112213211111
vg^a	400	Latin	2113011111120232111111020031111
vg^b	400	Latin	2113011111120232112120200211 12
vg^cl	1592	Latin	2113011112220232211111020011111
vg^s	1590	Latin	2113011111120232111111020011111
vg^st	1994	Latin	2113011111120232111111020011111
vg^ww	1889	Latin	2113011111120232111111020011111
it-d	450	Latin	1111010111100101111101010031111
sy^h	616	Syriac	1111011121100131111112010011131
sy^ph	507	Syriac	1111010111200131111101010011111

A comparison of the codes for the manuscripts indicates that some have very close genetic relationship. For example, vg^s, vg^st, and vg^ww (printed editions of the Latin Vulgate) have exactly the same codes, indicating they are identical sibling sisters of the same parent exemplar.

vg^s	1590	Latin	2113011111120232111111020011111
vg^st	1994	Latin	2113011111120232111111020011111
vg^ww	1889	Latin	2113011111120232111111020011111

Likewise, pm^a and pm^b (the two subgroups of the Byzantine tradition) are identical in the Third Epistle of John.

pm^a	850	Greek	1111212111122121111122132111 11
pm^b	850	Greek	1111212111122121111122132111 11

Manuscripts 2464* and 2495 differ by only one variant, indicating that they may be sisters or first cousins.

			↓
2464*	850	Greek	2111212111122121111122132111 11
2495	1450	Greek	2111212111222121111122132111 11

Similarly, manuscripts 2143 and 2298 differ by only two variants, suggesting that they may be cousins.

			↓ ↓
2143	1150	Greek	1111212111122121111132132111 11
2298	1150	Greek	1113212111122121211122132111 11

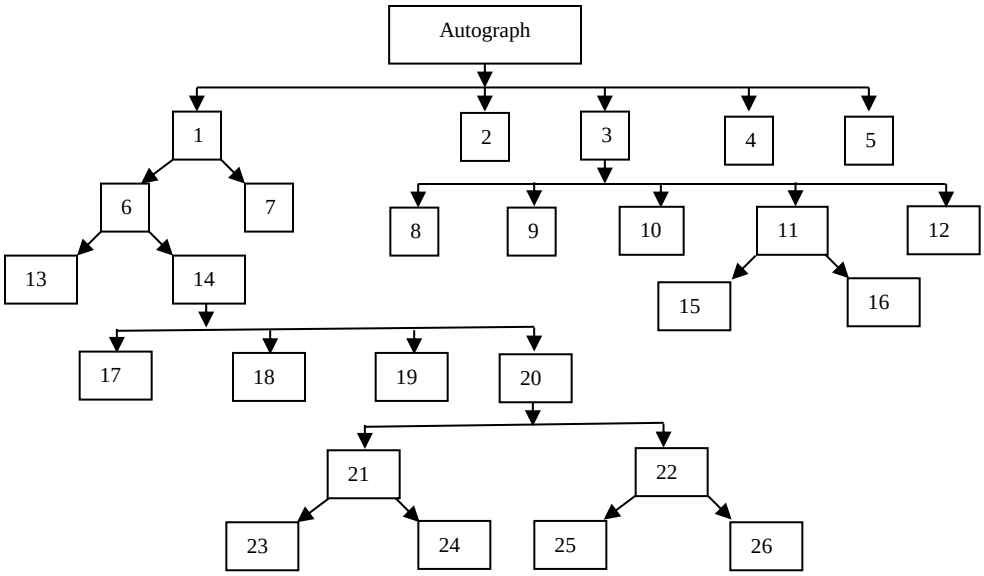
Comparisons of this sort are used by the genealogical software to reconstruct the genealogical textual history of the texts of the books of the Greek New Testament. Figure 1.2 presents the structure of the genealogical history of the text of the Third Epistle of John without any manuscript information.[16]

Chapter Two describes the genealogical theory and methodology in detail. Chapter Three describes how the genealogical theory and methodology were tested for validity. Chapter Four describes how the NA-27 database is unpacked and expanded for use in the genealogical software. Chapter Five evaluates the NA-27 database for the Gospel of Matthew to see how suitable it is for reconstructing its genealogical history.

Chapter Six presents the genealogical history of the manuscripts of Matthew. Chapter Seven presents the genealogical history of the variant readings of Matthew. The history of the manuscripts and that of the variant readings are distinct although intricately interrelated. Chapter Eight presents the genealogical history of the manuscripts and variants of the book of Ecclesiastes.

[16] A commentary on the genealogical history of the text of the Third Epistle of John will appear in a subsequent volume.

Figure 1.2
Genealogical History of
the Third Epistle of John



CHAPTER 2
A GENEALOGICAL THEORY OF TEXTUAL CRITICISM[1]

In the field of textual criticism, the genealogical relationship among manuscripts has long been regarded as an important aspect of external evidence that must be evaluated in order to recover the original form of a text. It is the fundamental basis for the recovery of the original texts of the ancient Greek and Latin classics. According to Bruce M. Metzger, an acknowledged authority on textual criticism, "The application of the critical methods to the editing of classical texts was developed principally by three German scholars: (1) Friedrich Wolf (1759-1824), one of the founders of classical philology, (2) Immanuel Bekker (1785-1871), and (3) Karl Lachmann (1793-1851)."[2] Lachmann showed "how, by comparison of manuscripts, it is possible to draw inferences as to their lost ancestors or archetypes, their condition, and even their pagination."[3]

The current state of textual criticism among the scholars of the Greek and Latin classics is outlined in the work of Paul Maas.[4] He divides the work of textual criticism into two phases: (1) *Recensio*—the phase in which a tree diagram (*stemma*) is developed to represent the genealogical history of the text under study; and (2) *Examinatio*—the phase in which one may determine whether the reconstructed history of the first phase is good or not. Maas defined the methodology of the *recensio* phase by twelve logical principles and that of the *examinatio* phase by ten additional principles.

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[1] This is an expanded revision of a paper read to the Southeastern Regional Division of the Evangelical Theological Society, March 5, 1988, in Chattanooga, Tennessee.

[2] Bruce M. Metzger and Bart D. Ehrman, *The Text of the New Testament: Its Transmission, Corruption, and Restoration*, 4th ed. (New York: Oxford University Press, 2005) 206.

[3] Metzger and Ehrman, 207.

[4] Paul Maas, *Textual Criticism*, translated from the German by Barbara Flower (Oxford: The Clarendon Press, 1958).

The classical approach to textual criticism, also known as *stemmatics*, has been charged with two weaknesses that allegedly render it unreliable: (1) nearly all *stemmata* turn out to be binary—that is, the nodes of the tree have only two branches, forcing the scholar to make a subjective judgment about which of two variants is inherited from an earlier ancestral exemplar and which is a new, genealogically independent error;[5] and (2) contamination (mixture)—when mixture occurs scholars claim the methodology is next to impossible.[6] My approach to textual criticism is based on the classical methodology of *recensio* as modified by insights derived from New Testament textual critics. The objective nature of the external evidence[7] limits the application of the *examinatio* methodology to those relatively few cases where the external evidence is uncertain. As it turns out, the above two alleged problems are relatively insignificant.

The Genealogical Principle

The genealogical principle is based on the historical fact that the text of an ancient original autograph was hand-copied by scribes. These copies were themselves copied in successive generations, resulting in a collection of manuscripts that are all genealogical descendants of the original autograph by means of various intermediate ancestral exemplars.

If every copy had been a flawless reproduction of its exemplar, the text of the original autograph would have been perfectly preserved in every manuscript. Unfortunately, the copying process was seldom flawless due to human frailty. A copyist usually introduced minor variations into the text, either accidentally or deliberately. Although corrections were made, undetected flaws were persistently passed on to succeeding generations of copies. Thus a manuscript may be understood as a hand-written copy of some earlier exemplar of a text, containing all the uncorrected flaws of its exemplar, plus any new ones introduced by its own scribe. Likening textual flaws to genetic mutations, one may say that, like a child, a manuscript contains the sum total of all the uncorrected textual mutations of all its ancestors. That is, the

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[5] Maas, 47.

[6] Maas, 7, 9, 48.

[7] *External evidence* is derived from the existing manuscript witnesses in the database as distinguished from *internal evidence*—that evidence derived from such subjective observations such as style, copyist habits, etc. External evidence is discussed in more detail later in this chapter.

textual variants of a manuscript record its genealogical history. One must simply learn how to read that history.

Theoretically, if the genealogical history of a text could be flawlessly reconstructed, and the introduction of every flaw indisputably identified, then the text of the original autograph could be perfectly recovered. Few are naive enough to expect that this can be done with the present manuscript data in such a state of complexity. However, approximate genealogical relationships can be inferred from the manuscripts. These approximations, together with other external and internal data, are used by textual scholars to determine the most likely readings of an original autograph. Genealogical relationships are normally regarded to be more significant than mere numbers of witnesses.

The genealogical principle is part of classical textual criticism. Kurt and Barbara Aland stated:

> Editorial methodology for a classical Greek (or Latin) text proceeds essentially by constructing a stemma to demonstrate the mutual relationships of its extant manuscripts, and then reconstructing the original text on the basis of insights gained from a complete view of the history of the text (distinguishing daughter manuscripts from their parent exemplars, and eliminating them from further consideration).[8]

The problem has been that attempts to construct such genealogical *stemmata* for the books of the Greek New Testament have met with frustration and failure. The number of manuscripts is great and the variation among them is complex. So some textual critics have abandoned the genealogical principle altogether, as it applies to manuscripts, or have been satisfied with the approximate evidence of text types.

Textual scholars attempt to reconstruct an approximate family tree of the manuscripts of a given text. In defining the principle for approximating a family tree of manuscripts, Metzger stated that "The basic principle that underlies the process of constructing a *stemma*, or family tree, of manuscripts is that, apart from accident, identity of reading implies identity of origin."[9] This means that manuscripts that have common sets of variant readings are more

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[8] Kurt Aland and Barbara Aland, *The Text of the New Testament*, trans. by Erroll F. Rhodes (Grand Rapids: Eerdmans, 1987), 34.

closely related genealogically than those that do not, and the greater the agreement in variant readings, the closer the genealogical relationship. Once a family tree is constructed, the readings that emerge as genealogical patriarchs are more likely to be regarded as original, all other considerations being equal.

The Problem of Mixture

In addition to correction and accidental or deliberate alteration, mixture and multiple parentage make the construction of a family tree difficult. Metzger observed:

> Often, however, difficulties hinder the construction of a stemma of manuscripts. . . . [A] disturbing element enters when mixture has occurred, that is, when a copyist has had two or more manuscripts before him and has followed sometimes one, sometimes the other or, as sometimes happened, when a scribe copied a manuscript from one exemplar and corrected it against another. To the extent that manuscripts have a "mixed" ancestry, the genealogical relations among them become progressively more complex and obscure to the investigator.[10]

Ernest C. Colwell regarded the problem of mixture to be quite serious, perhaps making genealogical relationships beyond use in practical application. He explained:

> When there *is* mixture, and Westcott and Hort state that it is common, in fact almost universal in some degree, then the genealogical method *as applied to manuscripts* is useless.
>
> *Without* mixture a family tree is an ordinary tree-trunk with branches–standing on the branches with the single trunk–the original text–at the top. The higher up–or the further back–you go from the mass of late manuscripts, the fewer ancestors you have!
>
> *With* mixture you reverse this in any series of generations. The number of possible combinations defies computation, let alone the drawing of diagrams.[11]

Colwell's comment "as applied to manuscripts" seems to limit his skepticism to an attempt to apply the method at the manuscript level, and his subsequent work does not suggest that he abandoned genealogy altogether. Nevertheless, Wilbur N. Pickering took Colwell's remarks to the extreme, describing an exaggerated interpretation of the circumstances:

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[9] Metzger and Ehrman, 207 (italics are theirs). By the term "reading" Metzger meant "variant." In textual criticism, that part of the text common to all manuscripts of the text is assumed original, and is not part of the textual critical methodology. At every place of variation in the text, one of the variants will be the autographic reading, and the other variants will be errors. The term "reading" is used with this meaning throughout this work.

[10] Metzger and Ehrman, 208.

[11] Ernest C. Colwell, "Genealogical Method: Its Achievements and its Limitations," *Journal of Biblical Literature* 66 (1947) 114; emphasis is his.

> The sort of genealogical diagram that one always sees is like a family tree that shows only male parents. Because of mixture the diagrams should be like a family tree that shows *both* parents, at every level–the further back you go the more hopelessly complicated it gets.[12]

Simple reflection upon the situation exposes the unreasonableness of this extreme. Even in the worst case where every manuscript is of mixed origin, the family tree still converges to a single trunk, the autograph. It does not diverge upward except it is from a single manuscript, and that divergence remains within the bounds of the tree, and ultimately converges to the trunk. Furthermore, except in the rare case of a major recension,[13] a given manuscript would usually have only two parents at the most that need to be identified in the construction of the tree. Because of this, its grandparents could more accurately be identified by the witness of its parents, and so upward through the tree. In addition, it is unlikely that every manuscript will be of mixed parentage, and it is possible that mixture may be less than imagined. The less mixture, the less complexity. Though the problem is complex, it is not hopelessly so.

Yet, Pickering uses the statements of scholars–those who discuss the difficulty and complexity of the genealogical problem–to conclude that the method is impossible to apply:

> Other scholars have agreed that the genealogical method has never been applied to the New Testament, and they state further that it *cannot* be applied. Thus Zuntz says it is "inapplicable," Vaganay that it is "useless," and Aland that it "cannot be applied to the NT." Colwell also declares emphatically that it "*cannot be* so applied."[14]

But Pickering surely misunderstood at least some of the scholars and overstated the case, because Kurt and Barbara Aland still regard the genealogical principle to be important. They recently listed twelve rules for textual criticism, the eighth of which reads:

> The reconstruction of a stemma of readings for each variant (the genealogical principle) is an extremely important device, because the reading which can most easily explain the derivation of the other forms is itself most likely the original.[15]

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[12] Wilbur N. Pickering, *The Identity of the New Testament Text*, 2nd edition (Nashville: Thomas Nelson Publishers, 1980), p. 218, n. 17; emphasis his.

[13] A recension is a deliberate alteration of a text tradition for the purpose of correction or improvement. For a more detailed definition of a recension see the glossary of terms.

[14] Pickering, 46; emphasis his.

Aland was referring to the genealogical relationships among "readings" rather than "manuscripts," but one must not infer from this that textual scholars have entirely abandoned the use of genealogical relationships among manuscripts. Genealogical principles are used to categorize manuscripts into text types and into profile groups and sub-groups. The genealogical relationships between such text types and groups often affect the decisions of textual scholars, even those who prefer the *local genealogical method*.[16] Thus Aland reasoned that "certain combinations of witnesses may deserve a greater degree of confidence than others."[17] Obviously his "combinations of witnesses" involve genealogical relationships among the manuscripts. Metzger stated it more specifically:

> After having ascertained the text types represented by the evidence supporting each of the variant readings under examination, the student should draw a tentative conclusion as to the preferred reading on the basis of considerations bearing on the age of the manuscripts, the geographical spread of the witnesses that join in support of a given reading, and the textual type to which it belongs. Due appreciation of the implications of the genealogical relationship among manuscripts prevents one from favoring a reading merely because a large number of witnesses may support it.[18]

Thus the global genealogical relationships among the manuscripts are known and used by textual scholars. They use both the genealogy of manuscripts and the genealogy of readings, even when they prefer to stress the importance of the latter. Actually one would expect the two genealogies to be in harmony. The alleged insurmountable problems are experienced with the intermediate genealogical relationships among manuscripts.

Therefore, it must be concluded that although most scholars recognize the difficulty of applying the genealogy principle to manuscripts, yet they still acknowledge its importance. Eric Poole correctly concluded the following concerning this problem:

> We must distinguish between the existence of a stemmatic relationship, and the practical difficulty of discovering it. Any set of things which have been produced by copying must necessarily have a stemmatic relationship. It may be an exceedingly complicated one;

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[15] Aland and Aland, *Text*, 276; Aland spoke of a stemma of readings, not of manuscripts. However, no one denies that the manuscripts have a genealogical history; they simply conclude that a genealogical stemma of manuscripts is too difficult to construct.

[16] Aland and Aland, *Text*, 276, referring to their rule 8.

[17] Aland and Aland, *Text*, 276.

[18] Metzger and Ehrman, 313.

> scribes may even have copied part of their text from one source, and part from another, so that the stemmatic relationship would be different from [sic–for] the two parts. But even this would not mean that a stemma did not exist, or that it was in principle undiscoverable. The mere fact that a job is difficult is no ground for saying that it is impossible, or not worth doing.[19]

With the advent of high-speed computers with vast memory capacity, the possibility of constructing a stemma (genealogical tree) for a set of manuscripts has moved from the improbable to the probable. In spite of the potential possibility of using sophisticated computer software to accomplish the task, Metzger remains skeptical. He stated:

> Though computing machines may conceivably be useful in 'remembering' the statistical details of variant readings, it is not likely that they will replace the use of rational critical processes in evaluating 'good' and 'bad' readings.[20]

What is needed to accomplish the task is an adequate genealogical theory and the computer software to implement the theory in its analytical mode. This work describes one such theory and the algorithms for implementing it.[21] The software—named after Karl Lachmann, the one who first applied the genealogy of manuscripts to the text of the New Testament—has been written and tested. It works quite well. Its value to the field of textual criticism remains to be determined. If the stemmata constructed by the implemented theory prove to be fairly accurate, then the use of genealogical stemmata will bring New Testament textual criticism into harmony with the classical methodology. Thus such a genealogical theory merits consideration.

Other Genealogical Methods

Because of the acknowledged difficulty of applying the genealogical principle to manuscripts, several methods have been developed for approximating genealogical family trees.

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[19] Eric Poole, "The Computer in Determining Stemmatic Relationships," *Computers and the Humanities*, 8 (1974) 207-216, p. 208.

[20] Metzger, *Text*, 3rd enlarged edition (1992), 169; in his later edition with Ehrman the skepticism is expressed in more vague terms.

[21] The theory addresses the problem of mixture and provides objective methods for identifying and locating the sources of mixture.

Set Theory

Jacques Froger[22] developed a computer procedure for ascertaining genealogical relations based on set theory. Poole summarized his method:

> For each reading, he defines the set of manuscripts which share the variant in question, and then he compares each set in turn with every other, to find whether one set always includes the other. Having done this, he sorts the sets into a hierarchy, according to their level of inclusiveness, and from this he constructs his stemma. . . . When the sets have been sorted into a hierarchy, he constructs a graph in which the sets are plotted according to their level of inclusiveness, and each is connected by a line to the group which includes it.[23]

Poole pointed out that this method "depends upon having a good supply of readings for which there are only two variants."[24] This is a difficult restraint to meet in actual practice.

Numerical Taxonomy

John G. Griffith experimented with the method of R. R. Sokal, known as numerical taxonomy,[25] which Sokal used in arranging biological classes into family trees. Griffith adapted the methodology to textual criticism and experienced some degree of success in classifying a number of the Biblical manuscripts into near-neighbor clusters that approximate family tree relations. He concluded that this method achieved "a sorting of material which proves refractory to the conventional logic of the stemma. It can be tested quantitatively in a way that the stemma cannot, and does not beg any questions about the merits of the material being handled."[26]

The Eric Poole Method

After having developed the theory described herein, I came across the work of Eric Poole, a lawyer who experimented with a computer method for recovering the genealogical stemmata of ancient classical literature.[27] His method is quite similar to mine, except for a few

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[22] Dom J. Froger, *La critique des textes et son automatisation* (Paris, 1968); see also his "La critique des textes et L'ordinateur," *Viligante Christianae,* 24.3 (1970) 210-217.

[23] Poole, 208.

[24] Poole, 208.

[25] J. G. Griffith, "Numerical Taxonomy and Some Primary Manuscripts of the Gospels," *JTS* 20 pt. 2 (1969) 389-406.

[26] Griffith, 405.

differences. Poole pre-edits the readings in order to eliminate those that involve mixture, readings which he calls "anomalies." He does this because of a purist commitment to ideal stemmata. He noted that "a stemma is by nature an open system, and cannot give rise to a closed figure."[28] According to the mathematical definition this is true. However, genealogical tree diagrams (stemmata) can indicate mixture and thus depart from the mathematical ideal. There is no reason why genealogical tree diagrams must be limited to "open" trees. Poole also had difficulty identifying the original node of the stemma. He noted that this problem

> is inherent in the very nature of a stemma: any point in it (whether or not at one of the nodes) is capable of being treated as the origin of all other points, without logical inconsistency with the data. The direction of the stemma is not therefore something which can be ascertained by a computer; it is a problem for the judgment of an editor, based on such matters as the dates of documents, or his opinion whether variants could, or could not, have come from the archetypal text.[29]

Again, from the purist mathematical point of view, he is right. But there is nothing to prevent a computer program from taking into account the dates of documents and other non-subjective data that bear witness to the directionality of the stemma.

Poole set up requirements for his computer program that he regarded as sufficient to provide successful construction of genealogical stemmata:

(a) It should be able to handle an input which represents all the significant variations of all the texts under examination.
(b) Its output should include a stemma showing a feasible relationship between those texts, and the readings which it ascribes to any lost or hypothetical texts required by the stemma.
(c) It should be able to perform this as a single operation, without human intervention at any stage.
(d) It should embody a rational and consistent method for identifying, and allowing for, anomalies; that is, for present purposes, readings inconsistent with the identification of a stemma.

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[27] Poole, 207-216.

[28] Poole, 209.

[29] Poole, 207.

(e) It should be able to handle readings with any number of variants.[30]

Poole exhibited keen discernment in his methodology. Nevertheless, he experienced some degree of disappointment when he applied the method to a portion of the text of *Piers Plowman*. The text had only seventeen manuscript witnesses, and the textual problems were of great complexity. His solution did construct a stemma, but he stated that "the results are insufficiently consistent to support even a plausible conjecture, and obviously a larger sample needs to be used in any serious attempt to elucidate the relationships of all the extant texts."[31] His final conclusion was:

> The trial with the *Piers Plowman* material shows, however, that some objective results can be obtained even with a comparatively small sample of grossly corrupt texts. I am convinced that neither the procedure which I described, nor any other purely mechanical procedure, can ever completely reconstruct the stemmatic relationship of a group of manuscript texts, or documents, or organisms, if only because the position of the archetype must be determined subjectively. Within this restriction, however, it seems reasonable to hope that such a procedure can, if used intelligently, provide reliable materials for the reconstruction of the stemma. Even in cases where it falls short, it may provide partial stemmata which will throw light on such matters as scribal practice and linguistic questions.[32]

The Zarri Method

Gian Piero Zarri studied the *stemmata codicum* theories of Dom H. Quentin and applied them to the problem of reconstructing stemmata in textual criticism.[33] After expressing skepticism about expecting quick solutions, he concluded that Quentin's theories may help clear up some difficult problems. He regarded all differing readings as variants instead of speaking of errors as opposed to correct readings. He constructed undirected graphs based on computed "zero" relationships between triplets of manuscripts. A zero relationship was regarded to exist within a manuscript triplet A-B-C if A and C never agree together against B. This established

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[30] Poole, 209.

[31] Poole, 215.

[32] Poole, 215.

[33] Gian Piero Zarri, "Algorithms, *stemmata codicum*, and the Theories of Dom H. Quentin," in *The Computer and Literary Studies*, eds. A. J. Aitken, R. W. Bailey, and N. Hamilton-Smith (Edinburg, 1973), 225-238; "Some Experiments in Automated Textual Criticism," a paper presented at the International Conference on Computers in the Humanities, Minneapolis, 1973; "A Computer Model for Textual Criticism?" in *The Computer In Literary and Linguistic Studies*, eds. Alan Jones and R. F. Churchhouse (Cardiff, 1976), 133-55.

B as intermediate between A and C. He primarily worked at establishing genealogical relationships between existing manuscripts, but he did acknowledge that "it is sometimes necessary to assume the existence of hypothetical 'lost' manuscripts, which therefore become part and parcel of the chain of genealogical derivations."[34]

Like Poole, he established directionality by manually examining the actual readings involved. Poole noted that his method seemed to experience trouble handling hypothetical lost texts; but he regarded Zarri's method to be "outstanding for the good practical common sense which it brings to bear on the problems of stemmatic analysis as a whole, and in particular for its rejection of mathematical theory not based on empirical observations."[35]

Dearing's Textual Analysis

V. A. Dearing developed a computer method for calculating genealogical stemmata which he named "textual analysis."[36] The method derives a stemma from patterns of agreement and disagreement exhibited among the existing manuscripts of a text. He postulated the "law of parsimony" and the principle of "synthetic variations" which assist the methodology in resolving difficult problems. He endeavored to resolve directionality by means of a complex statistical "birth-and-death" process.

M. P. Weitzman wrote a critical review of Dearing's method in which he concluded that "Professor Dearing's bid to reduce textual criticism to an exact science simply cannot be declared successful."[37] In his review he posed a problem that Dearing's method could not resolve. He was unconvinced of the "birth-and-death" process because "no check is made on the realism of the figures specified at the onset," so he warned the reader "to take this silence into account."[38]

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[34] Zarri, "A Computer Model," 145.

[35] Poole, p. 215.

[36] V. A. Dearing, *Principles and Practices of Textual Analysis* (University of California Press, 1974).

[37] M. P. Weitzman, *Vetus Testamentum* 27.2 (1977) 225-235, p. 231.

[38] Weitzman, 233.

Weitzman was overly critical of Dearing's method because the problem he posed was unrealistically complicated. For situations as complex as textual criticism, problems can always be posed which have no practical solution. Dearing responded, "I do not believe that a tree with the characteristics of Dr. Weitzman's is likely to occur in real life."[39] Again, Weitzman was too idealistic in expecting the method to provide flawless solutions of "exact science." Dearing, on the other hand, acknowledged that the method involved some degree of uncertainty: "With real problems . . . the best one can do is reason correctly from all the evidence, on the basis of axioms that seem . . . to be satisfactory."[40] Weitzman did admit that "in fairness . . . in very straightforward cases, such as the poem by Dryden . . ., 'textual analysis' does work."[41] Thus Dearing's method warrants significant attention.

Claremont Profile Method

Extensive research has been conducted at the Claremont Graduate School to develop a method for classifying Greek manuscripts into genealogical groups. This method, known as the Claremont Profile Method, makes use of a selected set of readings that define a unique profile for each of several manuscript groups. Each manuscript is classified into one of these groups by means of a calculated percentage of agreement with the profile of the group. This sampling method is being used to prepare a new comprehensive apparatus for the New Testament. Most of the work has been done manually, but recently W. L. Richards used a computer to assist the classification of manuscripts of the Johannine epistles.[42]

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[39] V. A. Dearing, "Textual Analysis: A Consideration of Some Questions Raised by M. P. Weitzman," *Vetus Testamentum*, 29.3 (1979) 355-359, p. 357.

[40] Dearing, *Vetus Testamentum* 29.3 (1979) 358-59.

[41] Weitzman, 231 n. 14.

[42] W. L. Richards, *The Classification of the Greek Manuscripts of the Johannine Epistles* (*SBLDS* 35; Missoula: Scholars Press for *SBL*, 1977); E. J. Epp, "The Claremont Profile-Method for Grouping New Testament Minuscule Manuscripts," in B. L. Daniels and M. J. Suggs, eds., *Studies in the History and Text of the New Testament*, vol. 29 of Studies and Documents, (Salt Lake City, 1967) 27-38; E. C. Colwell, and others, "The International Greek New Testament Project: A Status Report," *JBL* 87.2 (1968) 187-197; P. McReynolds, "The Value and Limitations of the Claremont Profile Method," *SBL*, Book of Seminar Papers (Sept 1972) 1.1-7; F. Wisse, *The Profile Method for the Classification and Evaluation of Manuscript Evidence, as Applied to the Continuous Greek Text of the Gospel of Luke* (Grand Rapids, 1982); W. L. Richards, "A Critique of a New Testament Text-Critical Methodology–The Claremont Profile Method," *JBL* 96 (1977) 555-556.

Coherence-Based Genealogical Method

Gerd Mink developed a genealogical method which he calls the "Coherence-Based Genealogical Method" (CBGM) built around a coherence feature.[43] While making use of the local genealogical method at each place of variation, CBGM goes further to assess the global interrelationships between the readings in all places of variation to provide a measureable value for the mutual coherence of manuscript texts. Mink stated:

> [I]t is necessary to integrate two arrays of data into the overall picture: (i) the relations between witnesses as evidenced by agreement and divergencies and (ii) assessment of the genealogical direction of divergencies on philological grounds. It is to this end that the CBGM provides a means to describe coherence between texts, to search for genealogical structures inherent in the tradition, and, most importantly, on the basis of these structures, to formulate statements about the relationships between witnesses that are valid for all variant passages and thus for the entire text.[44]

The process begins with an initial estimate of what the original form of the text most likely was. Then, using Aland's local genealogical method at a large number of places of variation, estimates are made as to the probability of each reading being original. Next, between each pair of witnesses a mutual coherence factor is calculated, based on the estimated probabilities at each place of variation. These mutual coherence factors are used to calculate the most probable parent-child relationships with which a genealogical stemma may be constructed.

In evaluating CBGM, Klaus Wachtel stated: "The CBGM is not the philosopher's stone that produces a reliable reconstruction of the initial text automatically. Yet it makes visible and evaluates coherence—a class of evidence that could not be reliably gathered and surveyed before the adoption of database technology."[45] This methodology is intended to be a research tool for use by textual scholars regardless of the theory they follow.

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[43] Available at http://www.uni-muenster.de/cbgm_presentation/.

[44] Gerd Mink, "Contamination, Coherence, and Coincidence in Textual Transmission: The Coherence-Based Genealogical Method (CBGM) as a Complement and Corrective to Existing Approaches," in *The Textual History of the Greek New Testament: Changing Views in Contemporary Research*, eds. Klaus Wachtel and Michael Holmes (Atlanta: Society of Biblical Research, 2011), p. 150.

[45] Klaus Wachtel, "Conclusions," in *The Textual History of the Greek New Testament: Changing Views in Contemporary Research*, eds. Klaus Wachtel and Michael Holmes (Atlanta: Society of Biblical Research, 2011), p. 221.

Phylogenetic Systematics

Beginning in the 1960s researchers in computational biology developed computer methods known as *phylogenic systematics* (also called cladistics) for producing tree diagrams of biological relationships.[46] Some have noticed a strong analogy between phylogenic systematics and textual stemmatics, and cladistic analysis has been successfully been applied to literary texts.[47] Cladistics begins by constructing all possible stemmatics relationships among the witnesses to a text, and by using the principle of "maximum parsimony" it selects the simplest stemma as the most likely solution. This method has three adverse difficulties: (1) large problems require much computation time even for today's computers, making compromise necessary; (2) its solutions lack directionality; and (3) mixture produces skewed results.

Stephen C. Carlson has attempted to resolve these difficulties and successfully applied cladistic analysis in some interesting studies.[48] He is the first to produce a genealogical history of the text of Paul's Epistle to the Galatians based on cladistics. He diminishes the difficulty of lengthy computation time by using heuristics that point the algorithms toward an approximate solution and then letting the software improve it. In order to supply directionality to a solution he imposes internal evidence to provide the variants with a kind of probability factor. In order to minimize the effects of mixture he incorporated what he called a "bipolar assumption" which attempts to measure the error caused by mixture and minimize its effect on the solution. His methodology consists of three steps: (1) the initial creation of an unoriented solution, (2) orienting the solution, and (3) minimizing the effects of mixture. His genealogical history of Galatians resembles the findings of other scholars, but seems to provide much more explicit detail.

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[46] Willi Hennig, *Phylogenetic Systematics* (English trans. and extensively rev., D. Dwight Davis & Rainer Zangerl; Urbana: U. Ill. Press, 1966).

[47] Nelson I. Platnick & H. Don Cameron, "Cladistic Methods in Textual, Linguistic, and Phylogenetic Analysis," *Sys. Zool.* 26 (1977): 380-385; Peter M. W. Robinson, "Computer-Assisted Stemmatic Analysis and 'Best-Text' Historical Editing," in Pieter van Reenen & Margot van Mulken, eds., *Studies in Stemmatology* (Amsterdam: Benjamins, 1996); Peter M. W. Robinson & Robert J. O'Hara, "Report on the Textual Criticism Challenge 1991," *Bryn Mawr Classical Review* 3 (1992): 331-337.

[48] Stephen C. Carlson, "The Origin(s) of the 'Caesarean' Text," a paper presented at the Society of Biblical Literature in 2005; "The Text of Galatians and Its History," a Ph.D. dissertation, Graduate Program in Religion, Duke University, 2012.

The Present Genealogical Theory

The problem is not that there are no genealogical relationships, or that they are not significant; but the problem has been with determining the relationships and evaluating their significance. Methods for discovering genealogical relationships have been complex and cumbersome, requiring a prohibitive amount of time to process the information manually. This has resulted in compromises of various sorts–either the use of "profile" sampling of many manuscripts, or the use of a few "characteristic" early manuscripts of text types. Such compromises open the door to subjectivity and uncertainty.

However, the advent of high-speed computers has greatly reduced the need for such compromises. Computers permit the use of much more complex methods and the processing of much more information without human error. What is needed is a genealogical theory of textual criticism that accommodates a general solution of the textual-critical problem to computer programming techniques.

The previously mentioned methods developed by Maas, Froger, Griffith, Poole, Zarri, Dearing and Richards have contributed much toward such a theory. This chapter outlines a genealogical theory of textual criticism designed to move closer to this ideal goal. It lays the foundation for continued theoretical research on the problem with no claim to completeness or finality. It defines the general nature of the problem together with its common complications. It defines a general solution of the problem along with its limitations. The theory has been tested by computer and found to be valid within limits.[49] Chapter Three describes the many tests to which the theory and its software implementation have been successfully subjected.

The present theory is designed to construct a genealogical stemma of manuscripts.[50] It incorporates most of the traditional canons of textual criticism as represented by Maas, Metzger, and Aland, except those that are dependent on subjective judgment. It makes use of the objective data available on the extant manuscripts such as name, date, variants, and language.

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[49] James D. Price, "A Computer Aid for Textual Criticism," *Grace Theological Journal* 8.1 (1987) 115-30; also "A Computer-Aided Textual Commentary on the Book of Philippians," *GTJ* 8.2 (1987) 253-90. These papers present tests of the theory in its earlier form. The present form is much more complex and powerful.

[50] I use the term *manuscript* to refer to the text written in the manuscript, not to the physical material of the document itself.

External Evidence

The method incorporates all the traditional canons of textual criticism for evaluating the external witness of the manuscript evidence. These canons are:

(1) **The canon of antiquity**: Older manuscripts are more likely to be closer to the autographic text than more recent ones, although many textual variations occurred very early.[51]

(2) **The canon of distribution**: The consensus of ancient widely distributed independent witnesses is more likely to represent the autographic text than a single text tradition. Such consensus is an objective measure of distribution.

(3) **The canon of genealogy**: Genealogical weight, not mere numbers, decides the probability that a reading is autographic. It goes without saying that an attempt to reconstruct the genealogical descent of the manuscripts constitutes the most rigorous application of the genealogical canon. The traditional Reasoned Eclectic Method uses the genealogical canon primarily with respect to the local readings at a particular place of variation; it uses this canon only at the global level for manuscripts–that is, by text types only. The Claremont Profile Method uses it only at the group level. Later discussion shows how these canons are implemented in this current theory.

Internal Evidence

The canons of internal evidence are not directly implemented in the computer algorithms of this theory because most of the lines of internal evidence involve some degree of subjective judgment that cannot be easily emulated by computer algorithms. This represents a limitation on the theory. But it should not be regarded as serious, because the canons of external evidence normally are applied before those of internal evidence, and the results of the canons of external and internal evidence are usually in harmony. That is, when the canons of external evidence are satisfied, the canons of internal evidence usually agree. Aland's basic rules 2 and 3 state:

> 2. Only the reading which best satisfies the requirements of both external and internal criteria can be original.
>
> 3. Criticism of the text must always begin from the evidence of the manuscript tradition and only afterward turn to a consideration of internal criteria.[52]

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[51] This canon applies only to manuscripts and is helpful and necessary to provide historical directionality to the genealogical tree. It has limitations with respect to variant readings. A reading is at least as early as the earliest dated extant manuscript in which it occurs. Other canons help to determine how much earlier the reading may be.

[52] Aland and Aland, *Text*, 275.

The canons of internal evidence are needed only to resolve the problem when the results of objective external evidence are uncertain. This genealogical theory identifies those places of uncertainty, so when necessary, the internal evidence is applied indirectly.

In this present theory the implementation of internal evidence is accomplished by the order in which the variants are arranged in the database. That is, when the input data is prepared, the variant with the best support from internal evidence is placed first in order. Thus, when the external evidence is ambiguous, the algorithm selects the first ordered variant by default. In this way the algorithm meets the requirement of internal evidence.[53] This is discussed further in the section on data preparation.

The Nature of the Problem

The problem of textual variants exists because ancient documents such as the books of the New Testament were copied manually by scribes; the copies were then copied successively by other scribes for numerous generations. Although the various scribes were careful, human frailty introduced variations from the original autograph. Such variations were passed down by inheritance to succeeding generations of copies, resulting in a collection of manuscripts that are not identical with the autograph or with each other. Figure 2.1 represents the first three generations of an ideal model of textual transmission with no secondary complications. This model is presented to illustrate the basic principles of genetic reconstruction without the associated complexities and potential error.[54]

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[53] The only case where this choice may fail is where the external evidence is at variance with internal evidence, and the internal evidence is judged superior. But this condition is unlikely to happen, and is contrary to Aland's rules 2, 3, and 4. In this case, the algorithm will select the reading with the best external evidence unless the evidence is ambiguous.

[54] Obviously, this model is hypothetical and simplistic. It is not known how many first generation exemplars there were or how many of their descendants survived, if any. The methods for measuring sisterhood, remoteness, directionality, and order of reconstruction are complex and not precise, but not impossible. The problems associated with such measurements and potential errors involved are discussed in depth in Appendix A.

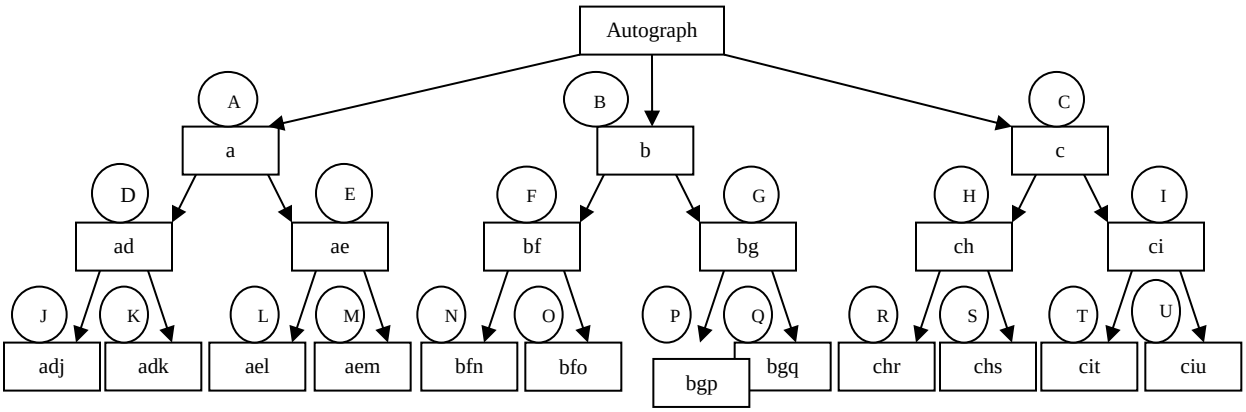


FIGURE 2.1
Model of Textual Transmission

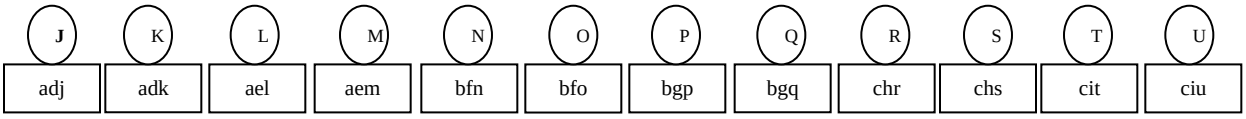
In the model of Figure 2.1, the autograph was copied by different scribes producing manuscripts A, B, and C, each inheriting the text of the autograph except for its own unique set of mutant variants *a*, *b*, and *c*, respectively, introduced accidently by the scribe who copied it and not by inheritance.[55] In the next generation, Manuscript A was copied producing manuscripts D and E which inherited the text of their parent exemplar A including its variants (*a*), except for the unique mutant variants (*d* and *e* respectively) accidently introduced by their individual scribes. Manuscript B was copied producing F and G which inherited the text of their parent exemplar B including its variants (*b*), except for the unique mutant variants (*f* and *g* respectively) accidently introduced by their individual scribes. Likewise, Manuscript C was copied producing H and I which inherited the text of their parent exemplar C including its variants (c), except for the unique mutant variants (*h* and *i* respectively) accidentally introduced by their individual scribes; and so throughout succeeding generations. A significant observation: mutant variants have no inheritance—they are not inherited but originate by chance; but they have a heritage—they are inherited by the children of the exemplar in which they originated. On the other hand, an autographic reading has inheritance until it is replaced by a mutant variant.

Each manuscript inherits the readings of all its ancestors except for the unique mutant variants introduced by its own scribe. Thus, for example, Manuscript J, besides containing the mutant variants introduced by its own copyist (*j*), it also contains the mutant variants (*d*)

[55] These newly initiated variants may include intentional scribal changes and readings borrowed by mixture from a source other than the parent exemplar. In every case, mutant variants originate by accident or intent and not by inheritance.

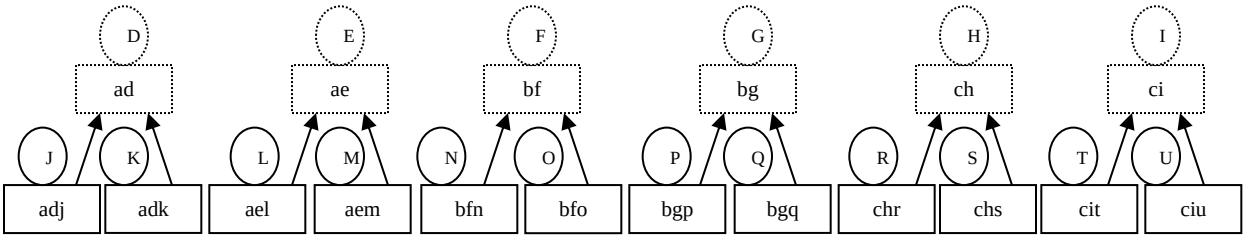
introduced by the copyist of its parent exemplar D and the mutant variants (a) introduced by the copyist of its grandparent exemplar A; finally, it contains what remains of the autographic text excluding the accumulated mutant alterations. Likening the introduction of a textual variant to a genetic mutation in biology, one may say that a manuscript contains all the uncorrected textual mutations of its ancestors, just as a child's DNA contains all the genetic mutations of its ancestors. In effect, a manuscript contains a record of its genealogical history in the accumulated variant readings it contains. One must learn how to read that history. One way to approach the reading of that history is the observation that mutant variants have heredity but not inheritance.

If all the manuscripts of the above model were available, it would be rather easy to reconstruct the genealogical history and confirm that the Autograph is indeed the ancestral forefather of them all. But if only the witnesses of the last generation are available, the reconstruction is more difficult but still possible. Consider the following diagram of witnesses of just the last generation of Figure 2.1:

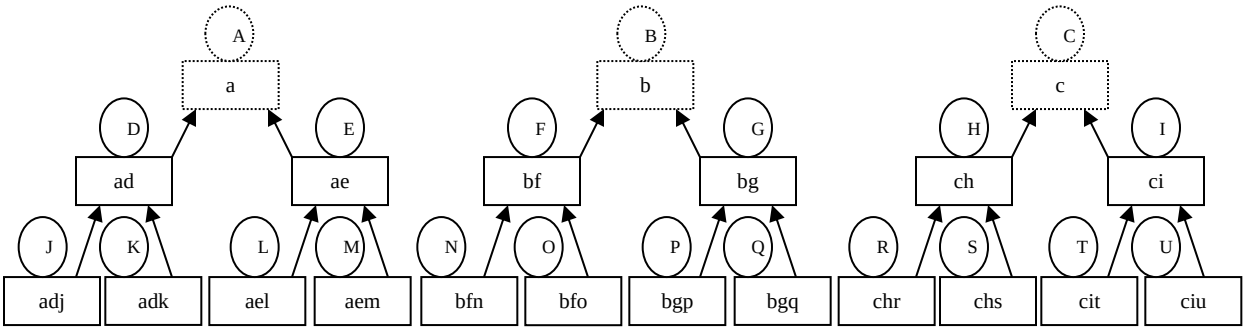


Manuscripts J and K have common textual mutations *d*, unique to themselves; manuscripts L and M have common mutations *e*, manuscripts N and O have mutations *f*, P and Q have *g*, R and S have *h*, and T and U have *i*. Thus each pair of manuscripts is recognized by their uniquely common mutant variants to be sibling children of a common nonexistent parent exemplar from which they inherited those mutants.[56] The next diagram illustrates how the nonexistent parent exemplars of each pair can be reconstructed:

[56] Siblings are recognized by uniquely common mutant variants. Those readings are the ones introduced newly by the copyist of their immediate parent exemplar and occur only in sibling witnesses but nowhere else in the heads of the other unattached branches of the developing tree. These unique variants determine genetic heritage; they do not include any variants introduced in the parent exemplar by means of mixture, because those readings occur elsewhere in the developing tree and are by virtue of that fact not unique to the siblings. By determining genetic heritage by means of these unique variants, the confusion caused by possible mixture is filtered out.

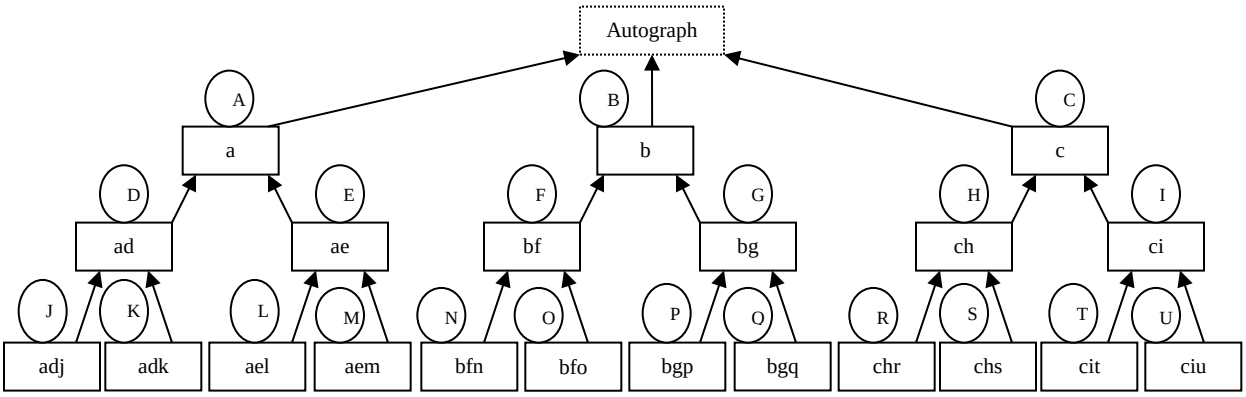


Each reconstructed parent exemplar has the common mutant variants of its daughters, but not the unique variants introduced by their respective copyists. The readings of a reconstructed parent exemplar are determined by consensus among its daughter witnesses.[57] In like manner, reconstructed exemplars D and E have the uniquely common mutant variants *a*, reconstructed exemplars F and G have *b*, and H and I have *c*. The following diagram illustrates how the next prior generation of exemplar witnesses may be reconstructed:



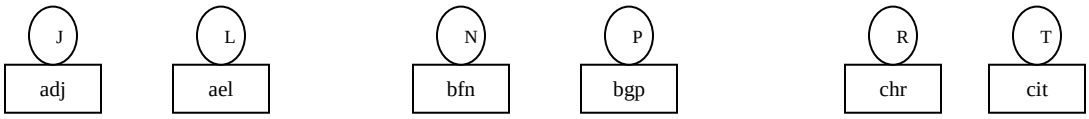
At this stage of the reconstruction each reconstructed branch is genetically independent of the other two, not having any common textual mutants. The text of the autograph may now be recovered from the consensus of the three ancient independent witnesses A, B, and C. Exemplars B and C will have the correct autographic reading wherever A differs from them; A and C will have the correct reading wherever B differs from them, and A and B will have the correct reading wherever C differs from them, as illustrated in the following diagram:

[57] Inherited readings have consensus among the daughter witnesses; newly introduced readings are unique and have no consensus. When there are only two daughters and they disagree, the reading of the parent exemplar is determined by the principle of delayed ambiguity discussed later. Basically, where one exemplar has an ambiguity its siblings will have the inherited reading. This is true because experience has shown that sibling witnesses rarely if ever have accidental variants in the same place of variation; and rarely are there more than two optional readings where siblings differ.



In this way the genealogical history of a set of manuscripts may be reconstructed if the complement of last generation of witnesses is complete. Basically, this reconstruction procedure amounts to filtering out the mutant variants in the reverse order in which they were accumulated in history. This simple example illustrates the basic principle of the methodology of the present theory: mutant variants have heredity[58] but not inheritance.[59]

Given all the terminal manuscripts in this ideal model, the reconstruction of the genealogical tree and the recovery of the text of the autograph are simple. However, for actual ancient texts, not all the terminal witnesses have survived. Even so, if the surviving witnesses have sufficient historical distribution, a good approximation of the genealogical history of the text may be reconstructed and the autographic readings recovered. Consider the case where only half the witnesses of the last generation of the above example have survived, that is witnesses J, L, N, P, R, and T are extant and all others have perished. The following diagram illustrates the reconstruction process:

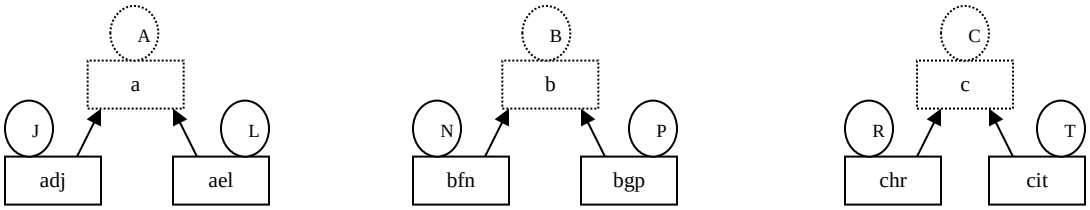


Witnesses J and L have common mutant variants *a* not in the other witnesses; though they are actually cousins, they appear as sibling children. Witnesses N and P have common mutant variants *b* not in the other witnesses; they too appear as sibling children. Likewise R and T have *c*, appearing as siblings. The parent exemplar of witnesses J and L may be reconstructed

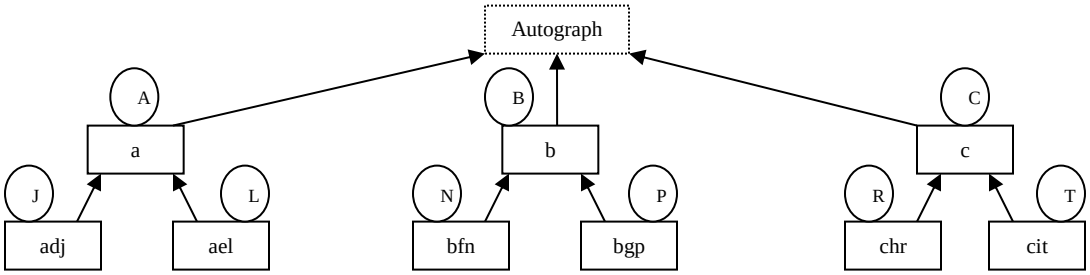
[58] That is, the variant is transmitted to subsequent generation but has no prior history.

[59] That is, the variant was inherited from a prior generation; it has prior history.

as A having their uniquely common mutant variants *a* together with their consensus readings. Likewise the parent exemplar of witnesses N and P may be reconstructed as B having their uniquely common mutant variants *b* together with their consensus readings. In the same manner also the parent exemplar of R and T may be reconstructed as C with their uniquely common mutant variants *c*, etc. The head exemplars of the three main branches of the tree have been correctly reconstructed by means of only two witnesses each; the intermediate exemplars were not reconstructed, but their genetic mutants survived in the variant readings of their descendants, as illustrated below:



As before, the head exemplars of the reconstructed branches are genetically independent of one another, and the autographic text may be recovered from the consensus of these three witnesses, as illustrated in the following diagram:



However, the ideal model fails to reflect actual historical conditions. The actual transmission of a text may have included mixture, corrections, and recensions. The problem is further complicated because the autograph has perished along with most of the early generation copies, leaving a random collection of manuscripts whose genealogical relations are unknown, and a set of variant readings whose origin is uncertain. The problem may be expressed as follows: given a collection of manuscripts of an ancient document under the above conditions, discover the most likely genealogical relationship among them and the set of variants most likely to be original to the autograph.

Assumptions of the Theory

The present theory is based on several important self-evident assumptions. It goes without saying that the theory assumes that the manuscripts of a given literary work have genealogical descent from a single ancestral autograph.[60] The reasonableness of this was demonstrated in earlier discussion. Other assumptions of the theory are discussed in the sections that follow, but in brief summary they are: (1) it is assumed that the text of each book of the New Testament is independent of the others; (2) it is assumed that each manuscript bears witness to a set of variant readings; (3) it is assumed that one of the variants at each place of variation is the autographic reading; (4) it is assumed that objective external evidence is more significant than subjective internal evidence; (5) it is assumed that only primary witnesses should be used in genealogical computations; (6) it is assumed that commonness of variant readings defines genealogical relationships; (7) it is assumed that among siblings[61] a witness in the original language is superior to a translation, and the witness of a manuscript is superior to a quotation of a church father;[62] (8) it is assumed that the witness of an exemplar may replace the witness of its descendants; and (9) it is assumed that tree-graph theory can reconstruct a tree diagram (stemma) of the approximate genealogical history of a given text from a set of manuscripts that comprise a good sample of the history of the text.

The Text of Each Book Is Independent

Because each book of the New Testament had an independent origin, and was independently circulated and copied in its earliest history, the early history of each book was different. It was only after the books were bound together in collections (such as the Gospels or the Pauline corpus) that books began to share a common history. Therefore each book should be studied independently.

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[60] Some text critics suppose that the books of the New Testament may have been issued in several revised editions. If that happened to be the case, this theory would recover the text of the most widely distributed edition and the other editions with surviving witnesses would manifest themselves as early recensions.

[61] The term "siblings" is used to refer to a group of manuscripts more like one another than any others in the database which have a unique set of variant readings. They may be assumed to be immediate children of a common exemplar, and so are siblings.

[62] The significant term here is "siblings." Sibling witnesses are children of a common parent exemplar. When computing the readings of a parent exemplar, where the siblings differ, preference is given to the reading of an existing original-language manuscript over that of a translation or quotation, because in that context, a translation or quotation is much more likely to have been a paraphrase than a contemporary sibling original-language manuscript to have been a scribal error.

Each Manuscript Bears Witness To a Set of Variants

Manuscripts resemble their exemplars, much like children resemble their parents. Since each manuscript is a copy of the text of its parent exemplar, it usually contains all the variants of its parent exemplar except for any new variants introduced by its copyist. Therefore a manuscript bears witness to a set of variants,[63] not simply to individual independent variants. Thus a manuscript's set of variant readings may be regarded as a type of genetic profile—much like a DNA code—that bears witness to the manuscript's genealogical descent. This is true even when mixture or alteration is involved; these circumstances only complicate the problem. This is in harmony with Aland's rule 9 that states: "Variants must never be treated in isolation, but always in the context of the tradition."[64]

It is true that each individual variant reading has its own genealogical descent, but the genealogy of a reading must be in harmony with the genealogy of the manuscripts in which it is found.[65] That is, the ancestors of a given manuscript should have the readings that best account for the inheritance of the readings in the given manuscript.

One Variant is Original

It is assumed that one and only one of the variants at each place of variation is the autographic reading.[66] It is possible that an original reading could have been completely lost. But the probability of such a loss is small, and the recovery of a lost reading is beyond the capability of the present theory or any other theory.

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[63] Because, in any place of variation, the reading of the autograph is not known in advance, all the various possible readings are referred to as "variants."

[64] Aland and Aland, *Text*, 276.

[65] Aland's local genealogical principle calls for the construction of a stemma for each individual place of variation (his rule 8). This present genealogical method does not construct a stemma for each place of variation, but constructs one global stemma for all the manuscripts. At any place in the reconstruction of a stemma, ancestral readings have a high probability and are propagated toward the trunk. Local variants have low probabilities and are moved away from the trunk. It is evident that if the global stemma for the manuscripts can be constructed fairly accurately, then the local stemmata of variants will be redundant and not needed.

[66] This applies to the global situation involving all witnesses. At the local level where the readings of a parent exemplar are being determined, it is assumed that one and only one of the variants of the sibling manuscripts is the reading of the parent exemplar.

External Evidence is Dominant

It is assumed that objective external evidence is more significant than subjective internal evidence. In the normal practice of textual criticism, external evidence is evaluated first, then internal evidence. This is in harmony with Aland's rules 3 and 4 which state:

> 3. Criticism of the text must always begin from the evidence of the manuscript tradition and only afterward turn to a consideration of internal criteria.
> 4. Internal criteria . . . can never be the sole basis for a critical decision, especially when they stand in opposition to the external evidence.[67]

This theory evaluates the external evidence first, and makes all decisions based on the probabilities of objective external evidence when it is unambiguous. It is only when the external evidence is ambiguous that internal evidence is utilized, and then only indirectly by default choice. This assumption is due primarily to the limitations of software implementation. The basic principle involved in the evaluation of external evidence is: *consensus among ancient independent witnesses.* This is harmony with Aland's rule 5 that states: "there is no single manuscript or group of manuscripts that can be followed mechanically."[68]

Only Primary Witnesses Should Be Used in Computations

A manuscript bears primary witness to the readings of its immediate parent exemplar, and secondary witness to the readings of its more remote ancestors and relatives. Primary witnesses provide the greatest statistical certainty and assure the most reliable probability. It is possible to use only primary witnesses by always computing from a group of sibling children to their immediate parent exemplar. Therefore only primary witnesses are used, thus maximizing all probabilities.

This restraint satisfies the criterion of consensus among ancient independent witnesses. As witnesses to the text of a parent exemplar, the sibling daughters of that exemplar are independent of one another. They are mutually dependent on their common ancestors, and so as witnesses to the text of more remote exemplars, they are interdependent and do not qualify as independent witnesses. But as witnesses to their common parent exemplar, they indeed are independent. They likely were copied at different times, perhaps under different circumstances, and possibly by different scribes, but all from the same exemplar. Their individual differences

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[67] Aland and Aland, *Text*, 275.

[68] Aland and Aland, *Text*, 276.

from their parent exemplar tend to be unique and can be explained as independent accidents, rarely occurring at the same place of variation. So, for example, in the textual history for Matthew, of the 63,333 instances where consensus decisions were made, only 347 had three options, 25 had four, and 1 had five; all other instances had two or less.

This means that "local"[69] rather than "global" statistics should be used in determining genealogical relationships. Global statistics are often misleading because they deal with broad general relationships rather than specific ones, yet specific relationships are required for determining genealogical descent. Global relationships emerge only after all local relationships have been sufficiently determined. This means that a genealogical tree should be reconstructed by beginning at the remote branches and working back through intermediate branches to the trunk. The final form of the tree and the readings of the autograph thus are determined by the consensus among the most ancient independent witnesses. This approach is in harmony with Maas's principles of *recensio*.[70]

Commonness of Variant Readings Defines Genealogical Relationships

A small group of manuscripts[71] more like one another than those outside the group may be assumed (although not conclusively) to be immediate sibling daughters of a common parent exemplar.[72] Such a group exhibits a high percentage of agreement and has one or more

[69] Aland's uses the term "local" in the sense that variants are individually evaluated afresh so that a genealogical stemma is constructed for each passage, rather than one for the manuscripts. The term "local" is used here in the geographic and temporal sense. When an exemplar is being reconstructed, only local statistics are used–that of sibling daughters.

[70] It may be objected that mixture skews the reconstruction of the genealogical tree causing erroneous structures. However, by using the variants unique to sibling manuscripts to determine their heredity, the potential confusion of mixture is filtered out.

[71] I use the term *variant* instead of *error* because one may not know in advance which readings at any place of variation are autographic and which are not. The term *error* implies that the autographic reading is already known.

[72] The method of determining sisterhood involves potential error and imprecision. The complexities of measuring sisterhood are discussed in Appendix A.

readings[73] unique to itself.[74] A sibling group bears primary witness to the readings of its parent exemplar and may be used to identify the readings of that exemplar, and thus the exemplar itself. The group will have unanimous agreement on most of the readings of its exemplar, providing 100% probability that those readings belong to the exemplar. Probability will be less certain in the places of variation where the siblings differ.[75]

Among sibling witnesses, at a given place of variation, the variant reading of each of the sibling witnesses is a candidate for being the reading of the parent exemplar; and it will have originated from one of three possible sources: (1) it may have been inherited from its primary parent exemplar; (2) it may have been borrowed by mixture from a secondary exemplar; or (3) it may have been a new variant freshly initiated by the copyist either intentionally or unintentionally. Consensus is evidence of genetic inheritance. Majority agreement among sibling witnesses identifies the reading of the exemplar.[76] Where majority agreement (consensus) fails to identify a reading as that of the parent exemplar, deciding which reading of the uncertain options was inherited from the parent exemplar and which one was a newly initiated scribal error may be postponed until a sibling of the parent exemplar is found. The sibling exemplar will have the inherited reading, thus resolving the ambiguity. I call this practice "the principle of deferred ambiguity" (discussed later).

In the case where there are only two siblings, Maas found it impossible to determine which variant is genealogically inherited and which is a newly initiated error: "If its tradition

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[73] The term *reading* in this context is used in the sense of "variant reading." Because all the manuscripts contain essentially the same text, the theory is concerned only with the places where variations occur. Thus the manuscripts are represented as sets of variants. So the concept of "commonness of readings" means that the manuscripts under consideration have mostly the same set of variants.

[74] The variants unique to the group are those scribal errors initiated in the parent exemplar of the group. These unique readings occur nowhere else in the active database.

[75] Sibling witnesses differ from one another at those places of variation where one or the other has a newly initiated scribal error. Two siblings differ by the sum of the number of scribal errors newly initiated in each, including mixture introduced from sources other than the exemplar being reconstructed.

[76] Statistical majority among siblings is admissible, because they share equal genealogical status. Genealogical restraints do not overrule numerical statistics at the sibling level–those restraints have already been satisfied by determining that the manuscripts satisfy the condition of being children of the same exemplar. At this level, the laws of probability suggest that a given accidental variation is unlikely to occur more than once at the same place in sibling copies of the same exemplar. At the sibling level consensus is evidence of genetic inheritance.

has two branches only . . . we have here *variants*, between which it is not possible to decide on the lines of our procedure hitherto."[77] However, the principle of deferred ambiguity solves Maas' problem even where mixture occurs except in the very first generation where a next prior generation sibling does not exist. Readings having no evidence of genetic inheritance are instances of newly initiated error.

The Original Language Dominates

Where sibling witnesses are of different languages, the readings of witnesses in the original language of the text being analyzed (Greek for the New Testament) dominate. Under this condition, it is safe to assume that the witnesses in the non-original languages are translations made from the exemplar under construction, and that the witnesses in the original language are more likely to reflect the readings of their exemplar. Likewise, manuscripts in the original language dominate quotations of church fathers that appear to be sibling witnesses. Such quotations usually have a less reliable transmissional history than an extant sibling manuscript. This is in harmony with Aland's rule 5 that states: "The primary authority for a critical textual decision lies with the Greek manuscript tradition, with the versions and Fathers serving no more than a supplementary and corroborative function."[78]

An Exemplar May Replace the Witness of Its Descendants

A reconstructed exemplar may replace the witness of all its descendants in the genealogical reconstruction procedure, since it is the authority that accounts for their text. It has behind it the statistical probabilities of its descendants plus the confirming probabilities of its own siblings and cousins. Therefore, once an exemplar has been reconstructed it may serve as a primary witness to its own parent exemplar in place of the witness of its descendants. This enables the principle of primary witnesses to continue functioning as the reconstruction of the genealogical tree progresses. In the classical methodology Maas stated:

> It will now be obvious that a witness is worthless (worthless, that is, *qua* witness) when it depends exclusively on a surviving exemplar or on an exemplar which can be reconstructed without its help. A witness thus shown to be worthless . . . must be *eliminated.*[79]

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[77] Maas, 6.

[78] Aland and Aland, *Text*, 275.

[79] Maas, 2.

Graph Theory

Graph theory[80] provides a general mathematical model for computing the structure of graphs that map the interrelations of variables having defined characteristics. A tree is a special kind of graph that takes the shape of a trunk with branches; it is particularly suited for mapping genealogical relationships. Theoretically a tree is *acyclic*, that is, it has no cycles or closed loops. My genealogical theory provides for the possibility of multiple parents because of mixture; but while such multiplicity of parents does result in virtually closed loops, secondary parents identify the source of mixture but are blocked from contributing to the reconstruction process, so the term *tree* is suitable. Provided the available data is adequately distributed, and diversity and mixture are not too complex,[81] the theory is known to provide reasonably accurate solutions. This book presents the reconstructed genealogical history of the text of the Gospel of Matthew computed by software program Lachmann-10.8, based on 269 witnesses having 1,428 places of variation, derived from the textual apparatus in the Nestle-Aland 27th edition of the *Greek New Testament*. Good reconstructions have been made of the genealogical histories of the texts of all the other books of the New Testament which will be published in subsequent volumes.

General Solution

Although other possible approaches may be proposed for the solution of the problem, a genealogical tree-diagram (stemmatic) approach seems to be one that best fits the known history of document transmission. This approach uses tree-graph theory with genealogical restraints; that is, the diagram maps parent-child relationships based upon commonness of variant readings. A node of the diagram represents a parent exemplar[82] and a branch represents a child. Of course, apart from the common ancestral forefather, every parent is a child of some member of the immediately preceding generation. In this case, a parent is an exemplar from which copies were made, daughters are first-generation copies of the exemplar, and sibling

[80] See Frank Harary, *Graph Theory* (Reading MA, 1969). Line diagrams that look like networks connect the nodes (variables) according to their relationships. Graph theory can be applied in many different fields of study. Back in 1847 G. Kirchhoff applied graph theory to the solution of simultaneous linear equations which define the current in each branch and around each circuit of an electrical network (Harary, p. 2).

[81] Limitations on distribution and complexity of mixture are discussed in a later section.

[82] In this problem only one parent is involved except in the case of mixture. In cases of multiple parents, the primary parent exemplar contributes to the genealogical structure of the tree and the secondary parents are the sources of mixture.

daughters are multiple first-generation copies of the same exemplar. Apart from the possibility of correction, mixture, and scribal default, a daughter manuscript is expected to contain all the readings of its parent exemplar except where its own copyist initiated a variant.

Available Data

The data available for use in the reconstruction process are a set of manuscripts each having a unique name, date, language code, a set of variant readings, a set of parents, and a set of children.[83] Initially the parents and children are unknown, but are assigned as the genealogical relationships become defined. Apart from the parents and children, these data correspond initially with a complete critical apparatus. The data may be represented as follows:

In the preparation of the input data, for each variation unit (place of variation), the variant with the best support from internal evidence should be placed in first position.[84] For example, for variation unit 12, the variant with best support from internal evidence should be made 12.1. This enables the program to invoke internal evidence when the external evidence is ambiguous.

Reconstruction Procedure

The general construction of a tree-diagram graph (stemma) requires iterative procedures that reconstruct the remote branches into nodes[85] first, then intermediate branches into clusters of nodes, and so forth; until all the branches and nodes are assembled into one stemma. Because the initial database is incomplete (that is, the autograph and most of the intermediate manuscripts are missing), the solution must restore any missing nodes (exemplars) as they are encountered. Restored nodes must be added as an active element to the database.[86] The procedure exhaustively iterates through the following steps:

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[83] The database must be self-consistent, that is, every manuscript must have data for the same set of variation units. The database may be optimized by eliminating insignificant variation units and insignificant manuscripts, or by selecting the set of those known to be the most significant. Such optimizing may skew the resultant solution if done unwisely.

The database must exhibit good geographical and historical distribution, together with a proper numerical balance between manuscripts and variants. These restraints are discussed in a later section, together with the availability of such a database.

[84] Usually the variant chosen by the editors of the critical apparatus from which the input data is taken will have the best support from internal evidence.

[85] In this study, a node is an exemplar manuscript from which subsequent manuscript copies were made.

(1) Find the sibling daughters of the most remote undefined node (exemplar). This is accomplished by locating the most remote[87] unattached manuscript[88] in the database having maximum mutual affinity with some other unattached manuscript.[89] Its siblings are the unattached manuscripts in the active database having greatest mutual affinity with it.
Affinity consists of two components: (1) quantitative affinity and (2) a sibling gene. Quantitative affinity means that siblings have more readings in common with one another than they do with non-siblings.[90] A sibling gene is that set of readings siblings have that are unique to themselves: the variants newly introduced by their parent exemplar.

(2) Create an exemplar for the given sibling group. It is the manuscript whose readings best explain the existence of the sibling manuscripts in the newly assembled sibling group. For each place of variation, the following criteria determine the reading of the exemplar:[91]

(a) Majority consensus among all the immediate sibling daughters;[92]

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[86] This procedure adds the most important ingredient of directionality to the construction of the tree. It allows the tree to "grow" inversely from the branches to the trunk, picking up its missing intermediate nodes in the process. A missing node cannot be restored unless sufficient descendants have survived and are in the database to account for its existence. Thus the solution cannot accurately reconstruct a severely sparse branch, but may only approximate it.

[87] The concept of remoteness is complex and discussed in depth in Appendix A.

[88] In this context, the term *manuscript* refers to an extant witness or an exemplar previously created by the program as the head of a branch. By providing a common exemplar parent for sibling heads of branches, the procedure creates larger, more complex branches.

[89] This criterion of remoteness incorporates the canon of antiquity into the procedure. This does not exclude the possibility that a late manuscript could be a faithful copy of an early exemplar; such a manuscript will not exhibit close relationships with a truly remote branch. The complexities of remoteness, affinity, and sisterhood are discussed more thoroughly in Appendix A. This step is similar to a corresponding one used by Poole (p. 210-11), except that he does not employ the ordering criterion of the most remote undefined node.

[90] Quantitative affinity affirms that the siblings share the mutant variants of their common ancestors except in the places where the siblings differ from one another.

[91] Poole (p. 211) has a similar but not identical set of criteria.

[92] Statistical majority among immediate sibling daughters is admissible, because they share equal genealogical status. Genealogical restraints do not overrule numerical statistics at the sibling level–those restraints have already been satisfied by determining that the manuscripts satisfy the conditions of being potential immediate children of the same exemplar. This is true at the local level, but as the tree grows the branches become more independent of one another; and at the autograph level, the branches are the most independent. Thus, in the

(b) if one alternative is supported by siblings in the language of the text and the other alternative is not, grant consensus to the alternative supported the siblings in the language of the text;

(c) if no consensus, then postpone the decision until a sibling emerges for the exemplar currently being reconstructed, the sibling will have the inherited reading;[93]

(d) if, in the case of deciding the readings of the autograph, majority consensus fails, then accept the first variant (the NA-27 reading) if it is an option;

(e) if the first variant is not an option, then by default arbitrarily select the smallest variant number that is an option.[94]

In general, the above criteria should be expected to be consistent with scribal probabilities. The date of a newly constructed exemplar is defined as the date in the database immediately prior to the date of the oldest sibling daughter.[95] Its name is unknown, so a unique name is assigned to it. Finally the language of the exemplar is defined as the dominant language of the group; if any of the sibling daughters are in the language of the text, then the exemplar is assigned the language of the text.[96]

earliest generations, this criterion implements the canon of distribution: Consensus among remote independent witnesses is more likely to represent the reading of the autograph.

[93] I call this practice *deferred ambiguity*. Since sibling witnesses rarely have the same scribal error at a given place of variation, where the reading of one sibling is ambiguous—that is, it is uncertain which of two readings is the inherited reading and which is a newly initiated error—the other siblings will have the inherited reading.

[94] Next to the first variant—the NA-27 choice—the reading with the smaller variant number is usually supported by more witnesses than those with larger variant numbers. While this option is purely arbitrary, it turns out to be rarely significant for determining the readings of the autograph. For determining the readings of the autograph the algorithm treats the exemplars of the last five branches to be constructed as siblings constituting the ancient independent witnesses.

[95] The actual date of a reconstructed exemplar will be unknown, but it will be older than its oldest daughter. It is safe to date the exemplar to the date of its nearest potential sibling—the date in the active database next prior to its oldest daughter. The default value is 50 years prior to its oldest daughter. When dates approach the first century, the default generation gap is progressively diminished.

[96] The language criterion adds another ingredient to directionality. A translation is obviously subsequent to the exemplar from which it was made.

(3) Add the newly created exemplar to the database. Mark the sibling daughters as attached to the exemplar as direct descendants, and remove them from the active database because their genealogical descent has been determined.[97]

Iteration

The reconstruction procedure iterates through these three steps exhaustively until only three unattached exemplars remain; these last three exemplars are made the first generation, and the autograph is constructed as their parent exemplar.[98]

Resultant Tree-Diagram

Each iteration of the solution produces a node of the tree (representing an exemplar) with two or more children (representing copies). In the process of producing branches, it systematically connects closely related branches together into larger, more complex branches, until it constructs the complete stemma. In displaying the stemma, the best way to indicate the degradation of the text is to note in the individual boxes (nodes) only those variants by which a copy differs from its exemplar. A copy is understood to contain all the mutant variants of all its ancestors unless otherwise indicated.

Maximum Statistical Probability

This solution takes advantage of maximum statistical probabilities. A manuscript bears primary witness to its immediate parent exemplar, and secondary witness to more remote ancestors and relatives. Thus a sibling group provides the strongest witness to the identity of its exemplar, bearing unanimous consent (100% probability) to most of its readings, and majority consent (> 50% probability) to nearly all the others. Furthermore, the very nature of genealogical descent guarantees that even the statistically weak readings–those that are selected for an exemplar by the procedure but that lack strong support from the statistics of the exemplar's descendants–will be confirmed by the exemplar's own siblings, cousins, or aunts. Therefore, an exemplar reconstructed by this solution is a statistically optimal representative of its descendants, and the solution procedure is justified in letting an exemplar stand in place

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[97] Poole (p. 211) follows a similar step. The siblings are removed from the database where further construction of the tree is concerned.

[98] Poole (p. 211-12) followed a similar iteration, except that he stopped when the number of remaining manuscripts reaches four. Actually, the number of original first generation exemplars is not know. I chose three because of the greater chance of having majority consensus. It should stop before the iteration converges because the genealogical relations become less explicit and majority consensus becomes less likely. Consensus among the three earliest independent witnesses turns out to be a good compromise.

of its descendants in subsequent statistical calculations. Nothing of statistical value has been lost in doing so.

Moreover, because the procedure always reconstructs from a sibling group to a parent exemplar, it always calculates from primary witnesses and with optimal statistics. Therefore, ideally the solution is based on the best possible statistical probabilities. Unfortunately, the ideal may be frustrated by inadequacies in the database that prevent best external evidence of genetic inheritance at the needed time, or by incidents in the history of the text that went contrary to logical expectation. Such frustrations may result in a less than optimal solution.

Restraints on the Theory

As with any theory, this one must operate within reasonable restraints. However, the type and complexity of the genealogical relationships are not predetermined, except that simple genealogical descent is expected,[99] with possible mixture.[100] If the complexity of the genealogical relationships departs radically from this expectation, then the probability of an accurate solution diminishes. No solution will be found for a collection of manuscripts having no genealogical relationships; and if the manuscript evidence matches Pickering's model,[101] all manuscripts would be identified as direct, first-generation children of the autograph.

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[99] Simple genealogical descent means that a manuscript was copied from only one exemplar and contains most or all of that exemplar's inherited defects. It does not exclude accidental or deliberate alterations introduced by the copyist. The work of the hand of a later corrector must be regarded as a separate witness to the text of the exemplar from which correction was made, assuming of course that the correction included every place where the manuscript differed from the correcting exemplar.

[100] Mixture means that the copyist had two or more exemplars before him from which he picked readings according to some unknown criterion. Mixture is not to be confused with correction as discussed in the preceding note. Mixture produces a hybrid text; correction produces a new witness to an alternate exemplar. Mixture of this type is expected but not extensively. In any case, mixture from a single source will not exceed fifty percent of the newly initiated variants, because, by definition, the primary parent exemplar is the one from which the sibling daughters inherit most of the new variants.

[101] Pickering described his model as "a swelling stream of faithfully executed copies emanating from the holders of the Autographs" (p. 134). Personal correspondence with him seems to indicate that he regards this as an over-simplification. He does not mean to imply that there are no genealogical relationships among the manuscripts.

In order for the solution to be a reasonable approximation of the actual transmissional history of a given text, restraints must be observed on the number and distribution of the manuscripts and variant readings used in the database. Restraints also must be observed on the completeness of the manuscripts. A solution is no better than the quality of the data used to derive it; and in every case it is merely an approximation of the actual transmissional history, being based on a sample of the history, not on a complete set of historical details.

Manuscript Distribution

The database should have manuscripts representing the entire spectrum of the genealogical history of the given text–that is, manuscripts from every available time period and every available textual tradition. The object is to have a good representative group for every possible branch of the tree. Sparsely represented branches cannot be accurately reconstructed. The witness of an ancient version may be treated as a manuscript as long as the translation is not a paraphrase and can be directly related to one of the variant readings at the related place of variation. However, nothing in a version that is peculiar to the language of translation should be allowed to dominate linguistic features of the original language itself.[102] The quotations of a patristic father also may be treated as a manuscript if the witness is relatively complete; but this involves the assumption that the father always cited from the same manuscript.[103] The composite witness of ancient versions and textual traditions, such as the Byzantine tradition, the Latin Vulgate tradition, the Old Latin traditions, etc., may be treated as individual manuscripts, because a composite witness is the equivalent of an exemplar that explains the origin of the version or text tradition. In addition to the composite witnesses, individual manuscripts of those traditions should be included when available.

Currently available critical apparatuses do not fully meet this desired distribution. The Nestles-Aland 27th edition provides a moderate number of variation units, and a moderate number of manuscript witnesses.[104] The *United Bible Society Greek New Testament* (fourth revised edition) provides a moderate number of manuscript witnesses, but a limited number of

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[102] This is accommodated by the language restraint on the algorithm that prevents a version from overruling a sibling manuscript in the original language.

[103] If the father quoted from a source not in the original language, the language restraint on the algorithm also prevents a foreign language father from overruling a manuscript in the original language.

[104] For the Gospel of Matthew, the NA-27 textual apparatus presents 269 witnesses with 1,428 places of variation.

variation units. The critical apparatus being produced by the International Greek New Testament Project promises to provide a relatively good database, and Aland's *Text und Textwert der griechischen Handschriften des Neuen Testaments* will provide an extensive apparatus when complete. My original research was conducted using the *UBSGNT*[3] because it provides the best balance of manuscripts and variation units; however, the data for use in the computer had to be manually transcribed, making extensive study prohibitive. With the recent publication of the *Stuttgart Electronic Study Bible*, the textual apparatus of the NA-27 *Greek New Testament* was made available in electronic digital form. The textual data used for this current study is derived from that electronic source. Chapter Four describes how that database was expanded and transformed into the input format required by program Lachmann-10.

Variant Distribution

Where the size of the database is restricted by a memory limitation in the computer, the number of variant readings may have to be restricted.[105] The set of variant readings used for reconstructing the genealogical history should be those regarded as the most significant. Minor spelling variations and the most common scribal errors should be weeded out first, then the less common scribal errors. The largest number of variant readings possible should be used.

Number Distribution

The number of manuscripts in the database limits the maximum number of branches of the family tree, and the number of variant readings limits the maximum number of nodes in the tree. If the number of manuscripts greatly exceeds the number of variant readings, then the tree will have few nodes each with numerous children. If the number of variant readings greatly exceeds the number of manuscripts, then enough nodes will develop to define the genealogical relationships of the manuscripts, and the variant readings will cluster in groups in the exemplars where they appear to originate. Thus the smaller number between the number of manuscripts and the number of variant readings limits the maximum detail of the family tree diagram resulting from the solution. So a balance between the numbers provides the greatest detail for a given database size.

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[105] The present version of program Lochmann-10 will accept any problem with up to 2,000 variation units, and with a maximum of 2,000 manuscripts, including those generated by the program itself. With the availability of extended memory on the more advanced computers now on the market, size does not seem to be the problem. But large problems will take quite a long time to solve. Presently, the solution for the Gospel of Matthew took a little over one minute.

Manuscript Completeness

The database must be self-consistent; that is, every manuscript must have data for the same places of variation. The data for every manuscript must be essentially complete; that is, every manuscript should have a reading for every place of variation used in the database. A few lacunae may be tolerated. A missing reading is potentially a match for every variant of a given place of variation. A manuscript less than about 60% complete tends to encumber the reconstruction. Such incomplete manuscripts may be included in the database, but the computer algorithm must exclude them from the basic computations, and then place them in their most likely branch after the genealogical tree has been constructed. Chapter Four discusses how well the NA-27 textual apparatus used in this study meets these restraints.

Special Considerations

Several complications encumber the reconstruction of tree graphs. These require special consideration: (1) directionality, (2) sparse witnesses, and (3) the existence of recensions.

Directionality

As Poole pointed out, any point in a stemma "is capable of being treated as the origin of all other points, without logical inconsistency with the data."[106] His conclusion was that the directionality of a stemma cannot be determined by a computer. This is not entirely true in the case of literary textual criticism, because the direction of a genealogical stemma of manuscripts will be oriented with history. That is, early manuscripts will tend to be genealogically nearer the autograph than late ones. Furthermore, an exemplar will always be older than its dated sibling daughters. Thus, by ordering the iterations of the construction of the tree from remote branches back to the trunk, the resultant stemma will possess historical directionality. This procedure involves the use of estimated dates for restored exemplars that may add some degree of uncertainty, but the presence of extant manuscripts with real dates tends to stabilize the orientation with true history. Furthermore, the language criteria and principle of genealogical inheritance reinforce the directionality provided by date.

Important internal evidence also contributes to determining the directionality of a tree. Versions must always descend from an earlier source in the language of the text. Also at any node in the stemma the reading that has the greatest external evidence of genetic inheritance is

[106] Poole, 207.

more likely to be the earlier one. With all these details taken into account, the exemplar that emerges as the trunk of the tree is most likely to be the autograph. Naturally some degree of uncertainty remains, but the uncertainty is no greater than, and is likely to be less than, the uncertainty inherent in the eclectic method and other approaches to textual criticism.

Incomplete Manuscripts

Fragmentary manuscripts having less than 60% of the readings utilized in the database cannot be used by the reconstruction procedure to recover the structure of the stemma. However, such a manuscript can be treated as a "maverick" and located on the completed tree according to the "genetic code" evident in its extant variant readings. Its date provides a fixed point in history that helps control the temporal directionality of the tree.[107] The algorithm marks the maverick manuscripts and restricts the way in which they may contribute to the reconstruction of the stemma.

Recensions

If the history of the text of a document involved only simple scribal discrepancies, the diversity between the developing branches would remain relatively limited. However, experience has shown that radical recensions occurred in the history of the Greek text of the books of the New Testament. A branch is recognized as such a recension by its significantly greater diversity from other branches. However, as it turns out, the software properly places a recension as a branch at the point of its origin in history, because it will have greatest affinity with its siblings in spite of its diversity.

In reconstructing the genealogical history of large books, diversity tends to increase as the tree approaches the earliest generations. What is happening is that the software has isolated several relatively independent ancient recensions. Consequently, the software is designed to stop when only three unattached branches remain. It creates the autograph as the parent of the remaining unattached branches based on the principle of "consensus among ancient independent witnesses." The heads of these three branches thus become the hypothetical first generation children of the autograph. The genealogical history of the text prior to this hypothetical first generation is too diverse to be defined. But the evidence of mixture between these first generation recensions indicates that some earlier history does indeed exist. The

[107] "Mavericks" are attached as a child to the exemplar in the tree where it fits closest for genetic affinity. A problem exists when a witness is extremely fragmentary. In this case there are insufficient readings to place the witness in the tree with any degree of certainty.

software creates *virtual exemplars* between the autograph and the first generation witnesses that account for this mixture, but the place of the virtual exemplars in history remains undefined and not part of the genealogical stemma.

The software tends to build only one or two prominent branches alongside of some relatively minor branches. However, the minor branches represent ancient independent witnesses even though their surviving descendants are relatively sparse. Two lines of evidence support the early date of these minor branches, especially the apparent late ones: (1) they receive mixture only from very early sources, and (2) they are sources of mixture for witnesses much earlier than the date of their earliest extant witness.

Resolving Mixture

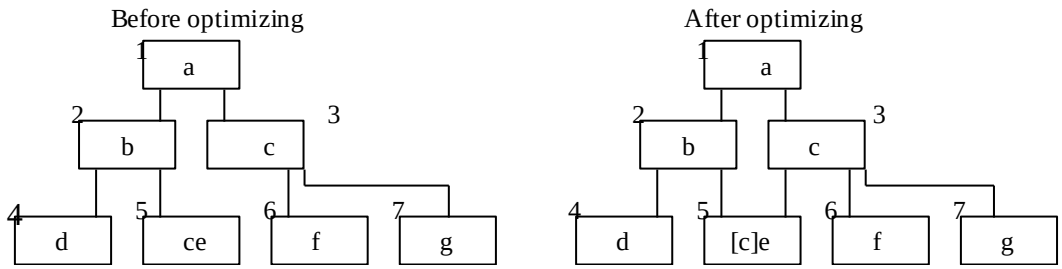
Resolving mixture amounts to detecting its presence, locating its source, and connecting its source as a secondary parent of the witness where the mixture occurs. Unresolved mixture in a branch is understood to be present whenever manuscripts[108] in the branch have variants that are not explained as being inherited from their primary ancestors–that is, a new variant reading has been introduced more than once into the branch. It may be taken for granted that a new variant is expected to be initiated only once in a given branch. The ultimate goal is to construct the branch so that new variant readings are introduced into the branch only once, other instances of the variant being explained as mixture. Three sources of mixture may occur within a branch: (1) mixture from a currently existing apparent aunt; (2) correction from a direct ancestor; or (3) mixture from a currently non-existing secondary parent—I refer to this type as same generation mixture.

Aunt Mixture

Within a given branch, two or more manuscripts may each introduce a common new variant–that is, each manuscript has the same reading that is not explained as having been inherited from its immediate parent exemplar. Whenever one of these manuscripts is the aunt of the others,[109] then the aunt may be regarded as the source of mixture and made a secondary

[108] The term "manuscript" is used here to refer to either extant manuscripts or to exemplars created by the computer unless otherwise indicated. I have chosen not to let an extant manuscript become an exemplar in order to simplify certain software procedures. If an extant manuscript actually could be an exemplar, it would appear in the tree as a flawless daughter of the parent exemplar the software created.

parent of the niece. This may be extended to apparent second, third, and fourth generation aunts, and beyond. The following figure illustrates the procedure:



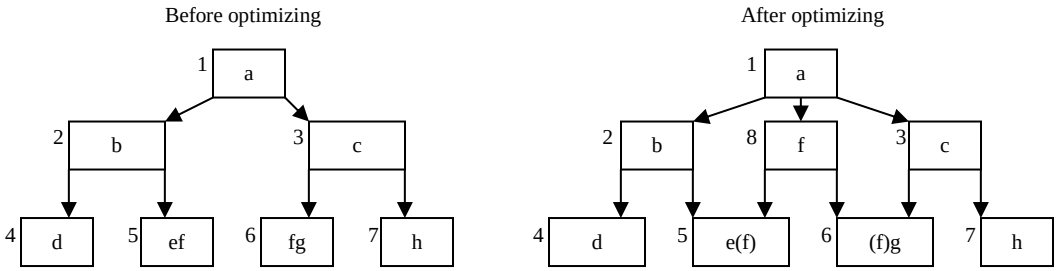
In this illustration, MS 1 is the head of the branch under consideration. MSS 2 and 3 are first generation daughters of MS 1, each containing the reading(s) *a* of the head and introducing their own unique and newly introduced variant(s) *b* and *c* respectively. MSS 4 and 5 are first generation daughters of MS 2, each containing the readings (*a* and *b*) of their parent MS 2, and introducing their own newly introduced variant(s) *d* and *ce* respectively. MSS 6 and 7 are first generation daughters of MS 3, each containing the readings (*a* and *c*) of their parent MS 3, and introducing their own newly introduced variant(s) *f* and *g* respectively. The problem is that variant(s) *c* are introduced twice in the branch, once in MS 3 and again in MS 5. But MS 3 is an aunt of MS 5, so MS 3 can be made a secondary parent of MS 5, thus resolving the unaccounted for mixture. The *c* in MS 5 is enclosed in brackets to indicate it is the result of mixture and not the initiation of new variant(s); consequently it is not counted in the computation of complexity. The same procedure applies to more remote apparent aunts. I refer to this kind of mixture as "diagonal" or "aunt" mixture because it involves mixture between genetically related witnesses within the same branch but in different generations. Actually, this same procedure also works with the second type of mixture—correction from a direct ancestor; in this case the apparent aunt is in fact an ancestor.

Cousin Mixture

Within a given branch, two or more manuscripts may each introduce a common new variant–that is, each manuscript has the same reading that is not explained as inherited from its immediate parent exemplar. Whenever two or more of these manuscripts are cousins,[110]

[109] A manuscript is an aunt of another when its parent is the grandparent of the other one. This relationship may be extended to earlier generations, so that the aunt's grandparent may be the great grandparent of the niece, etc. So the apparent aunt relationship may be generalized to include a known relative of an earlier generation that is not a direct ancestor.

then the above "aunt" resolution will not work, but a new "aunt" exemplar may be created that will be a secondary parent for both cousins. The new exemplar will be made a daughter of the nearest common ancestor of the cousins. It will have the readings of the common ancestor except for the readings mixed into the cousins. The result will be that the cousins will become half-siblings, with their common readings accounted for by their new secondary parent. This may be extended to apparent second, third, and fourth generation cousins, and beyond. The following figure illustrates the procedure:



In this example, MS 1 is the branch's head that accounts for common reading(s) *a* in every MS in the branch. MS 2 accounts for reading(s) *b* common to MSS 4 and 5; and MS 3 accounts for readings *(c*) common to MSS 6 and 7. However, before resolving mixture, MSS 5 and 6 also have common readings *(f*) not accounted by their current parents, and they are cousins. The software creates a new exemplar, MS 8, a direct descendant of the nearest common ancestor (MS 1) of MS 5 and MS 6, with readings (*a*) inherited from MS 1 except for readings (*f*), the mixture found in MS 5 and MS 6. This new exemplar is made the secondary parent for MSS 5 and 6, thus accounting for their common readings (*f*). Thus MSS 5 and 6 are identified as experiencing mixture from multiple parents. The cousins have become half-siblings or second cousins or third cousins, depending on how many generations the common ancestor is removed from them. I refer to this kind of mixture as "same-generation" because it involves mixture in the same generation with no apparent source. I refer to the exemplars created to resolve same-generation mixture as *virtual exemplars* because they do not contribute to the primary structure of the tree diagram.

When, in the last step of reconstructing the stemma, the mixture resolving procedure operates on the entire genealogical tree, the software will create virtual exemplars between the

[110] Manuscripts are cousins if they are in the same generation and have a common ancestor–that is, they have a common grandparent, great grandparent, etc. This relationship may be generalized to include manuscripts that are in the same generation with respect to their descent from a common ancestor (not a parent) in the branch.

autograph and the first generation exemplars. These virtual exemplars are the sources of mixture otherwise unaccounted for. Some account for common scribal errors that happen frequently and randomly without any genetic explanation; others account for the unknowable genetic relationships in the earliest history of the text. It is true that the actual sources of mixture cannot be known, but the above procedures provide the most likely sources, being those having the shortest genetic distance from the witness experiencing the related mixture.

Tests and Verification

The software implementation[111] of this theory has been successfully tested with five large test problems (see Chapter Three) as well as all the books of the Greek New Testament. In addition it was tested on the Greek text of the translation of the Old Testament Book of Ecclesiastes the textual data for which was supplied by Peter Gentry.[112] The results have been pleasingly successful. The stemmata exhibit a good degree of mutual consistency, verifying the commonly accepted ancient text types (Alexandrian, Western, and Antiochan)[113] as well as others; and they demonstrate the late, secondary origin of the Byzantine tradition. They suggest that the text of the Greek New Testament experienced significant degradation in its earliest history but relatively simple degradation thereafter involving only a limited amount of mixture and recensional activity. Poole correctly observed that

> In any experiment based on genuine material, there is of course no possibility of comparison of the results with any archetypal text, for none is extant. The only practical verification must therefore be by comparing the results from different bodies of data, to find whether they are consistent.[114]

The problem of verification has been attempted and the results of the textual history of the Gospel of Matthew are reported in Chapter Six of this book, and the textual history of

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[111] The present program is written in Turbo Pascal 7.0 intended for IBM compatible machines with extended memory. The size of the problems it can handle is flexible and is limited only by the amount of RAM available and the speed of the machine [up to a maximum of 2,000 variation units and 2,000 manuscripts]. Large problems require a reasonable amount of time to converge on a solution.

[112] Dr. Peter J. Gentry, Professor of Old Testament Interpretation, The Southern Baptist Theological Seminary, 2825 Lexington Road, Louisville, KY USA 40280

[113] However, these text traditions, while exhibiting a measure of independence, do not always appear as the earliest independent witnesses.

[114] Poole, 213.

Greek Ecclesiastes in Chapter Eight. The genealogical histories of the other books of the New Testament have been derived and they exhibit the kind of consistency expected between books having similar but independent histories. Although the consistency among the stemmata for different books is very encouraging, the task remains to verify the consistency among different databases for the same books. However, the distribution of the variants in the current stemma for Matthew suggests that such verification is likely.

An initial study of the results of different textual theories has been incorporated into the NA-27 database used in this project in order to compare the autographic texts determined by those theories with the autographic text derived by the present genealogical theory. This was accomplished by including the autographic texts derived from each theory as a witness in the database.[115] The texts used in the comparison were: (1) Scrivener's *Textus Receptus*,[116] (2) the *Majority Text* of Hodges and Farstad,[117] (3) the *Byzantine Textform* of Robinson and Pierpont,[118] and (4) the NA-27 text itself. For the Book of Ecclesiastes, the autographic text derived by Peter Gentry was used.

As expected and predicted by traditional textual critics, the *Textus Receptus*, *Majority Text*, and *Byzantine Textform* all appear as late descendants of early recensions. Interestingly, the NA-27 text also appears as a sixth generation descendant of an early recension (the Egyptian); this finding probably is the result of the NA-27 textual editors depending too heavily on Egyptian witnesses where objective genealogical evidence was sufficiently strong to indicate otherwise.

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[115] These witnesses were restricted from contributing the reconstruction of the genealogical history; they were inserted into the tree where they had the greatest genetic affinity after the tree was derived.

[116] F. H. A. Scrivener, *Η ΚΑΙΝΗ ΔΙΑΘΗΚΗ: The New Testament, The Greek Text Underlying the English Authorized Version of 1611* (London: The Trinitarian Bible Society, n.d.; reprint of the Cambridge University edition of 1902).

[117] Zane C. Hodges and Arthur L. Farstad, *The Greek New Testament According to the Majority Text* (Nashville: Thomas Nelson Publishers, 1982).

[118] Maurice A. Robinson and William G. Pierpont, *The New Testament in the Original Greek, Byzantine Textform* (Southborough, Massachusetts: Chilton Book Publishing, 2005); Robinson refers to this theory as the "Byzantine Priority" theory.

Alleged Limitations of the Genealogical Method

Bruce Metzger discussed several computer approaches (including my early studies as reported in *Grace Journal*) to reconstructing genealogical stemmata for ancient literary works. He concluded:

> The limitations of taxonomic investigation are obvious. Although the method may show the degree of affinity, it cannot rank the witnesses in the order of merit. The sole operative criterion in the analysis is the unambiguous one of likeness and difference, which has nothing to do with the goodness or badness of the reading under consideration. All that the numerical process has achieved is a sorting of material that proves refractory to the conventional logic of the stemma. In other words, at some stage of the process, the evaluation of individual readings must be made on the basis of a combination of external evidence and internal considerations, scribal and/or intrinsic.[119]

While his criticism may seem obvious for some methods he evaluated, it certainly is not so for the method outlined in this book.

Order of Merit

The very fact that the method arranges the witnesses into a genealogical stemma is evidence of an order of merit. The merit of each witness, including reconstructed exemplars, is based on the number of generations it is removed from the autograph and the number of errors it has accumulated in the process. These are objective values that transcend subjective judgments about how many of its readings are "good" or "bad." A reading is "good" only if it has been inherited from the autograph; all others are "bad" regardless of how good they may seem subjectively. Scribal errors often consisted of substituting what seemed better for what seemed bad. Variant genetic inheritance supersedes apparent goodness.

Likeness and Difference

It is true that the present theory and methodology employ the test of "likeness and difference" in reconstructing genealogical history and recovering autographic readings. At any place of variation, readings are either the same or different; manuscripts are either the same or different. But the degree of sameness or difference of witnesses is an objective measure of genealogical affinity the value of which may range from 0 to 100%. Such measurements do not result in simple "yes" or "no" answers, but provide the evidence necessary to make intelligent decisions. In the process of reconstructing a parent exemplar for a group of sibling daughter witnesses, at any place of variation where the sibling witnesses agree, the reading of

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[119] Bruce M. Metzger, *The Text of the New Testament: Its Transmission, Corruption, and Restoration*, 3rd enlarged edition (New York: Oxford University Press, 1992), 286.

the exemplar is certain, regardless of how "good" or "bad" it may be judged subjectively. There is no doubt that the reading has been inherited from the parent exemplar. Doubt arises only in those places where the sibling witnesses differ; there the decision must be made as to which reading is inherited and which one is a newly initiated error—regardless of how "good" or "bad" each may seem. As previously discussed, an inherited reading is found in other branches external to the sibling group and newly initiated errors are not. Thus an unambiguous objective same/different test determines variant inheritance without a "good" or "bad" subjective judgment. A problem exists only where the same/different test fails to unambiguously determine variant inheritance, but experience indicates that the principle of *deferred ambiguity* consistently distinguishes the inherited reading from a newly initiated one.

Goodness and Badness

At the local level, where a parent exemplar is being reconstructed, a reading is "good" when it has been inherited and "bad" when it has been newly initiated scribal error. This statement is true whether the reconstructed exemplar is the head of a small remote branch or of a large branch genealogically near the autograph. Ultimately, a reading is "good" when it is inherited from the autograph and "bad" otherwise—regardless of whether the reading seems subjectively "good" or not. However, Metzger is right when same/different tests fail to unambiguously determine inheritance. In this case, internal evidence must answer the question of inheritance—goodness. Because of the subjective nature of internal evidence, it is next to impossible to provide software algorithms to emulate the decision making process involved in evaluating internal evidence. Nevertheless, what cannot be done directly can be done indirectly. In those few places where the objective same/different tests fail to unambiguously determine inheritance, the software of Lachmann-10 defaults to the reading preferred by the NA-27 textual editors, thus indirectly using the witness of internal evidence and the editors' judgment of goodness. In this study of Matthew, of the 88,836 times the software made a decision about an exemplar reading, 81,792 were made by consensus, 1,915 were made by language preference, 4,218 by deferred ambiguity, 831 by appeal to internal evidence (NA-27), and 80 by arbitrary choice; the last two types were in regard to the readings of the autograph. Of the 1,428 places of variation, consensus determined the autographic reading 1,423 times, internal evidence none, and arbitrary choice 5 times.

CHAPTER 3
TESTING THE THEORY
AND ITS IMPLEMENTATION

This chapter reports the results of tests carried out to determine the accuracy of the genealogical theory of textual criticism as implemented on the computer software application known as Lachmann-10. The study consisted of running the software on large test problems of predetermined genealogical history. A separate software program called *Tester* created test problems the genealogical structure and complexity of which correspond as closely as possible to that of actual texts. After constructing a complete stemma having a predetermined genealogical history and autographic text, it recorded the data of only the terminal witnesses[1] as input for Lachmann-10. For each of the terminal witnesses, the recorded data consisted of its name,[2] date, and its reading at each place of variation. No information of any kind was preserved or recorded for the autograph or any of the non-terminal witnesses. This kind of information corresponds to the data available from the surviving manuscripts of actual ancient documents. The recorded input data of each test problem was fed to Lachmann-10 which attempted to recover the genealogical history from these data. The study reveals the level of success of the theory and its software implementation.

Fundamental Weaknesses

Before evaluating the theory by test problems, it is appropriate to acknowledge in advance the potential weaknesses of the theory regardless of the test problems it addresses. The theory is based on the fundamental assumptions that witnesses (1) having maximum

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[1] A terminal witness is the last manuscript at the terminal end of any branch of the tree diagram defining the genealogical history of an ancient text. The extant manuscripts of an actual ancient text are terminal witnesses.

[2] The name contained a code that identified the location of each witness in the original stemma so that the accuracy of the reconstructed stemma could be verified. The code in the name was not used in the reconstruction procedure.

affinity,[3] and (2) sharing the textual variants of a common potential parent exemplar,[4] can be regarded as sibling daughters of that potential parent exemplar. It is possible that quantitative affinity may exclude a sibling that differs from its parent exemplar by a large number of variants (as in the case of a radical recension). However, experience indicates that the quantitative magnitude of the differences between siblings is relatively insignificant, because with respect to non-sibling witnesses, the number of differences will always be greater than the difference between siblings. The complexities of determining sisterhood are discussed further in Appendix A.

It is also possible that a sibling gene will fail whenever the scribe who copied a manuscript made no errors. What happens in that case is that the errors that originated in the grandparent exemplar show up as those of a parent, allowing the possibility that an aunt may be erroneously identified as a sibling. This is not catastrophic, because the grandparent is in the same genetic line of descent of the branch being reconstructed.

It is also possible that quantitative affinity and a sibling gene may both fail, leaving no evidence for determining genealogical relationships. This condition could happen in the rare case when a branch of the tree is completely genealogically independent of the other branches. Ideally, the genealogical theory prefers independent witnesses like this; one of the theory's basic principles is "consensus among ancient independent witnesses."

Creating Test Problems

A separate program called *Tester* was designed to create test problems of predetermined size and complexity. Five test problems were created according to specified conditions.[5] The data of the terminal witnesses of each problem were recorded as input for

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[3] That is, maximum mutual quantitative affinity. Quantitative affinity is based on a same-different count. In the software implementation, quantitative affinity is measured as the inverse of the number of places where the readings of a manuscript differ from those of a potential sibling.

[4] That is, a sibling gene. Sibling witnesses are the only ones that have inherited the textual errors initiated in their immediate parent exemplar. Of course the children may each have their own children, but the software algorithm will have already identified their children and excluded them from further consideration in the database. This happens because the algorithm always works on the most temporally recent unattached branch of the genealogical tree.

[5] The specified conditions consist of a predetermined text, a predetermined genealogical descent, and a predetermined placement of predetermined variants. The predetermined knowledge of the genealogical history of

Lachmann-10 without any external indication of their genealogical relationships. Lachmann-10 then reconstructed a genealogical history of each problem, and the resultant reconstructed history was compared with the predetermined history. The test problems were created larger in size than any text encountered in the textual apparatus of the NA-27 Greek New Testament. This was done to prevent size from being a limiting factor. Each test problem had 2,000 places of variation (Luke has 1,920), and a number of witnesses usually greater than those found in the NA-27 (Matthew has 269). The result of the comparison provides a measure of the success of the program.

The creation of the problems began with an autographic text having 2,000 places of variation with predetermined readings. Three first generation copies were the head exemplars of three main branches of the stemma of the genealogical history being created. Seven different types of non-uniformity were incorporated in the problems: (1) Non-uniform number of daughters; that is, some exemplars had two daughters and some had three. (2) Non-uniform propagation of branches; that is, some daughters of an exemplar failed to propagate further generations. (3) Non-uniform branches; that is, each of the main branches had propagated a different number of generations. (4) Non-uniform genealogical ancestry: that is, each exemplar had mixture introduced from a genetically alien source. (5) Non-uniform number of variants; that is, sibling witnesses had a different number of variations from its parent exemplar. (6) Non-uniform dates: that is, the autograph was assigned the date of AD 100[6] and sibling witnesses had dates subsequent to their exemplar differing by 50 or 100 or 150 years. (7) Non-uniform preservation of terminal witnesses: that is, varying percentages of terminal witnesses were excluded, simulating the uncertain distribution of witnesses for actual ancient texts.

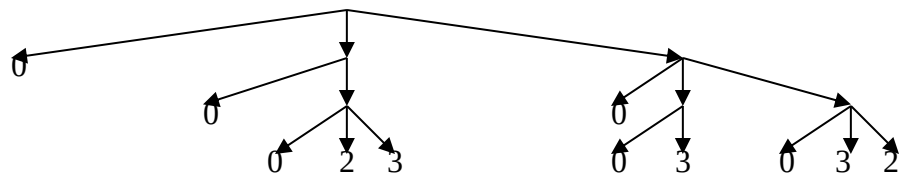
Non-Uniform Propagation of Branches

The problems were created with a non-uniform propagation of branches for each exemplar. That is, in each succeeding generation, one daughter of each exemplar ceased to propagate, leaving the non-propagating daughter as a terminal witness. The following tree diagram represents the first three generations of the exemplar of one of the first three branches

the test problem provides an objective means for measuring the success of the software's reconstruction of the history and the recovery of the autographic readings.

[6] This date is rather late; New Testament autographs are earlier. This date was chosen for the convenience of the software.

of the problem having either two or three daughters, where the numeral specifies the number of daughters in the next generation:



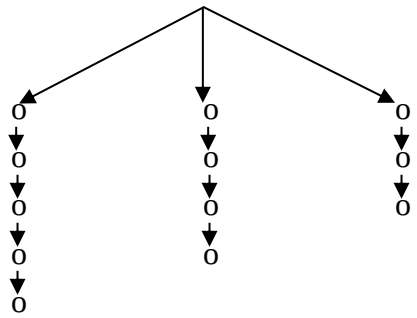
(and so forth)

This type of non-uniformity tested the theory and software for how well it handled the presence of extant witnesses dispersed throughout time in the history of a branch.

Non-Uniform Branches

The problems were created with a non-uniform number of generations in each of the three main branches. That is, in each succeeding generation after the second, one of the main branches ceased to propagate and died out, leaving its last generation children as terminal witnesses.

This type of non-uniformity corresponds with what is observed in the history of the so-called text types. The Byzantine tradition dominates in both quantity of witnesses and longevity of propagation. This non-uniformity tests the ability of the theory and its software to handle this real-life difficulty. The following tree diagram illustrated this non-uniformity, but it shows only the main line of the branches without showing the side branches:



etc.

Mixture

The problems were created with the presence of mixture. That is, in addition to the specified number of places where a witness inherited the variant readings of its parent

exemplar, another variant was introduced which was borrowed by mixture from an earlier genetically alien source. This non-uniformity tests the ability of the theory and its software to detect and handle mixture.

Recensions

The problems were created with a recension in three different branches. While the ordinary witnesses had between four to ten variants each (plus an extra one from mixture), a recensional exemplar had 300. This type of non-uniformity tests the software's ability to correctly locate a recension in its proper place in history.

Non-Uniform Number of Variants

The witnesses had a different number of newly initiated variants ranging from four to ten, with an occasional zero representing a lacuna. This non-uniformity corresponds to the situation in actual ancient texts; manuscripts have no predictable number of variations from their parent exemplar. This non-uniformity complicates the means for measuring both quantitative affinity and a sibling gene. It tests the software's ability to correctly operate with textual characteristics having unpredictable rather than fixed values.

Working with Test Problems

Five such test problems were created with the same autographic text and the same genealogical history except for the number of terminal witnesses that survived history. Each had 2,000 places of variation with a stemma constructed of 532 genetically interrelated witnesses as described above. 201 of the witnesses were exemplars and 331 were terminal witnesses. After the problems were created, all 201 exemplars were eliminated, leaving only the 331 terminal witnesses with no evidence of their genealogical relationships. Each test problem was the same except for the degree of paucity of terminal witnesses. Test 1 had 100% of the 331 terminal witnesses. Test 2 had 80% (265); test 3 had 75% (248); test 4 had 67% (222); and test 5 had 50% (165).

Lachmann-10 was able to reconstruct a genealogical stemma for each test problem, recovering over 99% of autographic readings in each case. However, while it did correctly reconstruct the branches of the later generations, it did not perfectly reconstruct the predetermined stemma in its early generations. There, reconstruction became progressively less accurate as the percentage of terminal witnesses declined. Even so, the recovery of the autographic readings remained essentially the same.

Working with Actual Texts

Unlike working with predetermined test problems, reconstructing the genealogical history of actual texts is different because their autographic readings and genealogical history are unknown. But certain expectations of a reconstructed stemma exist based what is already known about the extant witnesses of a given text and its history. Likewise, other expectations exist based on common sense. The general relationship of the extant witnesses to the text has been determined by textual scholars who have categorized them into genealogical groups. Also, each extant witness has an approximate historical date to which the directionality of the stemma may be compared. In addition, it is expected (1) that all but the most common scribal errors would be initiated only once in the stemma, all others being explained as mixture; (2) that most ambiguities may be resolved by the principle of deferred ambiguity; and (3) that most variants experience hereditary persistence. Lachmann-10's reconstructed genealogical history for the New Testament books of Matthew, Mark, and 2 Corinthians meet these expectations quite well, and the remaining New Testament books appear to do so without as much scrutiny. The same is true of the Greek translations of the Old Testament Book of Ecclesiastes.

Finally, the autographic readings of the text have been determined by others following different textual theories; these texts may be compared with each other and with Lachmann-10's recovered autograph. Unfortunately, for the New Testament books, Lachmann-10's recovered autographic readings do not compare well with those recovered by alternate theories because of the significant differences of underlying presuppositions. The same is not true for Ecclesiastes. Peter Gentry followed a similar genealogical theory, so his recovered autographic text of Ecclesiastes agrees with that of Lachmann-10 over 95% of the time. The remaining chapters describe in depth the reconstructed genealogical history of Matthew and Ecclesiastes.

CHAPTER 4
EXPANDING AND UNPACKING THE NA-27 DATABASE

The database used in this project is derived from the Nestle-Aland 27th edition of the *Greek New Testament*[1] hereafter referred to as NA-27. The database is located at the bottom of each page of that text, recording in very terse form the variant readings occurring on the given page. Small symbols in the main body of the text (⌜ ⊤ ⊤· ⊢ ⊇ ⊆ ⊆· ⊂ ⊃ ⊂· ⊃· ⊡ ⊘ ○) mark the place and kind of variation that occurs there. The meaning of the symbols is explained in the introduction to NA-27 and does not need to be repeated here.

The variations of the text are listed at the bottom of each page, providing the verse number where the variation occurs, the associated symbol indicating the kind of variation, the alternate readings that occur there, and a list of witnesses[2] that contain the given alternate reading. The list of witnesses is provided in compressed form in order to avoid as much repetition as possible. Basically, symbols are used to represent a consistent collection of witnesses. For example, the symbol "*vg"* represents all the various witnesses in the Latin Vulgate group, "*it"* represents all the witnesses in the Old Latin group, and "*co*" represents all the witnesses in the Coptic group. This compressed form is useful for conserving paper and ink, and is relatively easy for scholars to follow. But the computer software must have every item of data uniquely recorded, that is, there must be a record of every witness to the text under study, and a record of which variant reading each witness has at every place of variation. This necessity requires the NA-27 database to be unpacked and expanded.

Until recently the NA-27 database existed only in printed form, and expanding the data into the form needed by the genealogical software was a complex and time consuming task.[3] However, the database is now available in digital electronic form in the *Stuttgart Electronic*

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[1] *Novum Testamentum Graece* (Stuttgart: Deutsche Bibelgesellschaft, 1997).

[2] The witnesses consist of individual manuscripts, translations, and patristic quotations.

[3] All my prior research with the genealogical software was done with data manually extracted from the already expanded database in the United Bible Society's *Greek New Testament*.

Study Bible.[4] That form of the database is capable of being expanded and unpacked electronically.

This chapter describes the methods and principles used in a software program for expanding and unpacking the NA-27 database. In essence, the expansion may be achieved by simply replacing each symbol by the witnesses it represents, an easy task for a computer. But there are complications that make the task more difficult. These complications include (1) two different data formats: positive and negative; (2) an irregular order of variants; (3) the use of multi-language symbols; (4) the use of superscript symbols; (5) the use of consensus symbols; (6) the use of printed editions in the database, (7) the use of duplication symbols; and (8) recording minor variations.

Different Data Formats

The NA-27 database uses two different data formats: a positive format and a negative one. The positive format includes the data for each variant reading at a place of variation, including the reading of the NA-27 text, marked by the symbol "*txt*." Thus every variation of the text at that place of variation has a recorded list of witnesses that contain the variant readings. The negative format only provides the data for the variant readings that differ from the NA-27 text; it is understood that the NA-27 reading is contained in all the remaining witnesses—that is, those witnesses not listed with the other variants.[5] Consequently, the unpacking software must record that understood list of witnesses as containing the reading of the NA-27 text.

Irregular Order of Variants

When the NA-27 database uses the positive format, the data for the variant readings not in the NA-27 text are listed first, followed by the reading of the NA-27 text marked by the symbol "*txt*." When there are two variant readings, the NA-27 reading is second in order; when there are three, it is third in order, and so forth. However, it is important for the data of the NA-27 reading to always be first in order, as it is in the UBS database; because the software uses the NA-27 reading by default when consensus cannot decide between variant readings. By

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[4] Christof Hardmeier, Eep Talstra, and Bertram Salzmann, *The Stuttgart Electronic Study Bible* (Stuttgart, Germany: The German Bible Society, 2004); used with permission.

[5] Excluded are the church fathers and any manuscript or version known not to be extant at that place of variation.

always being first in order, the software can easily access the NA-27 reading when necessary. Consequently, the unpacking software must always rearrange the order of the data to make the data for the NA-27 reading first in order.

Multi-Language Symbols

The symbols used in NA-27 to represent the names of the witnesses are usually in English characters, but sometimes they are in Greek characters like Δ, or in Hebrew characters like **א**, and sometimes special characters like 𝔓, 𝔐. These foreign characters sometimes have the same digital code as English characters, creating potential confusion for computer software. Accordingly, the symbols involving foreign characters are transformed into a corresponding symbol using English characters. In the textual literature, uncial manuscripts are designated by an alphabetic character and also by a number beginning with zero. When an obscurity of digital codes would occur, I designated an uncial by its numerical symbol rather than by its alphabetic one, or sometimes by the combination of the two. For example, **א** is replaced by "01" and "D" is replaced by "D05." The symbol $\mathfrak{P}^{39}$ represents papyrus manuscript 39; the symbol P^39 replaces it. The symbol 𝔐 represents the Majority Text; it is replaced by "m." The unpacking software automatically does this transformation.

Superscript Symbols

The NA-27 database employs superscript symbols to distinguish witnesses having the same symbolic designation. For example, the symbol *B* represents the text of the fourth century Codex Vaticanus, whereas *B** represents the text of the hand of the original scribe of *B* as contrasted with B^1 representing the text of the hand of the first corrector of *B*, and B^2 that of the second corrector. Superscript symbols are also used to represent other distinguishing features of the witnesses. However, like non-English characters, superscripts are unfriendly to the software, so wherever a superscript symbol is involved, the character "^" is used to indicate a superscript. For example, B^1 is encoded as B^1, and B^2 as B^2, and so forth throughout the NA-27 database. The unpacking software does this transformation automatically.

Consensus Witnesses

Some symbols, like 𝔐 (= the Majority or Byzantine Text), represent the consensus of a number of genealogically related witnesses. In some places of variation the witnesses represented by 𝔐 are divided, one subgroup containing one variant reading and the other subgroup containing another. In those places, the NA-27 database records the symbol of the witness two or more times, one for each variant contained by one of the subgroups. NA-27

uses the superscript "*pt*" (= part of $\mathfrak{M}$) to mark the split witness of $\mathfrak{M}$, for example $\mathfrak{M}^{pt}$ means that part of witnesses represented by $\mathfrak{M}$ contains the associated variant reading while another part contains the other. When this happens, the evidence is ambiguous because NA-27 does not associate such a part with a specific Byzantine subgroup. In fact, the witness of the Majority Text is sometimes split into as many as three nearly equal subgroups. Consequently, the Majority Text requires three symbols: pm^a, pm^b, and pm^c, one for each subgroup. When $\mathfrak{M}$ occurs alone, it is replaced by pm^a, pm^b, and pm^c. When $\mathfrak{M}^{pt}$ occurs twice, the instance that agrees with MS K is replaced by pm^a, except when it stands alone in a negative apparatus, in which case it is replaced by pm^b. The genealogical software must have complete, explicit data for every witness; accordingly, the unpacking software expands the data where NA-27 has compressed multiple witnesses under one symbol.

The same is true for the symbol *vg*, which represents the consensus of a large number of Latin Vulgate manuscripts. Like the Byzantine tradition, in some places of variation, the Latin Vulgate manuscripts lack consensus, being divided into parts, one part containing one variant reading and the other part containing another variant. In those places of variation, the NA-27 database uses the symbol vg^{pt} or vg^{mss}; the identity of the subgroups these symbols represent is also ambiguous, like the Byzantine witnesses discussed above. Also most of the symbols for the other translations represent the consensus of a number of manuscripts. This is even true for some of the church fathers. Table 4.1 is an expansion map showing how the NA-27 symbols for Greek manuscripts are transformed into their English equivalents and expanded to include all the witnesses the symbol represents. Witnesses that needed no transformation or expansion are not listed.

Table 4.1
Expansion Map For Greek Manuscripts

NA-27 Symbol		Expanded Replacement	NA-27 Symbol		Expanded Replacement
$\mathfrak{P}^{37}$	→	P^37* P^37^c	L	→	L019* L019^c
$\mathfrak{P}^{37c}$	→	P^37^c	L*	→	L019*
$\mathfrak{P}^{53}$	→	P^53* P^53^c	L^c	→	L019^c
$\mathfrak{P}^{53c}$	→	P^53^c	K	→	K* K^c
$\mathfrak{P}^{86}$	→	P^86* P^86^c	K^c	→	K^c
$\mathfrak{P}^{86c}$	→	P^86^c	M	→	M*
$\mathfrak{P}^{37vid.45}$	→	P^37* P^37^c P^45*	N	→	N* N^c
$\mathfrak{P}^{37.45}$	→	P^37* P^37^c P^45*	N^c	→	N^c
$\mathfrak{P}^{45}$	→	P^45*	P	→	P024*
$\mathfrak{P}^{45vid.64vid}$	→	P^45* P^64	W	→	W* W^c
$\mathfrak{P}^{45vid.64}$	→	P^45* P^64	W^c	→	W^c
$\aleph$	→	01* 01^c 01^1 01^2	Z	→	Z* Z^c
$\aleph^c$	→	01^c	Z^c	→	Z^c
$\aleph^1$	→	01^1	Γ	→	036*
$\aleph^2$	→	01^2	Δ	→	037* 037^c
$\aleph^{c.*}$	→	01* 01^c	Δ^c	→	037^c
$\aleph^{2.*}$	→	01* 01^2	Θ	→	038* 038^c
$\aleph^{*.1}$	→	01* 01^1	Θ^c	→	038^c
$\aleph^{*.2}$	→	01* 01^2	078	→	078* 078^c
A	→	A* A^c	078^c	→	078^c
A^c	→	A^c	085*	→	85
B	→	B* B^1 B^2	0106	→	0106* 0106^c
B^1	→	B^1	0106^c	→	0106^c
B^2	→	B^2	0128	→	0128* 0128^c
$B^{2.*}$	→	B* B^2	0128^c	→	0128^c
$B^{*.2}$	→	B* B^2	0233	→	0233* 0233^c
C	→	C* C^1 C^2 C^3	0233^c	→	0233^c

NA-27 Symbol		Expanded Replacement	NA-27 Symbol		Expanded Replacement
C^{1}	→	C^1	0249	→	0249* 0249^c
C^{2}	→	C^2	0249^{c}	→	0249^c
C^{3}	→	C^3	28	→	28*
$C^{*.2}$	→	C* C^2	33	→	33*
$C^{*.3}$	→	C* C^3	118	→	118* 118^c
$C^{2.*}$	→	C* C^2	118^{c}	→	118^c
D or D^{s}	→	D05* D05^c D05^1 D05^2 it-d	565	→	565* 565^c
D*	→	D05* it-d	565^{c}	→	565^c
D^{c}	→	D05^c	579	→	579* 579^c
D^{1}	→	D05^1	579^{c}	→	579^c
D^{2}	→	D05^2	700	→	700* 700^c
$D^{*.c}$	→	D05* D05^c it-d	700^{c}	→	700^c
D^{s*}	→	D05* it-d	892	→	892* 892^c
D^{s2}	→	D05^2	892^{c}	→	892^c
$D^{c.*}$	→	D05* D05^c	1241	→	1241* 1241^c
E	→	E07*	1241^{c}	→	1241^c
F	→	F* it-f*	1424	→	1424* 1424^c
G	→	G011 it-g*	1424^{c}	→	1424^c
H	→	H013*			

Table 4.2
Expansion Map For Greek Lectionaries

NA-27 Symbol		Expanded Replacement
l	→	l^844* l^844^c l^2211* l^2211^c
*l**	→	l^844* l^844^c l^2211* l^2211^c
l 844	→	l^844* l^844^c
l 844^{c}	→	l^844^c
l 2211	→	l^2211* l^2211^c
l 2211^{c}	→	l^2211^c

Table 4.3
Expansion Map for Families of Manuscripts

NA-27 Symbol		Expanded Replacement
f^{1}	→	1 131* 209 1582
f^{13}	→	13 69 346 543 788 826 828 983
$f^{1.13}$	→	1 209 131* 13 69 346 543 788 826 828 983 1582

Table 4.4
Expansion Map for the Latin Vulgate Witnesses

NA-27 Symbol		Expanded Replacement
vg	→	vg* vg^a vg^b vg^cl vg^s vg^st vg^ww
vg^{pt}	→	vg^a or vg^b
$vg^{ms(s)}$	→	vg^a or vg^b
vg^{cl}	→	vg^cl
vg^{s}	→	vg^s
vg^{st}	→	vg^st
vg^{ww}	→	vg^ww
$vg^{cl.st}$	→	vg^cl vg^st
$vg^{cl.ww}$	→	vg^cl vg^ww
$vg^{s.st}$	→	vg^s vg^st
$vg^{s.st.ww}$	→	vg^s vg^st vg^ww
$vg^{st.ww}$	→	vg^st vg^ww

In addition to the symbols f^{1} and f^{13} that represent families of witnesses, several other symbols represent additional witnesses over and above their normal designation. The symbol 𝔐 not only represents the three subgroups of the Majority Text (pm^a, pm^b, and pm^c), but also all the other genealogical baggage associated with it. There are a good number of Byzantine-like witnesses that NA-27 lists only when they differ from 𝔐; in all these cases, pm^a carries with it those unlisted but understood witnesses. In addition, the symbol *vg* with no superscript represents all the Latin Vulgate witnesses; *it* represents all the Old Latin witnesses; *sy* represents all the Syriac witnesses; and *co* represents all the Coptic witnesses. Furthermore, the symbol *lat* or *latt* represents all the Latin witnesses, including all the Vulgate and Old Latin witnesses. Finally, the symbol *vers* or *verss* represents all the witnesses of all

the versions, the Latin, Syriac, Coptic, and versions not listed elsewhere. Table 4.9 is an expansion map of these multi-task symbols.

Table 4.5
Expansion Map for the Old Latin Witnesses

NA-27 Symbol		Expanded Replacement	NA-27 Symbol		Expanded Replacement
a	→	it-a	ff2	→	it-ff2*
aur	→	it-aur*	g	→	it-g*
aur*	→	it-aur*	g1	→	it-g1*
b	→	it-b* it-b^c	g1*	→	it-g1*
b^c	→	it-b^c	h	→	it-h* it-h^c
c	→	it-c	h^c	→	it-h^c
d	→	it-d	k	→	it-k*
d*	→	it-d	k*	→	it-k*
e	→	it-e	mu	→	it-mu
f	→	it-f*	n	→	it-n
f*	→	it-f*	q	→	it-q* it-q^c
ff1	→	it-ff1	q^c	→	it-q^c
ff1*	→	it-ff1	r1	→	it-r1
ff2*	→	it-ff2*			

Table 4.6
Expansion Map for the Coptic Versions

NA-27 Symbol		Expanded Replacement
co	→	ac* ac^2 bo^a bo^b bo^c mae mf pbo sa^a sa^b
ac	→	ac* ac^2
ac^2	→	ac^2
bo	→	bo^a bo^b bo^c
$bo^{ms(s)}$	→	bo^b
bo^{pt}	→	bo^b
sa	→	sa^a sa^b
$sa^{ms(s)}$	→	sa^b

Table 4.7
Expansion Map for the Syriac Versions

NA-27 Symbol		Expanded Replacement	NA-27 Symbol		Expanded Replacement
sy	→	sy^c sy^p sy^ph sy^h sy^s	$sy^{p.h**}$	→	sy^p
sy^{c}	→	sy^c	$sy^{s.c}$	→	sy^s sy^c
sy^{h}	→	sy^h	$sy^{s.c.h}$	→	sy^s sy^c sy^h
sy^{h**}	→	omit	$sy^{s.c.h**}$	→	sy^s sy^c
sy^{p}	→	sy^p	$sy^{s.c.p}$	→	sy^s sy^c sy^p
sy^{s}	→	sy^s	$sy^{s.c.p.h}$	→	sy^s sy^c sy^p sy^h
$sy^{c.h}$	→	sy^c sy^h	$sy^{s.c.p.h**}$	→	sy^s sy^c sy^p
$sy^{c.h**}$	→	sy^c	$sy^{s.h}$	→	sy^s sy^h
$sy^{c.p}$	→	sy^c sy^p	$sy^{s.p}$	→	sy^s sy^p
$sy^{c.p.h}$	→	sy^c sy^p sy^h	$sy^{s.p.h}$	→	sy^s sy^p sy^h
$sy^{c.p.h**}$	→	sy^c sy^p	$sy^{s.p.h**}$	→	sy^s sy^p
$sy^{p.h}$	→	sy^p sy^h			

The unpacking software expands the NA-27 database by transforming and replacing each NA-27 symbol in the database with all the symbols it represents according to the expansion maps provided in this chapter. The expansion maps are prepared manually in advance by pre-editing procedures. The maps are different for each book in the Greek New Testament. The unpacking software avoids a symbol occurring twice at a given place of variation by checking for duplication and deleting the one in the list provided for multi-task symbols, that is, it retains the symbol outside the domain of the corresponding multi-task symbol. The unpacking software also weeds out any symbol in a multi-task list that is not extant at the given place of variation.

Printed Editions

The NA-27 database includes the following four printed editions of the Latin Vulgate as witnesses: vg^{c}, vg^{s}, vg^{st}, and vg^{ww}. I have added the witness of the following three additional printed editions: the *Textus Receptus* (TR) of F. H. A. Scrivener, the *Majority Text* of Hodges and Farstad (HF), and the *Byzantine Priority Text* of Robinson and Pierpont (RP), as well as the text of NA-27 itself. The printed editions are marked so they do not enter into the

construction of the genealogical tree, but are added where they best fit after the tree is constructed.

Table 4.8
Expansion Map for the Church Fathers

NA-27 Symbol		Expanded Replacement	NA-27 Symbol		Expanded Replacement
Or	→	Or^a Or^b	Cl^{hom}	→	Cl^hom
$Or^{ms(s)}$	→	Or^b	Cl	→	Cl^a Cl^b
Or^{pt}	→	Or^b	$Cl^{ms(s)}$	→	Cl^b
Or^{lat}	→	Or^lat^a Or^lat^b	Cl^{pt}	→	Cl^b
$Or^{latms(s)}$	→	Or^lat^b	Mar^{Ir}	→	Mar^Ir
Or^{lem}	→	Or^lat^a Or^lat^b	Mar^{Irlat}	→	Mar^Ir-lat
Hier	→	Hier^a Hier^b	Cyr	→	Cyr^a Cyr^b
$Hier^{ms(s)}$	→	Hier^b	$Cyr^{ms(s)}$	→	Cyr^b
Epiph	→	Epiph^a Epiph^b	Cyr^{pt}	→	Cyr^b
$Epiph^{ms(s)}$	→	Epiph^b	Cyp	→	Cyp^a
Eus	→	Eus^a Eus^b	$Basil^{Cl}$	→	Basil^cl
$Eus^{ms(s)}$	→	Eus^b	Eus^{syr}	→	Eus^syr
Eus^{pt}	→	Eus^b	Ir^{lat}	→	Irlat^a Irlat^b
Did	→	Did^a Did^b	Ir^{latpt}	→	Irlat^b
$Did^{ms(s)}$	→	Did^b	Tert	→	Tert^a
Did^{pt}	→	Did^b	Ir	→	Ir^a

The use of Duplication Symbols

Rather than repeat identical lists of data, NA-27 uses the symbol *"bis"* (twice) to indicate that the marked list of data is repeated at the indicated place. There is no fixed pattern in which such repetition occurs, so this type of duplication of the data items must be done manually by "copy and paste" pre-editing. NA-27 also uses the symbol *"et"* to mark another form of data sharing. This too must be handled in pre-edit procedures.

Minor Variations

Certain elements of the NA-27 database are inconsequential with respect to this study and were excluded from the database. When the reading of a witness is less than certain it is marked with the superscript symbol "*vid*." The genealogical software has no provision for uncertain readings, so the uncertain reading is accepted without reservation. The NA-27

database sometimes lists minor variations within a listed variant reading or among the witnesses to the reading. The software has no provision for such minor variations, so they are excluded from the database. The NA-27 database sometimes lists marginal notes or the like that have no known source. Such extraneous notes provide no genealogical evidence so they are excluded from the data. Some readings in the text are enclosed in brackets [] to mark a passage regarded as questionable. Such marks in the text are excluded because the genealogical software is expected to determine the certainty of such variant readings. Sometimes the evidence of a witness is derived from a supplementary source. When that is the case, NA-27 marks the witness with a superscript "*s*." The genealogical software regards all the evidence of a witness to be derived from the same source. Sometimes NA-27 uses the symbol "*pc*" to indicate the presence of a few additional unidentified witnesses. The software has no way of using evidence from unidentified witnesses. This completes the description of the unpacking and expanding procedures used to transform the NA-27 database into the form needed by the genealogical software.

Table 4.9
Expansion Map for the Multi-Task Symbols

NA-27 Symbol		Expanded Replacement
𝔐 or pm^{a}	→	pm^a pm^b pm^c TR HF RP E07* F* it-f* G011 it-g* H013* K* K^c M* N* N^c O P024* S U V X Y 036* 037* 037^c 042 043 047 064 074 090 0133 0136 0196 0233* 0233^c 0250 4 17 21 22 28* 118* 118^c 157 225 237 238 251 348 474 482 544 565* 565^c 579* 579^c l* l^844* l^844^c l^2211* l^2211^c 700* 700^c 713 892* 892^c 998 1010 1012 1071 1093 1230 1241* 1241^c 1242 1253 1293 1424* 1424^c 1506 1573 2148 2542
vg	→	vg* vg^a vg^b vg^cl vg^s vg^st vg^ww
it	→	it-a it-aur* it-b* it-b^c it-c it-d it-e it-f* it-ff1 it-ff2* it-g* it-g1* it-h* it-h^c it-k* it-k^c it-mu it-n it-q* it-q^c it-r1
lat(t)	→	lat* it* it-a it-aur* it-b* it-b^c it-c it-d it-e it-f* it-ff1 it-ff2* it-g* it-g1* it-h* it-h^c it-k* it-mu it-n it-q* it-q^c it-r1 vg* vg^a vg^b vg^cl vg^s vg^st vg^ww
sy	→	sy^c sy^p sy^ph sy^h sy^s
co	→	ac* ac^2 bo^a bo^b bo^c mae mf pbo sa^a sa^b
vers(s)	→	lat* it* it-a it-aur* it-b* it-b^c it-c it-d it-e it-f* it-ff1 it-ff2* it-g* it-g1* it-h* it-h^c it-k* it-mu it-n it-q* it-q^c it-r1 vg* vg^a vg^b vg^cl vg^s vg^st vg^ww sy* sy^c sy^p sy^ph sy^h sy^s co* ac* ac^2 bo^a bo^b bo^c mae mf pbo sa^a sa^b arm geo^b got aeth slav

Dates

Unless the date of a witness had been determined explicitly by some objective source (such as a dated colophon), the dates in the NA-27 apparatus are represented by capital Roman numerals designating the century in which the witness was copied. Such dates are scholarly estimates based on the evidence of ancient calligraphy, carbon-14 dating, external historical references, and so forth. These dates are regarded as accurate within a range of error of about ± fifty years. The software requires an exact number in Arabic numerals, so these Roman numerals were converted to Arabic ones by placing the date in the middle of the indicated century. For example, the Roman numeral date IV was converted to 350, and IV-V was converted to 400. While the software treats these dates as precise, one must remember that they have a margin of error unless they were given explicitly.

CHAPTER 5
WITNESSES TO THE TEXT OF MATTHEW

The witnesses[1] to the text of the Gospel of Matthew used in this study are those derived from the electronic form of the textual apparatus of the NA-27 edition of the Greek New Testament as contained in the *Stuttgart Electronic Study Bible*[2] as edited and modified for the purposes of this project. They consist of 269 existing witnesses[3] of various types:

(1) Papyrus manuscripts	23
(2) Uncial manuscripts	89
(3) Minuscule manuscripts	58
(4) Lectionary manuscripts	4
(5) Printed editions	5
(6) Latin Versions	24
(7) Egyptian Versions	9
(8) Syriac Versions	5
(9) Armenian Version	1
(10) Georgian Version	1
(11) Gothic Version	1
(12) Ethiopic Version	1
(13) Slavic Version	1
(14) Greek Church Fathers	31
(15) Latin Church Fathers	13

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[1] I use the term witness because the reconstruction of genealogical history derives evidence not only from extant manuscripts but also from ancient translations and quotations from church fathers. In addition a few printed editions are involved although not for reconstruction purposes.

[2] Christof Hardmeier, Eep Talstra, and Bertram Salzmann, *The Stuttgart Electronic Study Bible* (Stuttgart, Germany: The German Bible Society, 2004).

[3] Appendix B lists all the extant witnesses by name, date, language, content, number of readings, and percentage of completeness.

The witnesses to the text of an ancient document must have several characteristics before a reasonably reliable reconstruction of its genealogical history can be made. Among these are (1) number of witnesses, (2) date, (3) completeness, (4) limited variableness, (5) commonness of text, and (6) genealogical affinity. These characteristics of the available witnesses to the text of Matthew are discussed below and are shown to be suitable for a reasonable reconstruction of its textual history.[4]

Number of Witnesses

Contrary to the number of available witnesses to the texts of ancient classical literature, there are approximately 2,328 existing Greek manuscripts of the Gospels, including about 178 fragments.[5] This does not include the witnesses of the ancient translations and church fathers. This study makes use of the 269 witnesses to the Gospel of Matthew recorded in the NA-27 apparatus which includes all the ancient papyri witnesses and most of the existing manuscripts dating before the ninth century and a good sample of those from later times. This number includes the consensus witness of the many manuscripts of the text used in the Greek speaking Byzantine churches together with a number of manuscripts related to the Byzantine text. Also it contains the consensus witness of the many manuscripts of the Latin Vulgate and the individual witness of four different printed editions of the Vulgate. The various Old Latin translations also are represented by a consensus of a number of manuscripts of each of these individual translations. Consequently, the consensus witnesses bring many additional manuscripts indirectly into the reconstruction process. There is good reason to believe that there are sufficient witnesses to the text of the Gospel of Matthew to reconstruct its genealogical history.

Date

While it is possible to reconstruct the genealogical history of a text without the benefit of dates, dates are very helpful for accurately locating scribal activity in real history. The dates of the witnesses to Matthew range from the second to the twentieth centuries.[6] Table 5.1 and

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[4] All the technical data present in this chapter and elsewhere comes from the monitor screen of software application Lachmann-10 or from a printed report created by Lachmann-10.

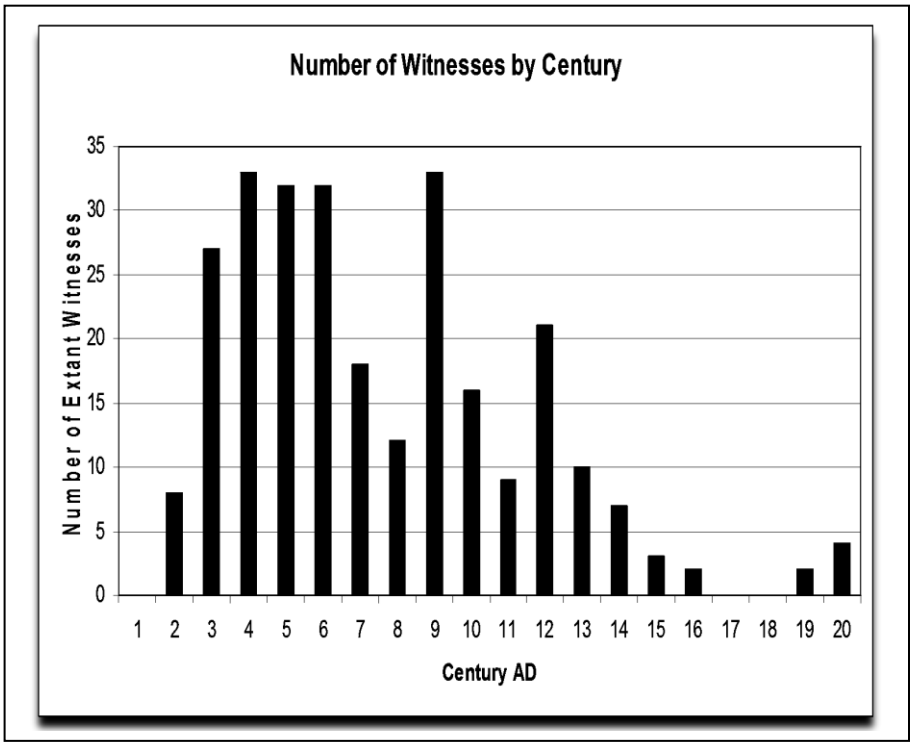
[5] Aland and Aland, p. 83.

[6] The witnesses in the 19th and 20th centuries are printed editions that do not contribute to the reconstruction of the genealogical history.

its associated graph display the reasonably good distribution of the witnesses by date. These dates have a margin of error of about ± fifty years.

Table 5.1:
Distribution of Extant Witnesses by Century:

Century	Number of Witnesses
2	8
3	27
4	33
5	32
6	32
7	18
8	12
9	33
10	16
11	9
12	21
13	10
14	7
15	3
16	2
17	0
18	0
19	2
20	4



Completeness

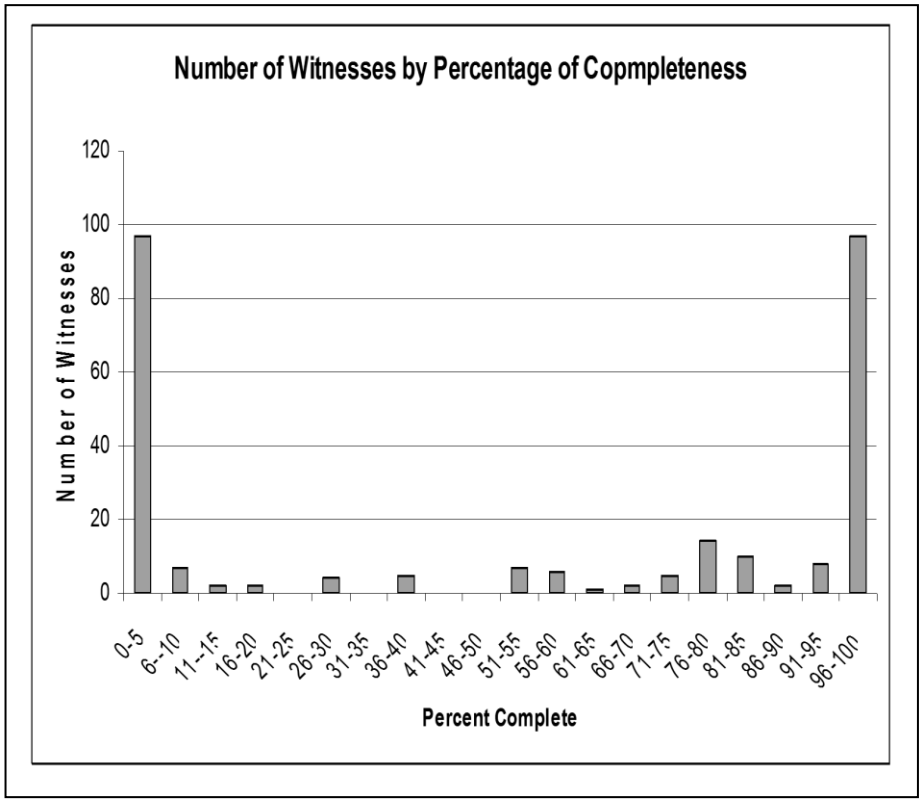
Many of the witnesses are fragmentary, not all their text having survived the passage of time. Only 97 of the 269 witnesses have 95-100% of their text complete, and 121 > 80% complete; thus completeness is significant for this study. Table 5.2 and its associated graph display the distribution of completeness for the witnesses used in this study. Completeness is important for the reconstruction of the textual history, because the computer depends on minimal difference between witnesses to determine genealogical affinity. Consequently, the computer reconstructed the genealogical history on the basis of witnesses having at least 80% of their text complete; the more fragmentary witnesses are added to the genealogical tree where they best fit after the tree is constructed. The fragmentary witnesses are still important and

should not be excluded from the study because they contribute to establishing fixed dates in the textual history.

Because many of the witnesses are fragmentary, it is of interest to know the distribution of those witnesses having 80% or greater completeness. They are the ones that contribute to the reconstruction of the genealogical history. Table 5.3 and its associated graph display the distribution of these witnesses. It is evident that numerous contributing witnesses are from as early as the third century, so a reasonably good reconstruction can be expected.

Table 5.2
Distribution of Witnesses
by Completeness:

% Com-plete	Number of Witnesses
0-5	97
6-10	7
11-15	2
16-20	2
21-25	0
26-30	4
31-35	0
36-40	5
41-45	0
46-50	0
51-55	7
56-60	6
61-65	1
66-70	2
71-75	5
76-80	14
81-85	10
86-90	2
91-95	8
96-100	97



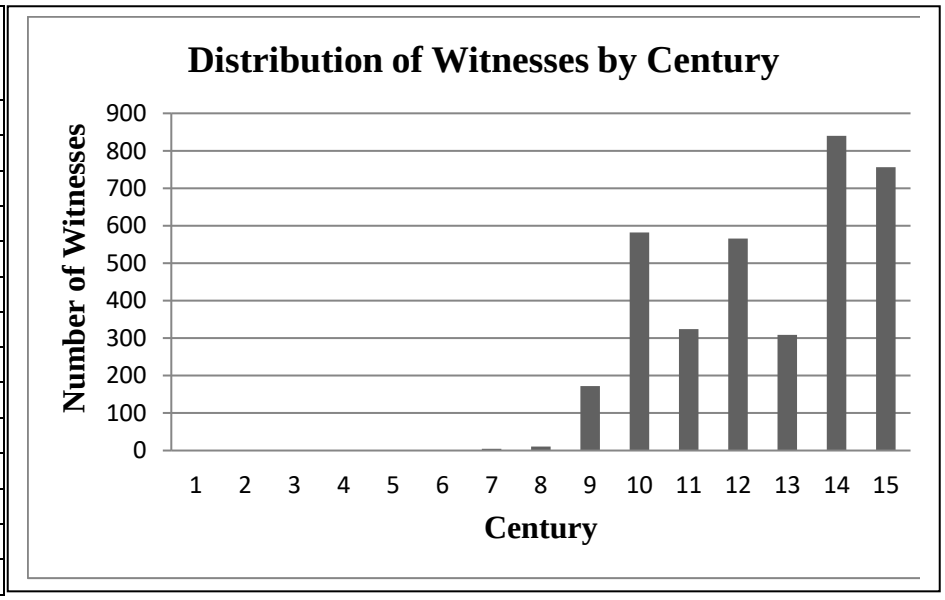
Limited Diversity

The more diverse the text the more difficult the reconstruction of its textual history is. In the overall picture, all witnesses to Matthew agree in over 90% of the text. The places of variation and the number of variants at those sites provide the data for reconstruction.

However, even so, the number of places of variation and the number of variants constitute a limit to what can be reconstructed because of the magnitude and complexity of the problem. But modern technology has expanded that limit to where reconstruction is now possible for texts the size and diversity of Matthew. The NA-27 apparatus records 1,428 places of variation[7] for the Gospel of Matthew with a total of 3,430 variant readings distributed among them.[8] This averages out to 2.40 variants per place of variation. In earlier decades this amount of information would have been impossible to manually process, but not so today. My desktop computer provides complete solutions to problems this size in just a matter of minutes. Table 5.4 and its associated graph display the distribution of the number of variations per place of variation. For example, 1,013 places of variation have only two variations whereas only three places of variation have seven variations.

Table 5.3
Distribution of Witnesses of 80% or Greater Completeness by Century

Century	Number of Witnesses
3	0
4	4
5	3
6	7
7	4
8	7
9	25
10	13
11	9
12	21
13	10
14	7
15	3
Total	113



[7] Of course there are more places of variation than this, but the editors of the NA-27 text have weeded out those that are insignificant for reconstruction and meaning.

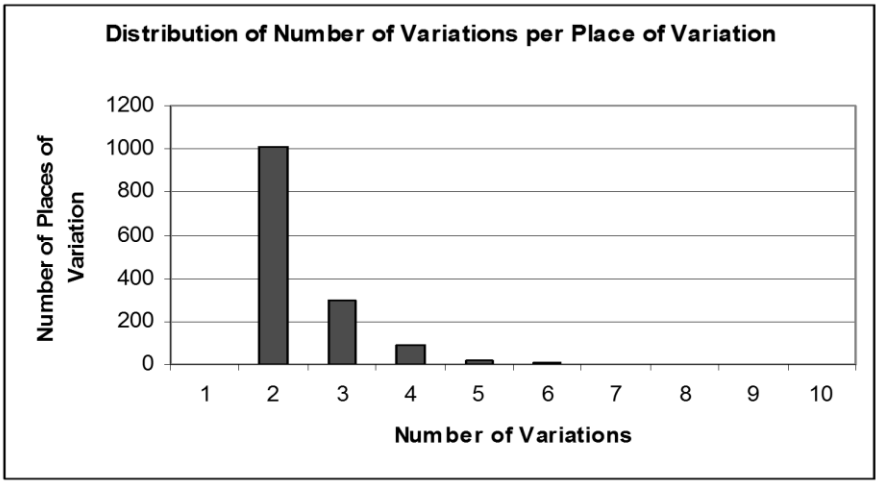
[8] Appendix C provides a map showing where the places of variation occur in the text by chapter and verse.

Commonness of Text

Commonness is a measure of the percentage of text two witnesses have in common. When two witnesses both have complete texts, that is, they are not fragmentary, having readings at every place of variation, they have 100% commonness, regardless of the agreement or disagreement of their readings. Fragmentary witnesses, however, are less than complete and may actually have no commonness of text. For example, witness A may be 40% complete, lacking the text for the last 60% of the places of variation, and witness B may be 40% complete, lacking the text for the first 60% of the places of variation. As a result, the two witnesses have no commonness of text. The greater the commonness of text two witnesses have, the greater potential they have for genealogical affinity. Table 5.6 and its associated graph display the distribution of commonness each witness shares with every other witness for the Gospel of Matthew.

Table 5.4
Distribution of Number of Variations per Place of Variation

Number of variants	Number of Places of Variation
1	0
2	1,013
3	294
4	94
5	19
6	5
7	3
8	0
9	0
10	0
Total=	3,430



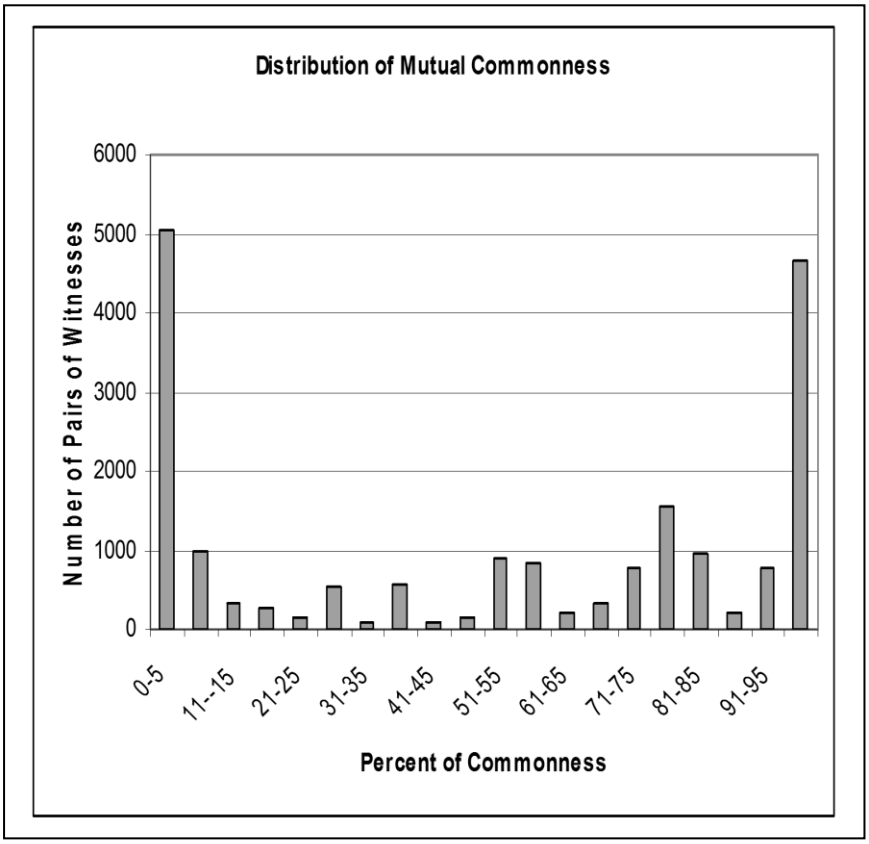
The NA-27 apparatus records six different types of variations to the text. Table 5.5 displays the distribution of these types of variation for the Gospel of Matthew. While the type of variation has no significance for the reconstruction process, the information is provided for those who are interested.

Table 5.5
Distribution of Variation Type

Variation type	Number of Variants
Omit a word	175
Omit a phrase	72
Alternate word	459
Alternate words	303
Transposed words	78
Added word or phrase	341
Total	1,428

Table 5.6
Distribution of Commonness of Text among Witnesses

% Commonness	Number of witness pairs
0-5	5,058
6--10	994
11--15	319
16-20	280
21-25	147
26-30	523
31-35	91
36-40	561
41-45	83
46-50	161
51-55	893
56-60	839
61-65	203
66-70	325
71-75	790
76-80	1,547
81-85	958
86-90	216
91-95	791
96-100	4,646



Genealogical Affinity

Genealogical affinity is a measure of how strongly two witnesses are genealogically related. Witnesses are genealogically related when they have many of the same readings at

their shared places of variation. Genealogical affinity is determined by the number of places of variation where the witnesses have the same reading divided by the number of places of variation the witnesses have in common. For example, if witness A and witness B have 1,000 places of variation in common, and in 952 places they have the same reading, the genealogical affinity of A to B is 952 ÷ 1,000 = 0.952 or 95.2%. Table 5.7 and its associated graph display the distribution of genealogical affinity among all the pairs of witnesses for the Gospel of Matthew. These data are skewed because of the many fragmentary witnesses. A better picture of the significant affinity is that which is among witnesses having 80% content or greater. These witnesses are the ones used to reconstruct the genealogical history.

Table 5.7
Distribution of Genealogical Affinity Among all Witnesses

% Affinity	Number of Witnesses
0-5	0
6--10	0
11--15	0
16-20	0
21-25	0
26-30	0
31-35	2
36-40	6
41-45	11
46-50	550
51-55	262
56-60	412
61-65	548
66-70	1,332
71-75	1,945
76-80	1,597
81-85	1,096
86-90	1,833
91-95	1,899
96-100	24,553

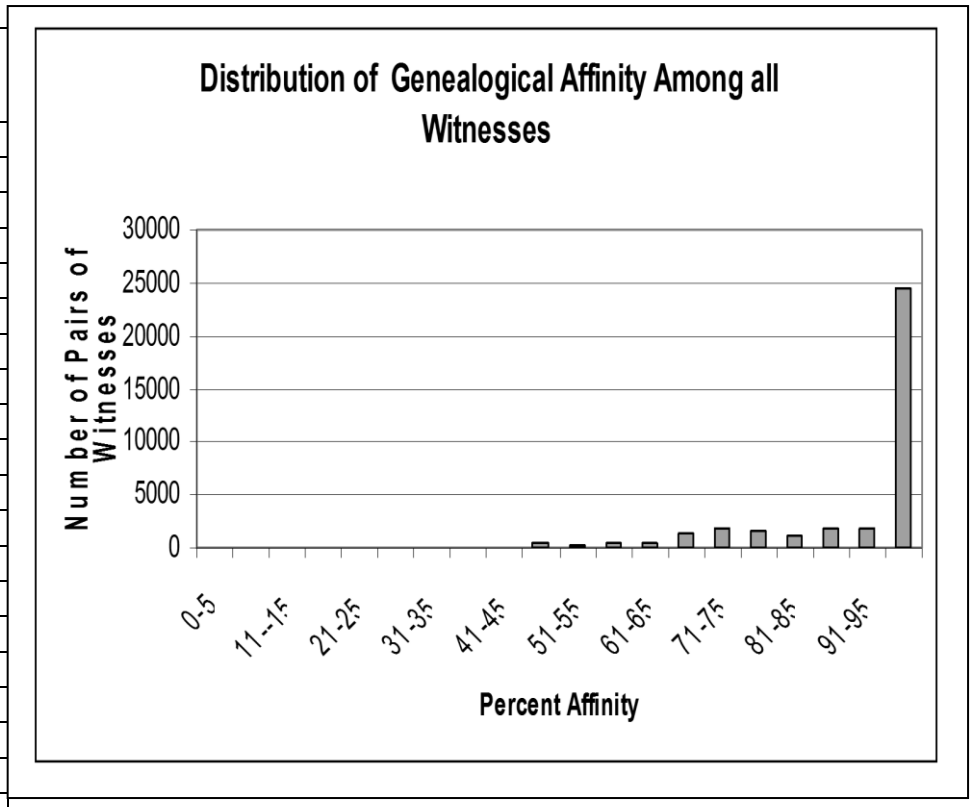


Table 5.8 and its associated graph display the distribution of the affinity among witnesses having 80% content or greater. It is evident that many of the extant witnesses to

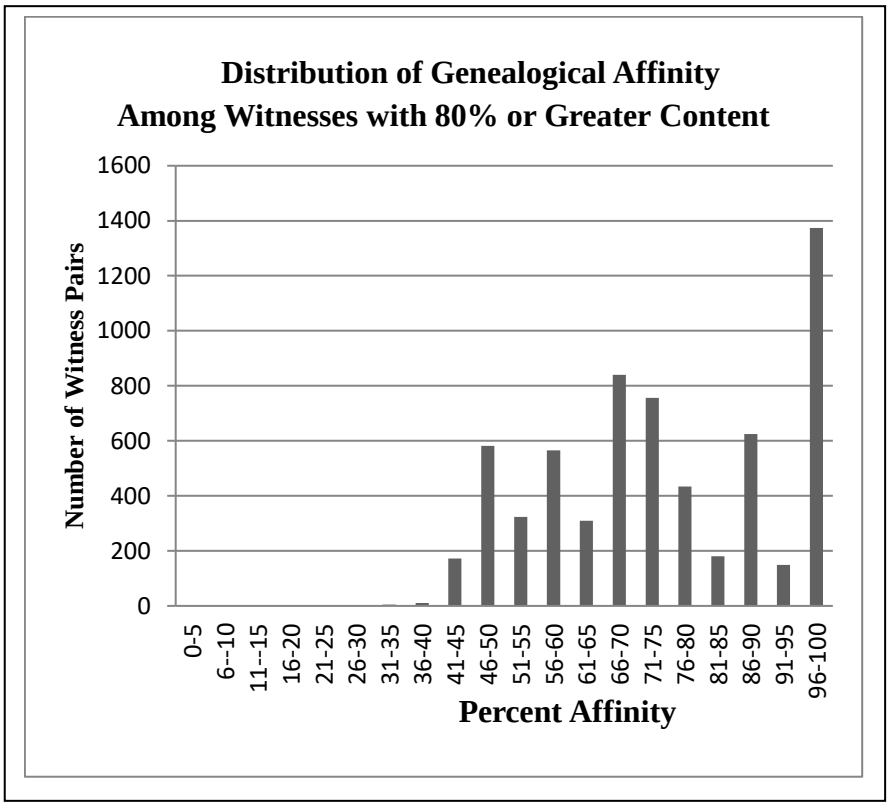
Matthew have relatively strong genealogical affinity with one another. This suggests that reconstruction of the genealogical history is reasonably feasible.

Summary for All the New Testament Books

After reviewing the qualifications of the NA-27 data for the Gospel of Matthew, the general details of all the books of the New Testament are of interest. Table 5.9 lists the following information for each book: (1) the number of extant witnesses, (2) the number of places of variation, (3) the total number of variants, and (4) the number of extant witnesses with a content greater that 60 percent.

Table 5.8
Distribution of Genealogical Affinity Among Witnesses with 80% or Greater Content

% Affinity	Number of Witnesses
0-5	0
6-10	0
11-15	0
16-20	0
21-25	0
26-30	0
31-35	5
36-40	11
41-45	172
46-50	582
51-55	324
56-60	566
61-65	309
66-70	840
71-75	756
76-80	434
81-85	181
86-90	625
91-95	149
96-100	1,374



Conclusion

There are sufficient witnesses to the text of the Gospel of Matthew with dates distributed over the historical period of interest, being sufficiently complete, having relatively limited diversity, and having ample mutual commonness and strong genealogical affinity. There is good reason to expect that the genealogical history derived from these witnesses will be a good approximation of the actual textual history of the book.

Table 5.9
Data for All Books

Book	No. of Witnesses	No. of Places	No. of Variants	No. > 80%
Matthew	269	1,428	3,430	113
Mark	184	1,048	2,716	100
Luke	242	1,920	4,460	145
John	220	1,538	3,725	117
Acts	173	1,662	3,783	99
Romans	140	497	1,114	85
1 Cor.	141	469	1,056	79
2 Cor.	115	270	627	69
Galatians	123	133	325	74
Ephesians	128	160	358	70
Philippians	107	100	233	72
Colossians	117	124	289	66
1 Thess.	105	93	199	68
2 Thess.	89	50	113	58
1 Tim.	95	87	191	62
2 Tim.	89	71	159	73
Titus	88	49	122	66
Philemon	69	23	56	60
Hebrews	134	323	739	78
James	127	219	529	93
1 Peter	114	232	589	73
2 Peter	102	128	325	83
1 John	119	179	428	84
2 John	74	30	72	64
3 John	70	30	72	66
Jude	86	79	199	73
Revelation	111	1,209	2,802	67
Ecclesiastes	203	2,158	6,093	189

CHAPTER 6
GENEALOGICAL HISTORY OF MATTHEW'S MANUSCRIPTS

This chapter presents the genealogical history of the manuscripts[1] of the Greek text of the Gospel of Matthew as reconstructed by computer program Lachmann-10.[2] Beginning with a database of 269 existing witnesses, 1,428 places of variation, and 3,430 variants, the program reconstructed 46 intermediate exemplars, arranging them in the genealogical stemma (tree diagram) presented in its full form in Appendix D, but in a condensed form in Figure 6.1.[3] This condensed form portrays the genealogical interrelationship of all the reconstructed exemplars of the text of Matthew including most of the terminal witnesses. The rectangular boxes contain the information for the exemplars created by the software and the boxes with rounded corners contain the information for the extant witnesses. Witnesses in the same box are siblings. Figure 6.2 displays a second tree diagram in which the principle line of descent from the autograph to the Byzantine text tradition appears in a straight line from which the other text traditions branch off.

The head exemplars of the three main branches of the stemma are exemplars Ex-312, Ex-313, and Ex-314. These branches are quite independent of one another, having mutual affinities ranging from 49% to 70%.[4] But they have affinities with the autograph ranging from 68% to 92%. In addition, the sibling gene of each uniquely distinguishes them from one another.

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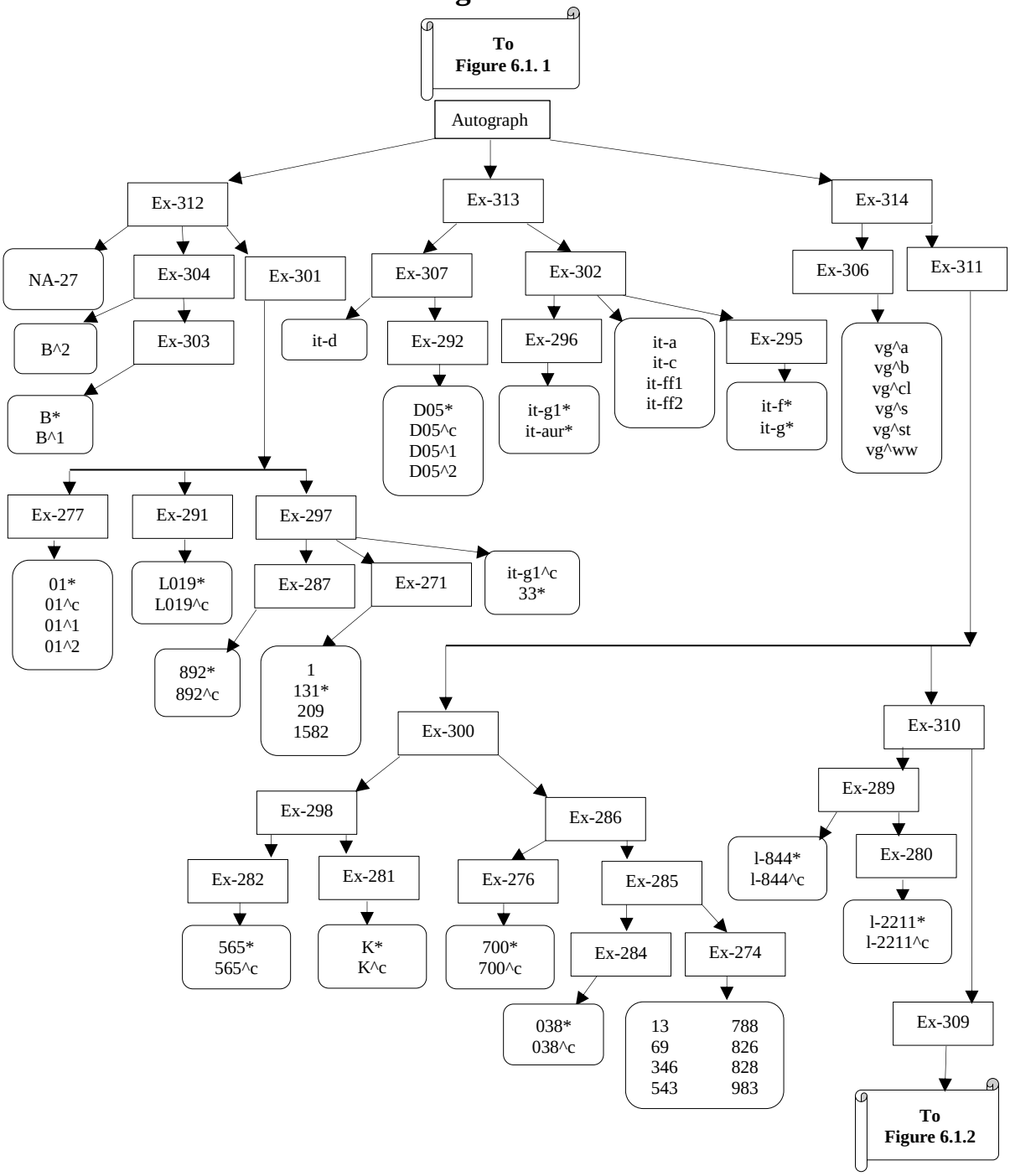
[1] The term *manuscript* is used here in its inclusive sense of manuscripts, translations, church fathers, and reconstructed exemplars—the sense I usually assign to the term *witness*.

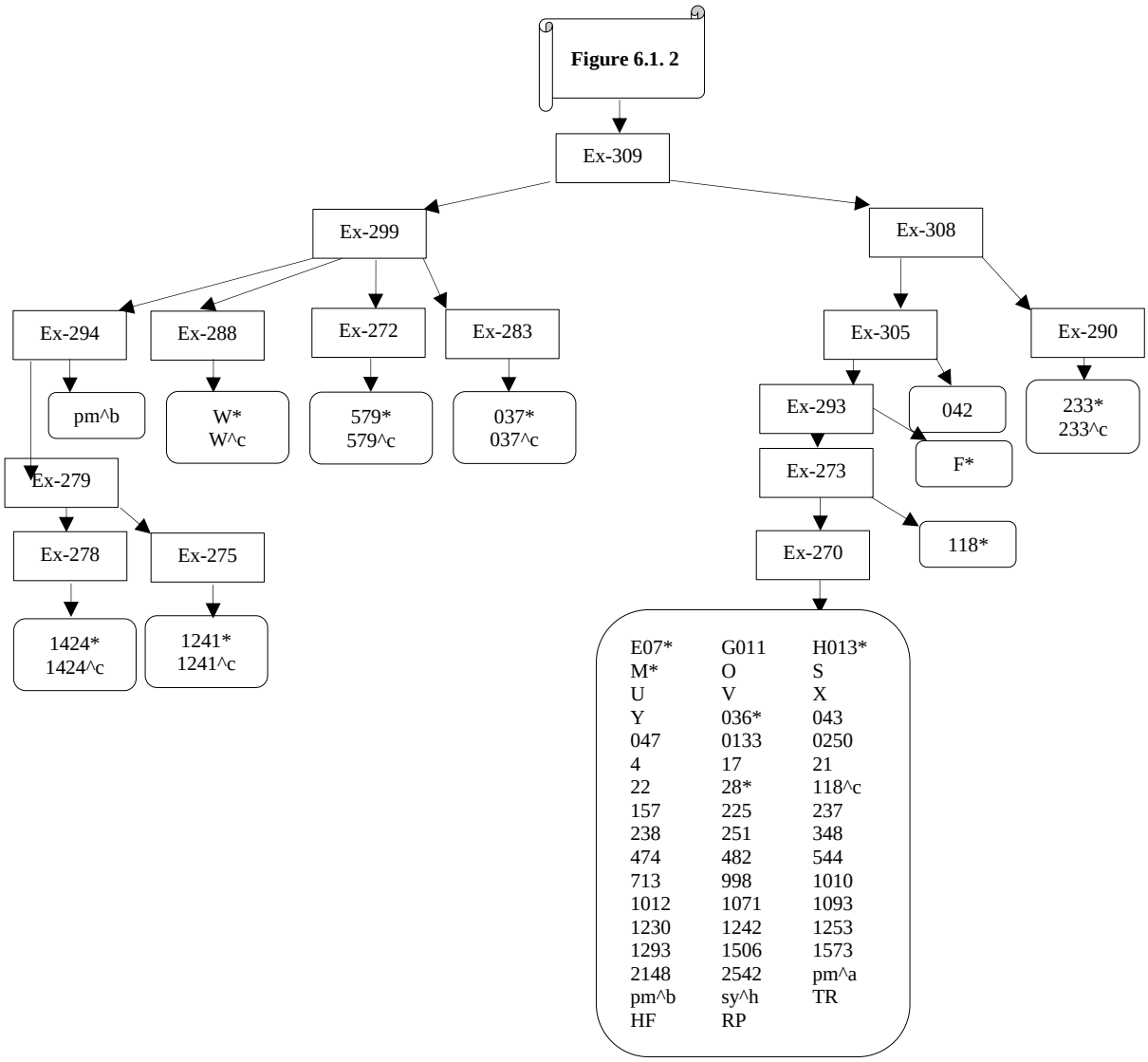
[2] The total computing time was one minute and eighteen seconds including the time required for the software to assemble and format all the information contained in the tables, diagrams, and appendices of this book.

[3] The full diagram, displayed in Appendix D, requires seven pages. The condensed form deletes all the technical information except the names of the witnesses. Likewise it omits exemplars that only account for same-generation mixture (those with a $ sign attached to their name).

[4] Ex-312 to Ex-313 (0.60); Ex-312 to Ex-314 (0.70); Ex-313 to Ex-314 (0.49).

Figure 6.1
Condensed Genealogical Stemma-1 of Matthew





Exemplar Ex-312 is the ancestral recension from which the Egyptian witnesses were derived. Although all the Egyptian versions, papyri, and fathers are fragmentary and fail to show up in the above condensed stemma, having less than 80% content, they found their place in this branch[5] (see Appendix D). What is important is that the witnesses in this branch share a relatively high portion of the 116 sibling gene readings of Ex-312[6] these 116 readings

[5] **Papyri**--P^44%, P^45*%, P^53*%, P^64%, P^71%, P^86*%; **Majuscules**--Z*%, Z^c%, 067%, 071%, 073%, 085%, 094%, 0170%, 0275%, 0281%, 0293%, 0298%; Versions--ac*%, ac^2%, arm%, aeth%, bo^a%, bo^c%, geo^b%, got%, mf%, pbo%, sa^a%, sa^b%, slav%; **Fathers**--Ad%, Hier^b%, Or^b%, Theoph%. It appears that the corrector of Old Latin it-gl used a text close to Family-1.

[6] NA-27 (90.5%); Ex-304 (78.8%); 892* 100 (99.12%); Ex-301 (99.1%); 01* (92.2%); B* (98.3%).

uniquely distinguish this main branch from the other two. For lack of a better term, I call this branch the Egyptian text tradition.

Figure 6.2
Condensed Genealogical Stemma-2 of Matthew

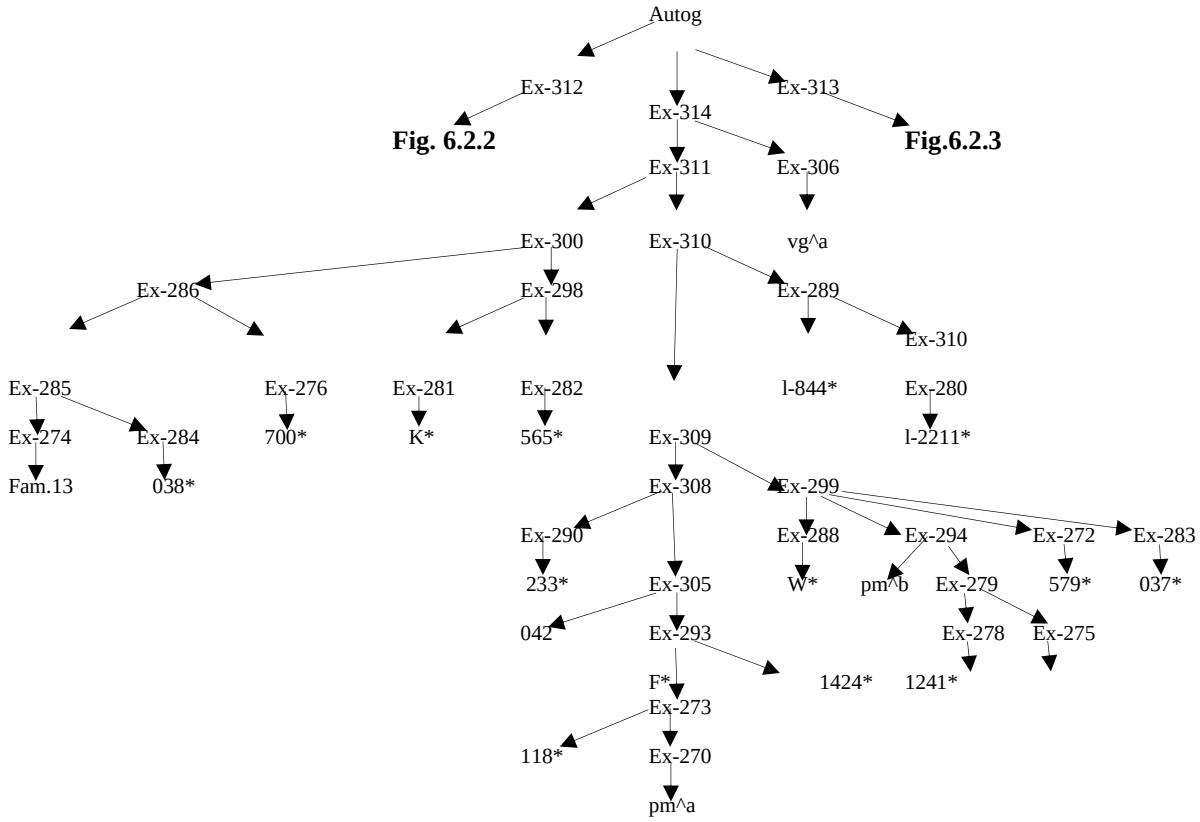


Fig. 6.2.2

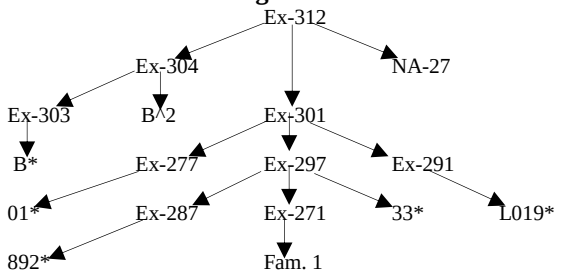
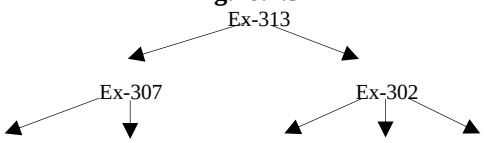
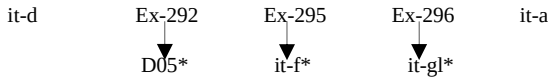


Fig. 6.2.3





It is interesting to note that although the second corrector of Codex Vaticanus (B^2) is dated in the sixth or seventh century, the corrections were made from a text earlier and closer to the autograph (Ex-304) than that of B* (Ex-303). It is also interesting that Family-1 is found in the Egyptian branch. It shares only 54.3% of the 116 sibling gene readings of the head exemplar Ex-312, evidently because its text is quite diverse, sharing a significant number of the sibling gene readings (48.1%) of the Antiochan test tradition as well.

Exemplar Ex-313 is the ancestral recension from which nearly all the Old Latin versions were derived. Although a number of the Old Latin versions, papyri, majuscules, and Fathers are fragmentary and fail to show up in the above condensed stemma, having less than 80% content, yet they found their place in this branch[7] (see Appendix D). What is important is that the witnesses in this branch share a relatively high portion of the 461 sibling gene readings of Ex-313[8] these 461 readings uniquely distinguish this main branch from the other two. For lack of a better term, I call this branch the Latin text tradition. Unfortunately, the two sub-branches of this Latin branch are only loosely related (60%). One sub-branch, headed by Exemplar Ex-307, is the source of Codex Bezae (D05*) and its related witnesses; the other sub-branch, headed by Exemplar Ex302, is the primary source of the Old Latin versions. However, they are closer to one another than with anything else.

Exemplar Ex-314 is the ancestral recension from which the Antiochan-like witnesses were derived. A number of papyri, versions, majuscules, and Father are fragmentary and fail to show up in the above condensed stemma, having less than 80% content, they found their place in this branch[9] (see Appendix D). What is important is that these witnesses share a

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[7] **Papyri**--P^21%, P^105%; **Majuscule**--0234%; **Old Latin**--it-e%, it-ff2*%, it-h*%, it-h^c%, it-k*%, it-k^c%, it-mu%, it-n%, it-q*%, it-q^c%, it-r1%; **Fathers**--Acac%, Bas%, Cl^a%, Cl^b%, Cyp^a%, Cyr^a%, Cyr^b%, Eus^syr%, Hier^a%, Irlat^a%, Irlat^b%, Lcf%, Tert^a%.

[8] NA-27 (90.5%); Ex-304 (78.8%); 892* 100 (99.12%); Ex-301 (99.1%); 01* (92.2%); B* (98.3%); etc.

[9] **Papyri**--P^1%, P^19%, P^25%, P^37*%, P^37^c%, P^53^c%, P^62%, P^70%, P^77%, P^83%, P^86c%, P^96%, P^101%, P^110%; **Versions**--bo^b%, mae%, sy^c%, sy^h%, sy^p%; **Majuscules**--A^c%, C*%, C^1%, C^2%, C^3%, N*%, N^c%, 058%, 064%, 074%, 078*%, 078^c%, 087%, 090%, 0102%, 0106*%, 0106^c%, 0107%, 0128*%, 0128^c%, 0148%, 0160%, 0161%, 0136%, 0171%, 0196%, 0204%, 0237%, 0242%,

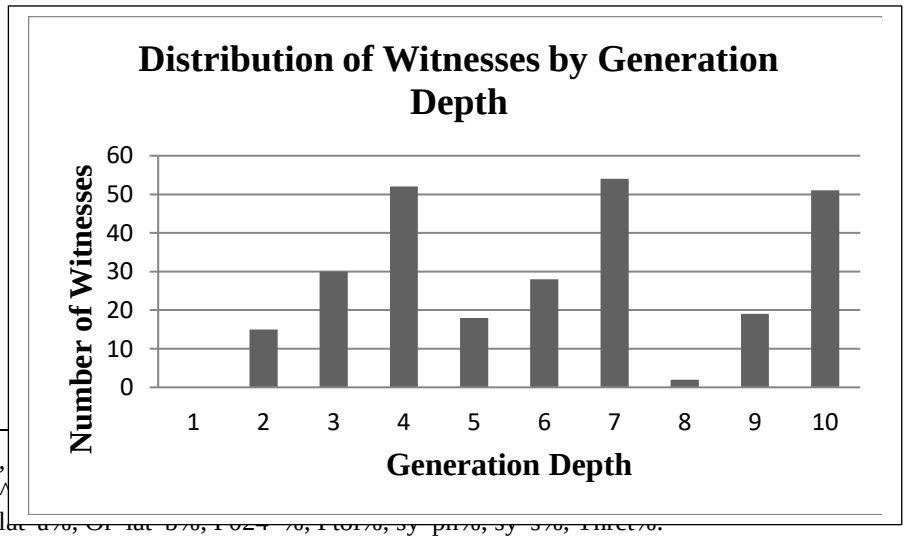
relatively high portion of the 318 sibling gene readings of Ex-314; these 318 readings uniquely distinguish this main branch from the other two. For lack of a better term, I call this branch the Antiochan text tradition. Unfortunately, the two sub-branches of this Antiochan branch are only loosely related (76%). One sub-branch, headed by Exemplar Ex-306, is the source of Latin Vulgate (vg^a*) and its related witnesses; the other sub-branch, headed by Exemplar Ex311, is the primary source of the Byzantine-like witnesses. However, they are closer to one another than with anything else. It is also interesting that the Byzantine sub-branches are considerably different; one sub-branch (pm^b) derived its text from sixth generation Exemplar Ex-294, and the other two (pm^a and pm^c) derived their texts from ninth generation Exemplar Ex-270; they differ by 89 readings.

The Generations of Genealogical History

Program Lachmann-10 reconstructed the genealogical history of the text of Matthew into twelve generations of descent from the autograph. Of course, the exact number of generations cannot be known because the genealogical history before the present first generation major recensions was too fuzzy for the software to accurately reconstruct. The 269 extant witnesses are distributed throughout the genealogical history. Table 6.1 and its associated graph display the distribution of the extant witnesses of Matthew by generation. Every generation except the first has at least nine extant witness.

Table 6.1
Distribution of Extant Witnesses by Generation Depth

Generation	# of Witnesses
1	0
2	15
3	30
4	52
5	18
6	28
7	54
8	2



0249*%, 0249^c%, 0271%,
Did^b%, Didache%, Epiph^
Mar^Ir%, Mar^Ir-lat%, Or^lat-a%, Or^lat-b%, P024*%, Ptol%, Sy^ph%, Sy^s%, Thect%.

9	19
10	51
Total	269

Mixture

The number of parents a witness had is a measure of the mixture of its text; the more parents, the more mixture. At any place of variation, the reading of a witness may differ from that of its primary parent exemplar[10] for one of two reasons: (1) the reading is a newly initiated variant having no prior existence; or (2) the scribe selected the reading from one of the secondary exemplars he was consulting.

Table 6.2 and its associated graph displays the distribution of witnesses by number of parents. Witnesses having only one parent experienced no mixture; every variant differing from that of the primary parent exemplar was newly initiated by the scribe either accidentally or intentionally. That condition was true for 78 of the witnesses. Those witnesses with the greatest mixture are those with the most diverse text; for example MSS C^2 and C^3 have 29 parents, MS C^1 has 28, and MS C* has 24, being fragmentary descendants of Exemplar Ex-275 (see Figure 6.1.2). Table 6.2 records 1,637 parents for 327 total witnesses. This averages 5.91 parents per witness, a rather high index of mixture.

Primary Children

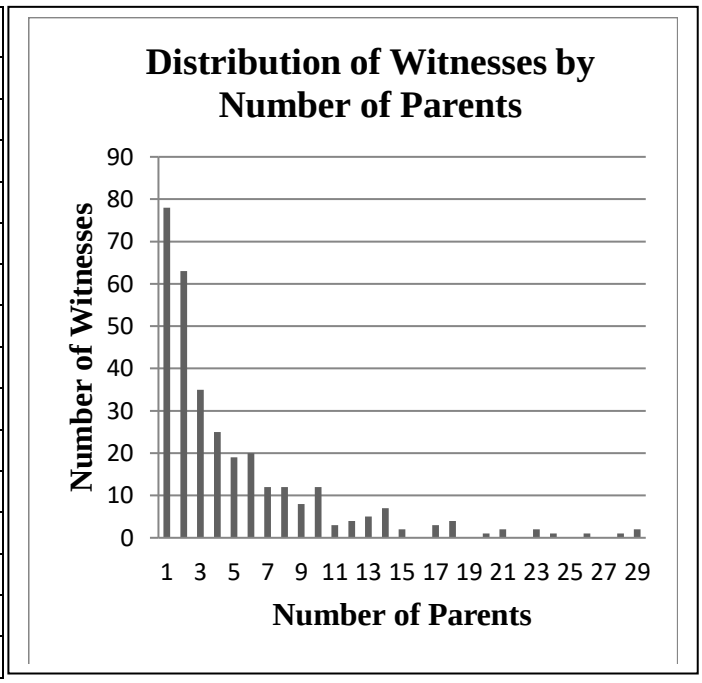
When an exemplar is the primary parent of one of its daughter manuscripts, that daughter in turn is a primary child of the exemplar. Except for exemplars created to account for same-generation mixture (those marked with $), an exemplar always has at least two primary children, but it may have as many as needed for grouping multiple sibling daughters. The number of primary children of an exemplar is a measure of how well the software was able to find groups of siblings. For example, Exemplar Ex-270 has 46 primary descendants, being the parent exemplar of the largest group of Byzantine witnesses (see Figure 6.1.2). Exemplar Ex-274, the head of the Family-13 group, has 8 (see Figure 6.1.1). Exemplar Ex-302, the parent exemplar of a group if Old Latin witnesses, has 5 (see Figure 6.1.1). Table 6.3 displays the distribution of primary children by number of exemplars.

[10] A primary parent exemplar is the exemplar from which a witness derives its genealogical descent; secondary parent exemplars are the sources from which a witness acquires mixture. A witness has only one primary parent, but it may have any number of secondary parent exemplars.

Critics of the genealogical theory protest that the genealogical trees it develops are mostly binary, that is, nodes in the tree have only two branches—in other words, reconstructed exemplars have only two primary sibling children. Table 6.3[11] displays the distribution of the number of primary children per exemplar. It demonstrates that this claim is true, but the principle of deferred ambiguity resolves this problem.

Table 6.2
Distribution of Witnesses
by Number of Parents

# Parents	# Witnesses	# Parents	# Witnesses
1	78	16	0
2	63	17	3
3	35	18	4
4	25	19	0
5	19	20	1
6	20	21	2
7	12	22	0
8	12	23	2
9	8	24	1
10	12	25	0
11	3	26	1
12	4	27	0
13	5	28	1
14	7	29	2
15	2	Total	1,637



Critics of the genealogical theory protest that the genealogical trees it develops are almost exclusively binary, that is, nodes in the tree have only two branches—in other words, reconstructed exemplars have only two primary sibling children. Table 6.3 demonstrates the error of this claim.

Secondary Children

When an exemplar is the source of mixture (a secondary parent) for one of its daughter children, then that daughter is a secondary child of the exemplar. An exemplar does not need

[11] The table includes only witnesses having 80% completeness or greater. They are the ones involves in determining exemplar reading.

to have any secondary children, but it may have as many as needed for resolving mixture within its associated branch. The number of secondary children of an exemplar is a measure of its value as a source of mixture, suggesting that scribes regarded the exemplar as having some measure of authority. Table 6.4 displays the distribution of secondary children by number of exemplars. For Example, second generation exemplar Ex-304, the source for MS B* and its associated witnesses, has 57 secondary children; that is, it is the source of mixture for 57 exemplars. And second generation exemplar Ex-301, the source of the rest of the Egyptian text tradition, has 56 secondary children.

Table 6.3
Distribution of Primary Children by Exemplar

# of Primary Children	# of Exemplars
2	35
3	3
4	5
5	1
6	0
7	0
8	1
46	1
Total	158

Table 6.4
Distribution of Secondary Children by Exemplar

# of Secondary Children	# of Exemplars	# of Secondary Children	# of Exemplars
0	10	22	2
2	3	24	1
3	3	25	1
4	3	27	1
5	3	28	1
6	2	30	1
8	1	32	1
9	1	41	2
10	1	45	1
12	1	47	1
13	2	50	1
16	1	51	1
18	1	53	1
19	1	56	1
20	1	57	1
		Total	843

Resolution of Mixture

The mixture procedures of the software resolve all mixture in a genealogical tree, leaving every instance of a variant accounted for either by genealogical inheritance, by mixture, or by initiation. That is, the software locates the exemplar or witness where every variant

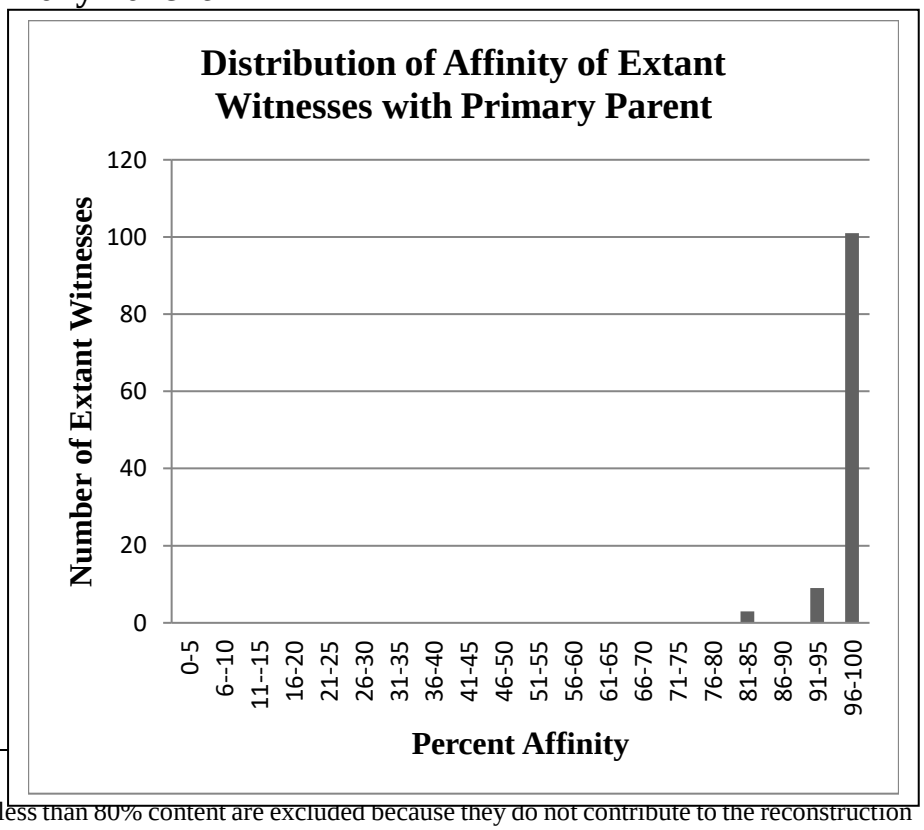
originated in the genealogical history of the witnesses. This feature is treated further in Chapter Seven where the genealogical history of the variants is discussed.

Distribution of Affinity

Another measure of the success of the software in reconstructing the genealogical history of the text of Matthew is the distribution of the affinity of the witnesses to their primary parent exemplars. If this affinity is consistently high, the success may be regarded as high. Table 6.5 and its associated graph display the distribution of the affinity of the extant witnesses[12] to their corresponding primary parent exemplar. Table 6.6 and its associated graph display the distribution of the affinity of the reconstructed exemplars to their corresponding primary parent exemplar, not including those functioning only to resolve same-generation mixture.[13]

Table 6.5: Distribution of Affinity of Extant Witnesses with Primary Parent

% Affinity	No. of Witnesses
0-5	0
6-10	0
11-15	0
16-20	0
21-25	0
26-30	0
31-35	0
36-40	0
41-45	0
46-50	0
51-55	0
56-60	0
61-65	0
66-70	0
71-75	0
76-80	0
81-85	3
86-90	0



[12] Witnesses with less than 80% content are excluded because they do not contribute to the reconstruction of the genealogical history but are attached at the most appropriate place after the tree is complete.

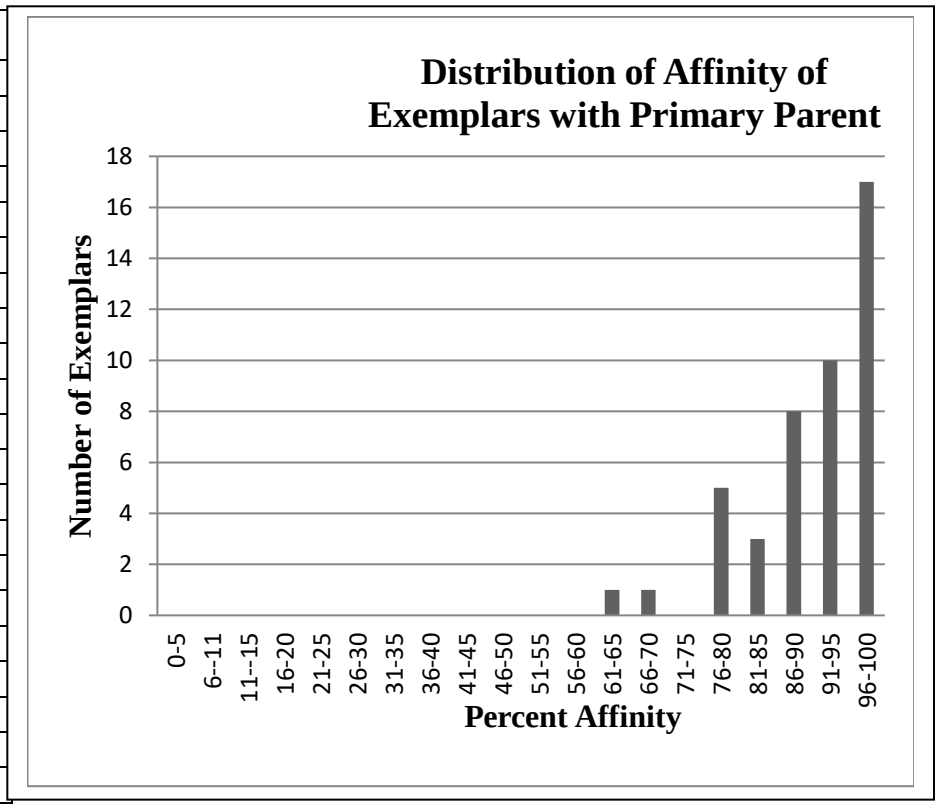
[13] Such exemplars do not contribute to the reconstruction of the tree diagram of the genealogical history of the witnesses, their affinity with their parent exemplar having no significance to the reconstruction process.

91-95	9
96-100	101
Total	113

The evidence from Table 6.5 indicates that 110 (97.3%) of the 113 extant witnesses had a strong affinity (> 90%) with their primary parent exemplar, and all had an affinity greater than 80%. This demonstrates that considerable close grouping exists among the extant witnesses.

Table 6.6
Distribution of Affinity of Exemplars with Primary Parent

% Affinity	No. of Exemplars
0-5	0
6--11	0
11--15	0
16-20	0
21-25	0
26-30	0
31-35	0
36-40	0
41-45	0
46-50	0
51-55	0
56-60	0
61-65	1
66-70	1
71-75	0
76-80	5
81-85	3
86-90	8
91-95	10
96-100	17
Total	45



The evidence from Table 6.6 indicates that 26 (57.7%) of the 45 reconstructed exemplars[14] have a strong affinity (> 90%) with their primary parent exemplar, and another 11

[14] The exemplars constructed just to account for same-generation mixture were not included in the study because they do not contribute to the construction of the genealogical tree.

(24.4%) had a moderate affinity (81-90%) with their parent. Of the seven exemplars with an affinity less than 81%, are exemplars Ex-313 (0.68), Ex-302 (0.63), and Ex-271 (0.79) in Figure 6.1.1; and Ex-314 (0.78) and Ex-306 (0.76) in Figure 6.1.3.

Date of the Autograph

The dates of the autograph and all other exemplars are relative, not exact, being created by the date algorithm of the software which states that a parent exemplar is given the next prior date to that of its oldest sibling daughter. When the dates diminish to below AD 150, the generation gap is reduced to 20 years, giving more room for activity in the first half of the second century and earlier. When the dates diminish below AD 100, the generation gap is reduced to five years. When the date diminishes below AD 50, the generation gap is reduced to one year. The date of the autograph (AD 50) is traced down to seventh generation church father, Didache (c. AD 100), through the generations listed below. Unfortunately, the witness of Didache has only four reading in Matthew, and its place in the tree was determined by only two, so its place in genealogical history is uncertain. However, several other early witnesses, although fragmentary, are more firmly located in the tree,[15] so the date of the autograph is confidently fixed within the first century.

```
Autograph[0.00]<0>{AD 50}/0/0/0
  |-Ex-314#[0.78]<1>{AD 55}/318/364/4
     |-Ex-311[1.00]<2>{AD 60}/0/410/1
        |-Ex-310[0.98]<3>{AD 65}/31/86/10
           |-Ex-309[0.97]<4>{AD 70}/40/123/10
              |-Ex-299[0.97]<5>{AD 75}/36/57/12
                 |-Ex-272[0.89]<6>{AD 80}/162/6/6
                    |-Didache%[0.50]<7>{AD 100}/2/0/2
```

The fact that the first generation exemplars Ex-312 (AD 180)[16] and Ex-313 (AD 165)[17] are also dated early likewise supports the early date of the autograph.

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[15] Also in this branch are Irenaeus (c. AD 150), Basilides (c. AD 150), Marcus (c. AD 150), Ptolemy (c. AD 180), Athanasius (c. AD 180)—all seventh generation fragments; and Justin Martyr (c. AD 165)—ninth generation.

[16] This early date depends on second generation P^{64} (c. AD 200).

[17] This early date depends on fourth generation Tertullian (c. AD 220).

Conclusions

The software does indeed reconstruct a genealogical history of the manuscripts of the Gospel of Matthew, and of the other books of the New Testament as well. The results were approximately what was anticipated, based on earlier experiments with smaller books, smaller databases, and less sophisticated programs. I anticipated that the commonly accepted text traditions would emerge as independent witnesses to the autograph. But these traditions turned out to be not exactly Western, Alexandrian, Caesarean, and Byzantine, but rather Latin, Egyptian, Antiochan, and Byzantine, with Byzantine being the latest as expected and with no clear evidence of a Caesarean tradition.[18]

What did emerge as the most ancient independent recensions were (1) the Alexandrian-like common ancestor of 01*, B*, and MS 892* (Ex-312), which I call the Egyptian recension; (2) a Western-like text tradition containing nearly all of the Old Latin witnesses and some Egyptian witnesses (Ex-313), which I call the Old Latin recension; and (3) an Antiochan-like text tradition containing all the Byzantine witnesses and some other related manuscripts and translations (Ex-314), which I call the Antiochan recension. The Byzantine text tradition was a sub-branch of the Antiochan branch of the stemma headed by fourth generation Exemplar Ex-309, sharing 97.2% of the 318 sibling gene readings of Ex-314, but differing from that exemplar by 70 readings.

This concludes the discussion of the genealogical history of the manuscripts of Matthew. While the reconstruction of the genealogical history of manuscripts depends on the genetic affinity (consensus) and the date of manuscripts, the genealogical history of variant readings depends on the consensus and inheritance of variants. The history of the variant readings of the text of Matthew is discussed in Chapter Seven.

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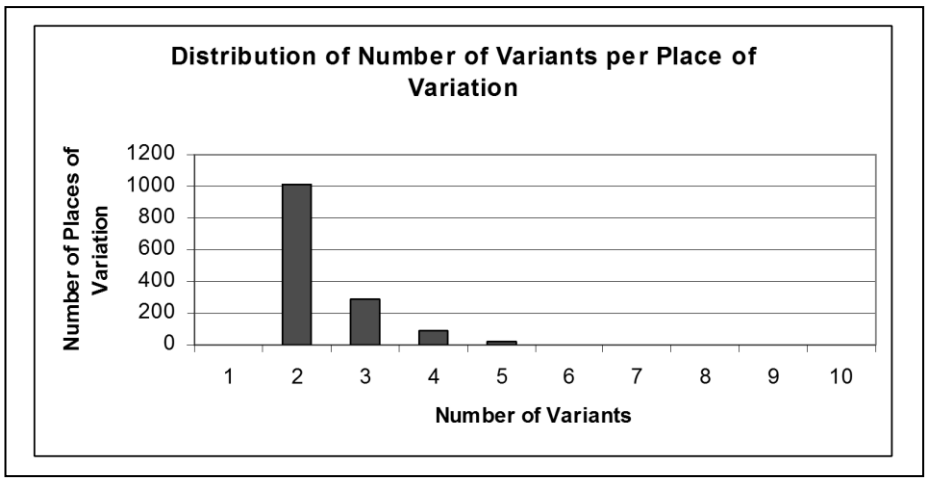
[18] The principal witnesses generally regarded as belonging to the Caesarean text tradition are Family-1, Family-13, and MS 038. But Family-1 is independent of Family-13 and MS 038, being a fourth generation sub-branch in the Egyptian text tradition headed by Exemplar Ex-312 (see Figure 6.1.1); while Family-13 and MS 038 belong to a fifth generation sub-branch of the Antiochan text tradition headed by Exemplar Ex-314 (see Figure 6.1.1).

CHAPTER 7
THE HISTORY OF THE TEXTUAL VARIANTS IN MATTHEW

Chapter Six presents the genealogical history of the manuscripts[1] of the Greek text of the Gospel of Matthew. That history is necessary before the genealogical history of an individual variant may be explicitly discussed, because the history of a textual variant is totally dependent upon the history of the manuscripts in which it occurs. The NA-27 Greek New Testament records 1,428 places of textual variation in the book of Matthew and 3,430 alternate readings distributed in those places. This averages out to a variableness index of 2.40 alternate readings per place of variation—a relatively low value. Table 7.1 and its associated graph display the distribution of the number of variants per place of variation.

Table 7.1
Distribution of Number of Variants per Place of Variation

Number of variants	Number of Places of Variation
1	0
2	1013
3	294
4	94
5	19
6	5
7	3
8	0
9	0
Total	3,430



Initially the number 1,428 seems large when considering textual variations in a book of the Bible, but this number must be considered with respect to the total number of places

[1] Again the term *manuscript* is used in its broader sense to include manuscripts, translations, quotations from church fathers, and reconstructed exemplars.

where variation could occur. If the number of words in the Greek text of Matthew (21,632) is regarded as the number of places where variation could occur, and each variation is regarded as the equivalent of one word, then the text of Matthew is 93.4% pure[2] before variations are even considered. Thus variation occurs in only 6.6% of the text. In that small portion of the text 3,430 variants are recorded, but 1,428 of them are original readings, so only 2,002 are real variants. While this still seems like a large number, the genealogical software clearly identified all of them as non-original.

Types of Variants

Four basic types of textual variations occur in the text of Matthew: (1) omissions, (2) alterations, (3) transpositions, and (4) additions. Table 7.2 lists the distribution of these types of variants in the 1,428 places of variation in the autographic text of the Gospel of Matthew, and Table 7.3 lists their distribution with respect to all variations.

Table 7.2
Distribution of Autographic Variants by Type

Variation type	Number of Variants
Omit a word	175
Omit a phrase	72
Alternate word	459
Alternate words	303
Transposed words	78
Added word or phrase	341
Total	1,428

Table 7.3
Distribution of All Variants by Type

Variation Type	Number of Variants
Omit a word	350
Omit a phrase	146
Alternate word	1,115
Alternate words	915
Transposed words	172
Added word or phrase	732
Total	3,430

[2] ((21,632 – 1428) ÷ 21,632) x 100 = 93.4%. Of course it is recognized that many more than 3,430 variants exist, but the ones in the textual apparatus of NA-27 are those regarded as significant by the editors of NA-27.

Determining Exemplar Readings

Whenever the genealogical software creates a new exemplar as the parent of a group of sibling witnesses, at each place of variation, the reading of the exemplar is decided on the basis of five ordered rules:

(1) Majority consensus among all the immediate sibling witnesses;[3]

(2) if one alternative is supported by siblings in the language of the text and the other alternative is not, grant consensus to the alternative supported the siblings in the language of the text;

(3) if no consensus, then postpone the decision until a sibling emerges for the exemplar currently being reconstructed, the sibling will have the inherited reading;[4]

(4) if, in the case of deciding the readings of the autograph, majority consensus fails, then accept the first variant (the NA-27 reading) if it is an option;

(5) if the first variant is not an option, then by default arbitrarily select the smallest variant number that is an option.[5]

Table 7.4 lists the total number of times each of the above rules was used in the process of reconstructing the genealogical history of the text of Matthew.

[3] Statistical majority among immediate sibling daughters is admissible, because they share equal genealogical status. Genealogical restraints do not overrule numerical statistics at the sibling level–those restraints have already been satisfied by determining that the manuscripts satisfy the conditions of being potential immediate children of the same exemplar. This is true at the local level, but as the tree grows the branches become more independent of one another; and at the autograph level, the branches are the most independent. Thus, in the earliest generations, this criterion implements the canon of distribution: Consensus among remote independent witnesses is more likely to represent the reading of the autograph.

[4] I call this practice *deferred ambiguity*. Since sibling witnesses rarely have the same scribal error at a given place of variation, where the reading of one sibling is ambiguous—that is, it is uncertain which of two readings is the inherited reading and which is a newly initiated error—the other siblings will have the inherited reading.

[5] Next to the first variant—the NA-27 choice—the reading with the smaller variant number is usually supported by more witnesses than those with larger variant numbers. While this option is purely arbitrary, it turns out to be rarely significant for determining the readings of the autograph. For determining the readings of the autograph the algorithm treats the exemplars of the last five branches to be constructed as siblings constituting the ancient independent witnesses.

Table 7.4
Frequency of Exemplar Reading Rules

(1)	by greater probability:	61,059	91.55%
(2)	by deferred ambiguity:	4,043	6.06%
(3)	by default to NA-27:	509	0.77%
(4)	by arbitrary choice	43	0.07%
(5)	By language deference	1,037	1.55%
Total		66,691	100.00%

The evidence indicates that the vast majority of exemplar readings (91.55%) were determined by "consensus among independent witnesses," and nearly all the remainder were determined by the principle of deferred ambiguity (6.06%) or language deference (1.55%). The same set of rules does not apply to determining the readings of the autograph—the last exemplar to be created—because rule (2) is not relevant in the first generation.

Autographic Readings

The readings of the autographic text of the Gospel of Matthew were determined on the basis of consensus among the three most ancient independent witnesses. For the book of Matthew, the exemplars of the three most ancient independent recensions were used: (1) Exemplar Ex-312, the Egyptian recension from which Codex Vaticanus (B*), Codex Sinaiticus (01*) together with their related witnesses were derived; (2) Exemplar Ex-313 the Old Latin recension from which ancient Latin translations were derived, except the text of the Vulgate; and (3) Exemplar Ex-314, the Antiochan recension from which the Byzantine-like witnesses were derived along with some other ancient translations. Appendix C lists each of the 1,428 readings of the autograph together with its place of variation, the chapter and verse where it occurs, the reading of the text at that place, and the probability that the reading is original. Table 7.5 lists the number of times each of the above rules was used in the process of determining the autographic readings of the text of Matthew. The evidence indicates that all the readings were determined by "consensus among ancient independent witnesses."

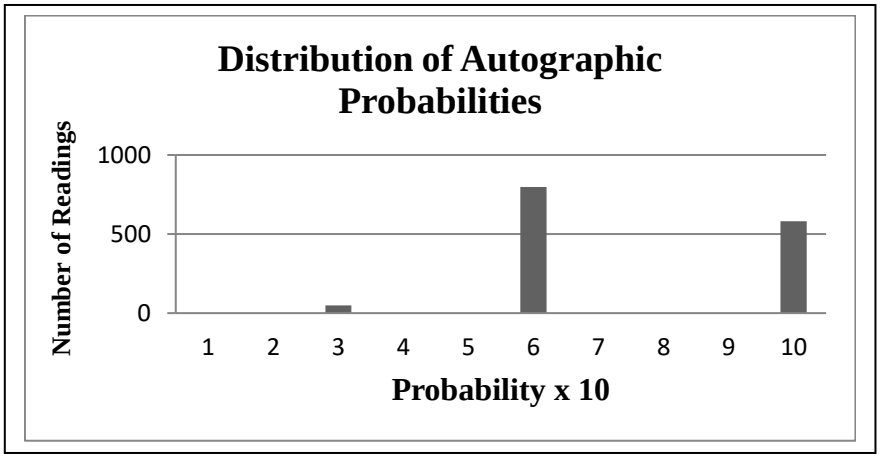
Table 7.5
Frequency of Exemplar Reading Rules

(1)	by greater probability:	1,428	100.0%
(2)	by delayed ambiguity:	0	0.00%
(3)	by default to NA-27:	0	0.00%
(4)	by arbitrary choice	0	0.00%
(5)	By language deference	0	0.00%
Total		1428	100.00%

Table 7.6 and its associated graph display the distribution of autographic readings by consensus probability.

Table 7.6
Distribution of Autographic Readings by Probability

Probability	Number of Variants
0.1	0
0.2	0
0.3	49
0.4	0
0.5	0
0.6	797
0.7	0
0.8	0
0.9	0
1.0	582
Total	1,428



Agreement with NA-27

In the database used in this work, the first variant at every place of variation is the reading of the NA-27 text. The second and subsequent variants are the alternate readings listed in the NA-27 database. Table 7.7 lists how often the various alternate readings were found to be original. The evidence indicates that the autographic text reconstructed by the genealogical software agrees with the NA-27 text 1,230 out of 1,428 times (86.13%), and differs from the NA-27 text 198 times (13.86%). Appendix H lists the 198 places where the Lachmann-10 text differs from that of NA-27.

Table 7.7
Frequency of Alternate Variants

Variant 1	1,230
Variant 2	179
Variant 3	14
Variant 4	1
Variant 5	1
Variant 6	1
Total	1,428

The Origin of the Variants

The software identifies the place of origin of every variant in the genealogical tree, accounting for every instance of a variant as being the result of genealogical descent, mixture, or initiation—that is, the software finds the one and only exemplar or extant witness in the genealogical history where each variant originated.[6] Often, after the first initiation of a reading, it may have been introduced again in a later exemplar by means of mixture.

Exemplars Ex-316$ through Ex-323$, are children of the Autograph created by the software as sources for resolving same-generation mixture between the branches headed by the first-generation recensions, that is, for non-autographic readings that occur in more than one primary branch of the genealogical tree. These exemplars serve as virtual exemplars lost in the unrecoverable genealogical history between the Autograph and the assumed first-generation recensions. Of the 2,002 non-autographic variants, 1,430 are listed as originating in one of these virtual exemplars. Two possibilities exist for each of these variants: either it really originated only once in the earliest decades of unrecoverable history, or it originated independently in two or more major branches of the tree diagram of genealogical history; the latter case can be true for commonly occurring scribal errors, but not for the uncommon ones. Variants of the first kind are weakly distributed among the branches of the first-generation recensions and are of little genealogical significance individually; their distribution among the three most ancient recensions is weaker than that of their corresponding autographic reading.

Egyptian Recension

The text of Exemplar Ex-312 is the Egyptian recension, the ancestral forefather of that text tradition. This recension differs from the autograph by 116 secondary variants[7] among which it uniquely originated the following 53 variants peculiar to this entire text tradition:

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[6] The place a variant reading was initially introduced in genealogical history is determined by locating the witness containing the variant reading where the reading differs from that of its parent exemplar and the reading is not accounted for by mixture. Mixture fails when the reading does not occur in any witness in preceding generations.

[7] In this and other lists of variants herein, an exemplar enclosed in square brackets [] is the source of mixture for the associated variant. Those references not marked with a source were newly initiated in the associated witness. Variants are listed only by their reference: 1:6,1.1[Ex-321$]; 1:25,3.1; 2:18,1.1[Ex-321$]; 3:1,1.1; 3:6,1.1; 5:13,2.1; 5:25,3.1[Ex-321$]; 5:32,1.1; 5:48,1.1[Ex-321$]; 6:10,2.1; 6:32,2.1; 6:34,1.1[Ex-321$]; 7:10,1.1[Ex-321$]; 7:21,1.1[Ex-321$]; 7:26,3.1; 8:3,1.1[Ex-321$]; 8:22,2.1; 8:25,2.1[Ex-321$]; 8:29,1.1; 8:34,1.1[Ex-321$]; 9:11,1.1; 9:30,1.1; 10:23,1.1[Ex-321$]; 12:29,2.1[Ex-321$]; 12:31,2.1; 12:47,1.2; 13:1,1.1; 13:2,1.1[Ex-321$]; 13:7,1.2[Ex-321$]; 13:9,1.1; 13:24,1.1[Ex-321$]; 13:25,1.1[Ex-321$]; 13:48,4.1; 14:15,1.1; 14:25,1.1; 14:33,1.1[Ex-321$]; 15:2,1.2[Ex-321$]; 15:33,1.1[Ex-321$]; 15:35,7.1[Ex-321$]; 16:19,2.1[Ex-321$]; 16:20,4.1[Ex-321$]; 16:26,1.1[Ex-321$]; 16:28,1.1[Ex-321$]; 17:3,2.1[Ex-321$]; 17:15,1.2[Ex-321$]; 17:20,3.1[Ex-321$]; 17:20,5.1[Ex-321$]; 17:22,1.1; 18:2,1.1[Ex-321$]; 18:7,1.1; 18:10,3.1; 18:30,1.1[Ex-321$]; 19:3,3.2[Ex-321$]; 19:20,2.1[Ex-321$]; 19:28,1.1[Ex-321$]; 20:10,3.1[Ex-321$]; 20:16,1.1[Ex-321$]; 21:5,1.1[Ex-321$]; 21:12,2.1; 21:13,1.1[Ex-321$]; 21:25,1.1; 21:25,2.1; 21:26,1.1; 21:29,5.2;

Place of Variation	Reference	Reading
31.1	1:25,3.1	⌜υιον
49.1	3:1,1.1	○δε
53.1	3:6,1.1	○ποταμω
112.1	5:13,2.1	⌜βληθεν εξω
132.1	5:32,1.1	⌜πας ο ἀπολυων
175.1	6:10,2.1	⊤ ομιτ
203.1	6:32,2.1	⌜ἐπιζητουσιν
239.1	7:26,3.1	⌞αὐτου την οἰκιαν⊤
270.1	8:22,2.1	⌜λεγει
277.1	8:29,1.1	⊤ ομιτ
301.1	9:11,1.1	⌜ελεγον
331.1	9:30,1.1	⌜ἐνεβριμηθη
470.1	12:31,2.1	⊤ ομιτ
487.2	12:47,1.2	□ ομιτ
496.1	13:1,1.1	⊤ ομιτ
507.1	13:9,1.1	⊤ ομιτ
559.1	13:48,4.1	⌜αγγη
597.1	14:15,1.1	⊤ ομιτ
616.1	14:25,1.1	⌜ηλθεν
778.1	17:22,1.1	⌜Τυστρεφομενων
795.1	18:7,1.1	⊤ ομιτ
802.1	18:10,3.1	⊤ ομιτ
982.1	21:12,2.1	⊤ ομιτ
995.1	21:25,1.1	○το
996.1	21:25,2.1	⌜ἐν
998.1	21:26,1.1	⌜ως προφητην εχουσιν τον Ἰωαννην
1008.2	21:29,5.2	⌢ δευτερω
1012.1	21:32,1.1	⌞Ἰωαννης προς υμας⊤
1027.1	22:7,1.1	⌜ο δε βασιλευς
1033.1	22:13,1.1	⌞ο βασιλευς ειπεν⊤
1037.2	22:16,1.2	⌢ λεγοντας
Place of Variation	Reference	Reading
1044.1	22:25,1.1	⌜γημας

21:32,1.1; 21:46,2.1[Ex-321$]; 22:7,1.1; 22:10,2.2[Ex-321$]; 22:13,1.1; 22:16,1.2; 22:25,1.1; 22:27,1.1[Ex-321$]; 22:30,3.1[Ex-321$]; 22:35,2.1; 23:7,1.1[Ex-321$]; 23:9,2.1[Ex-321$]; 23:9,3.1[Ex-321$]; 23:21,1.1; 23:23,3.2[Ex-321$]; 24:3,1.1[Ex-321$]; 24:37,2.1; 24:38,1.1; 24:48,2.1; 25:1,2.1; 25:7,1.1; 25:15,3.1[Ex-321$]; 25:18,1.1; 25:22,2.1[Ex-321$]; 25:41,1.2[Ex-321$]; 26:28,2.1[Ex-321$]; 26:31,1.1; 26:42,3.1[Ex-321$]; 26:44,3.1[Ex-321$]; 26:45,1.1; 26:53,2.1; 26:55,1.1; 26:60,1.1[Ex-321$]; 26:60,3.1[Ex-321$]; 26:60,4.1[Ex-321$]; 26:61,1.1; 26:63,1.1; 27:2,2.1[Ex-321$]; 27:3,2.1; 27:3,3.1[Ex-321$]; 27:5,2.1; 27:11,1.1[Ex-321$]; 27:21,1.1[Ex-321$]; 27:29,1.1; 27:43,3.1; 27:47,1.1; 27:49,2.2; 27:58,1.1; 27:61,1.1[Ex-321$]; 28:2,1.1[Ex-321$]; 28:6,1.1[Ex-321$]; 28:8,1.1[Ex-321$].

1056.1	22:35,2.1	⊤ *ομιτ*
1091.1	23:21,1.1	⌜*κατοικουντι*
1148.1	24:37,2.1	⊤ *ομιτ*
1149.1	24:38,1.1	⌜*ως*
1162.1	24:48,2.1	ʻ*μου ο κυριος*
1164.1	25:1,2.1	⌜*υπαντησιν*
1172.1	25:7,1.1	⌜*εαυτων*
1180.1	25:18,1.1	⌜*γην*
1243.1	26:31,1.1	⌜*διασκορπισθησονται*
1269.1	26:45,1.1	⊤ *ομιτ*
1278.1	26:53,2.1	ˢ*αρτι* ⌜*πλειω* ⊤ *δωδεκα* ʻ*λεγιωνας ἀγγελων*
1282.1	26:55,1.1	⊤ *ομιτ*
1293.1	26:61,1.1	⌜*οἰκοδομησαι*
1294.1	26:63,1.1	⊤ *ομιτ*
1318.1	27:3,2.1	⌜*εστρεψεν*
1322.1	27:5,2.1	ʻ*εἰς τον ναον*
1344.1	27:29,1.1	ʻ*της κεφαλης*
1368.1	27:43,3.1	⌜*νυν*
1375.1	27:47,1.1	⌜*εστηκοτων*
1379.2	27:49,2.2	*αλλος δε λαβων λογχην ενυξεν αυτου την πλευραν, και εξηλθεν υδωρ και αιμα*
1388.1	27:58,1.1	⊤ *ομιτ*

The Old Latin Recension

The text of Exemplar Ex-313# is the Old Latin recension, being the ancestral forefather of the Old Latin versions, except the Vulgate witnesses. It differs from the autographic text by 461 secondary variants,[8] among which it uniquely originated the following 138 variants peculiar to this entire text tradition:

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[8] 1:5,1.3[Ex-321$]; 1:5,2.3[Ex-321$]; 1:7,1.2[Ex-321$]; 1:7,2.2[Ex-321$]; 1:7,5.2[Ex-321$]; 1:9,1.2[Ex-321$]; 1:9,2.2[Ex-321$]; 1:16,1.2[Ex-321$]; 1:22,2.2[Ex-321$]; 1:23,1.2[Ex-321$]; 2:3,1.2; 2:4,1.2[Ex-321$]; 2:6,1.2[Ex-321$]; 2:9,2.2; 2:17,1.2[Ex-321$]; 3:16,5.2; 3:17,1.2[Ex-321$]; 3:17,2.2[Ex-321$]; 4:2,1.2[Ex-321$]; 4:3,1.3[Ex-321$]; 4:4,1.2[Ex-321$]; 4:4,2.2[Ex-321$]; 4:7,1.2; 4:10,1.2[Ex-321$]; 4:16,1.2[Ex-321$]; 4:18,1.2; 4:19,1.2[Ex-321$]; 4:23,1.3[Ex-321$]; 5:4,1.2[Ex-321$]; 5:9,1.2[Ex-321$]; 5:11,2.2[Ex-321$]; 5:11,3.2[Ex-321$]; 5:11,4.2[Ex-321$]; 5:11,6.2; 5:11,7.2; 5:12,2.2; 5:13,1.2[Ex-321$]; 5:19,1.2[Ex-321$]; 5:20,1.2; 5:22,2.2[Ex-321$]; 5:29,1.2[Ex-321$]; 5:30,1.2[Ex-321$]; 5:32,2.3[Ex-321$]; 5:36,1.4[Ex-321$]; 5:38,1.2[Ex-321$]; 5:39,3.4; 5:40,1.2; 5:41,2.2[Ex-321$]; 5:42,2.2[Ex-321$]; 5:46,1.2[Ex-321$]; 6:1,3.2[Ex-321$]; 6:4,1.3; 6:4,2.2[Ex-321$]; 6:5,3.2; 6:8,2.2[Ex-321$]; 6:12,2.2[Ex-322$]; 6:15,2.3[Ex-321$]; 6:18,2.2; 6:18,3.2; 7:28,1.2[Ex-321$]; 8:5,1.4; 8:7,1.2[Ex-321$]; 8:21,1.2[Ex-321$]; 8:28,2.2[Ex-322$]; 9:1,2.2[Ex-321$]; 9:2,2.2[Ex-322$]; 9:4,2.2[Ex-321$]; 9:6,1.2[Ex-321$]; 9:9,1.2[Ex-321$]; 9:9,2.2[Ex-321$]; 9:10,1.2[Ex-321$]; 9:15,1.2[Ex-321$]; 9:15,2.2[Ex-321$]; 9:15,3.2; 9:17,2.2[Ex-321$]; 9:17,3.2[Ex-321$]; 9:18,1.6[Ex-321$]; 9:18,2.2[Ex-321$]; 9:19,1.2[Ex-321$]; 9:21,1.2[Ex-321$]; 9:22,1.2[Ex-321$]; 9:22,2.3; 9:22,3.2[Ex-321$]; 9:25,1.2; 9:26,1.3[Ex-321$]; 9:27,1.2[Ex-321$]; 9:27,2.2[Ex-321$]; 9:28,1.4; 9:28,2.2[Ex-321$]; 9:29,1.2[Ex-321$]; 9:34,1.2[Ex-321$]; 10:3,1.2[Ex-321$]; 10:4,3.4[Ex-321$]; 10:5,1.2; 10:6,1.2; 10:11,1.4; 10:12,1.2[Ex-321$]; 10:13,1.2; 10:14,1.2; 10:15,1.2[Ex-321$]; 10:16,3.2; 10:17,1.2[Ex-321$]; 10:17,2.3[Ex-321$]; 10:18,1.2[Ex-321$]; 10:19,2.2; 10:23,2.2[Ex-321$]; 10:23,3.2[Ex-321$]; 10:25,3.4; 10:27,1.2[Ex-321$]; 10:28,1.2[Ex-321$]; 10:30,1.2; 10:30,2.2; 10:35,1.2[Ex-321$]; 10:37,1.2[Ex-321$]; 10:41,1.2; 10:42,1.2[Ex-321$]; 10:42,2.3[Ex-321$]; 10:42,3.2[Ex-321$]; 10:42,4.2[Ex-321$]; 11:2,1.2[Ex-

Place of Variation	Reference	Reading
32.2	2:3,1.2	° *ομιτ*
37.2	2:9,2.2	*του παιδιου*
67.2	3:16,5.2	*καταβαινοντα εκ του ουρανου ως*
79.2	4:7,1.2	*ου πει—*
88.2	4:18,1.2	*π) παραγων*
107.2	5:11,6.2	° *ομιτ*
108.2	5:11,7.2	*δικαιοσυνης*
110.2	5:12,2.2	*υπαρχοντας*
Place of Variation	Reference	Reading
118.2	5:20,1.2	□ *ομιτ*

321$]; 11:5,1.3; 11:21,1.2; 11:24,1.2[Ex-321$]; 12:1,2.2[Ex-321$]; 12:2,1.2[Ex-321$]; 12:5,1.2; 12:10,1.3[Ex-321$]; 12:11,1.2[Ex-321$]; 12:11,2.2; 12:11,3.3[Ex-321$]; 12:11,4.2[Ex-321$]; 12:11,5.3; 12:14,1.5[Ex-321$]; 12:15,2.2; 12:18,1.2; 12:18,2.3[Ex-321$]; 12:21,1.3[Ex-321$]; 12:25,1.4[Ex-321$]; 12:36,1.2; 12:40,1.3; 12:40,2.2[Ex-321$]; 12:44,1.2; 12:46,1.3[Ex-321$]; 12:46,2.2[Ex-321$]; 12:48,2.2[Ex-321$]; 12:49,1.2[Ex-321$]; 12:50,1.2; 13:1,2.4; 13:3,1.2[Ex-321$]; 13:6,1.3; 13:6,3.2; 13:13,1.4; 13:13,2.3[Ex-321$]; 13:14,1.3; 13:14,2.2[Ex-321$]; 13:17,2.2; 13:19,1.3; 13:23,2.2[Ex-321$]; 13:26,1.2[Ex-321$]; 13:29,1.4; 13:30,3.3; 13:30,4.3[Ex-321$]; 13:31,1.2[Ex-321$]; 13:32,1.2[Ex-321$]; 13:33,1.4[Ex-321$]; 13:40,1.3; 13:42,1.2[Ex-321$]; 13:46,2.2[Ex-321$]; 13:48,1.2[Ex-321$]; 13:48,2.3; 13:48,3.2[Ex-321$]; 13:49,1.2; 13:52,1.4[Ex-321$]; 13:52,2.2[Ex-321$]; 13:54,1.2[Ex-321$]; 13:55,2.4[Ex-321$]; 13:58,1.2[Ex-321$]; 14:1,1.2[Ex-321$]; 14:2,1.2[Ex-321$]; 14:2,2.2[Ex-321$]; 14:3,3.5; 14:3,4.2[Ex-321$]; 14:4,1.3; 14:6,2.3; 14:8,1.2; 14:8,2.2; 14:8,3.2; 14:11,1.2; 14:12,2.2[Ex-321$]; 14:14,2.4; 14:14,3.2; 14:16,1.2[Ex-321$]; 14:16,2.2; 14:18,1.3[Ex-321$]; 14:19,2.2[Ex-321$]; 14:19,3.3[Ex-321$]; 14:19,4.3; 14:21,1.2[Ex-321$]; 14:21,2.2; 14:22,4.2; 14:24,1.2[Ex-321$]; 14:24,2.4[Ex-321$]; 14:25,2.2[Ex-321$]; 14:27,1.3[Ex-321$]; 14:28,1.5; 14:29,1.2[Ex-321$]; 14:34,2.2[Ex-321$]; 15:8,2.2[Ex-321$]; 15:11,1.2; 15:11,2.2; 15:11,3.2; 15:11,4.2; 15:14,1.2; 15:14,2.5[Ex-321$]; 15:14,4.2; 15:22,2.3; 15:24,1.2[Ex-321$]; 15:26,1.3[Ex-321$]; 15:28,1.2[Ex-321$]; 15:30,1.7; 15:30,3.2[Ex-321$]; 15:31,3.2[Ex-321$]; 15:32,4.2; 15:33,2.2[Ex-321$]; 15:38,2.2[Ex-321$]; 16:2,2.2; 16:4,1.2; 16:4,2.2[Ex-321$]; 16:7,1.2; 16:11,1.2[Ex-321$]; 16:11,2.4[Ex-321$]; 16:12,1.4[Ex-321$]; 16:13,2.2[Ex-321$]; 16:13,3.2; 16:14,1.2; 16:16,1.2[Ex-321$]; 16:19,1.4; 16:20,1.2[Ex-321$]; 16:20,3.2[Ex-321$]; 16:21,4.2[Ex-321$]; 16:22,1.3; 16:22,2.2; 16:23,1.2; 16:23,2.2; 16:23,3.2[Ex-321$]; 17:1,1.2[Ex-321$]; 17:1,2.2[Ex-321$]; 17:1,3.2[Ex-321$]; 17:1,4.2; 17:2,1.2[Ex-321$]; 17:2,2.2[Ex-321$]; 17:2,3.2[Ex-321$]; 17:7,1.2; 17:11,3.2; 17:12,1.2[Ex-321$]; 17:12,2.2; 17:14,1.3[Ex-321$]; 17:15,2.2[Ex-321$]; 17:20,4.2[Ex-321$]; 17:23,1.2[Ex-321$]; 17:24,1.2[Ex-321$]; 17:25,1.2[Ex-322$]; 17:26,1.5; 17:27,2.2[Ex-321$]; 17:27,3.2[Ex-321$]; 18:2,2.2[Ex-321$]; 18:6,1.3; 18:9,1.2; 18:10,1.2[Ex-321$]; 18:16,2.4; 18:17,1.2[Ex-321$]; 18:18,3.2[Ex-322$]; 18:19,1.3[Ex-321$]; 18:24,1.2[Ex-321$]; 18:26,1.2[Ex-321$]; 18:26,3.3[Ex-321$]; 18:31,2.2[Ex-321$]; 18:31,3.2[Ex-321$]; 18:32,1.2[Ex-321$]; 18:33,1.3[Ex-321$]; 18:34,2.2; 19:1,1.2[Ex-321$]; 19:3,1.2[Ex-321$]; 19:3,2.2[Ex-321$]; 19:6,1.2[Ex-321$]; 19:6,2.2; 19:7,1.2[Ex-321$]; 19:9,1.2[Ex-321$]; 19:9,2.4[Ex-321$]; 19:10,3.2; 19:14,1.2[Ex-321$]; 19:17,4.2[Ex-321$]; 19:20,1.2[Ex-321$]; 19:25,2.2[Ex-321$]; 19:28,2.2[Ex-321$]; 20:3,1.2; 20:5,2.2[Ex-321$]; 20:7,1.2[Ex-323$]; 20:9,1.3[Ex-321$]; 20:10,2.3; 20:12,1.2[Ex-321$]; 20:13,1.1[Ex-321$]; 20:15,1.2[Ex-321$]; 20:17,2.2[Ex-321$]; 20:17,3.2[Ex-321$]; 20:21,3.2[Ex-321$]; 20:23,2.2[Ex-321$]; 20:23,6.1[Ex-321$]; 20:26,1.2[Ex-321$]; 20:28,1.2[Ex-321$]; 20:29,1.2[Ex-321$]; 20:30,1.3[Ex-321$]; 20:30,2.2[Ex-321$]; 20:31,3.2[Ex-321$]; 20:34,1.1[Ex-321$]; 21:2,4.2[Ex-321$]; 21:3,2.2; 21:7,2.3; 21:8,1.2[Ex-321$]; 21:8,2.2[Ex-321$]; 21:16,1.2; 21:18,2.3; 21:22,1.3; 21:24,2.2[Ex-321$]; 21:25,3.2[Ex-321$]; 21:28,4.2; 21:29,2.2[Ex-321$]; 21:29,6.2[Ex-321$]; 21:29,8.2[Ex-321$]; 21:32,2.3[Ex-321$]; 21:36,1.3; 21:39,1.2; 21:44,1.2[Ex-321$]; 22:7,2.2[Ex-321$]; 22:10,1.1[Ex-321$]; 22:10,3.2[Ex-321$]; 22:12,1.2[Ex-321$]; 22:13,2.2[Ex-321$]; 22:17,1.2[Ex-321$]; 22:20,1.3[Ex-321$]; 22:21,2.2[Ex-321$]; 22:24,1.2; 22:28,2.2[Ex-321$]; 22:32,3.2[Ex-322$]; 22:34,1.2[Ex-321$]; 22:37,1.3[Ex-321$]; 22:39,2.4[Ex-321$]; 22:45,1.2[Ex-321$]; 22:46,1.2[Ex-321$]; 23:1,1.2[Ex-321$]; 23:2,1.2[Ex-321$]; 23:3,2.2; 23:9,1.2[Ex-321$]; 23:10,1.2; 23:15,1.3; 23:23,2.2[Ex-321$]; 23:26,1.1[Ex-321$]; 23:26,2.1[Ex-321$]; 23:27,2.3[Ex-321$]; 23:31,1.3; 23:34,1.2[Ex-321$]; 23:34,2.2[Ex-321$]; 23:37,1.2[Ex-321$]; 24:17,2.2[Ex-321$]; 24:19,1.2; 24:20,1.2; 24:21,1.2[Ex-321$]; 24:21,2.2; 24:24,2.3; 24:27,1.2[Ex-321$]; 24:29,1.2; 24:30,1.3; 24:30,2.2[Ex-321$]; 24:31,1.3[Ex-321$]; 24:31,4.2[Ex-321$]; 24:34,3.2[Ex-321$]; 24:39,1.2[Ex-321$]; 24:41,1.2[Ex-321$]; 24:41,2.2[Ex-321$]; 24:45,2.3[Ex-321$]; 25:1,3.4[Ex-321$]; 25:3,2.2[Ex-321$]; 25:17,2.3; 25:20,1.2[Ex-322$]; 25:21,2.2[Ex-321$]; 25:22,3.2[Ex-322$]; 25:23,1.2[Ex-321$]; 25:24,1.2[Ex-321$]; 25:24,2.2[Ex-321$]; 25:27,1.2[Ex-321$]; 25:28,1.2; 25:29,1.2; 25:41,2.3[Ex-321$]; 26:1,1.2; 26:3,3.2[Ex-321$]; 26:7,2.2[Ex-321$]; 26:9,2.2[Ex-321$]; 26:14,1.2[Ex-321$]; 26:15,1.2[Ex-321$]; 26:15,2.2[Ex-321$]; 26:16,1.2[Ex-321$]; 26:22,1.2[Ex-321$]; 26:22,2.2[Ex-322$]; 26:23,1.2[Ex-321$]; 26:26,1.2[Ex-321$]; 26:27,1.2[Ex-321$]; 26:29,3.2[Ex-321$]; 26:34,2.2[Ex-321$]; 26:36,1.2[Ex-321$]; 26:36,2.3[Ex-321$]; 26:36,4.2; 26:44,2.2[Ex-321$]; 26:49,3.2; 26:55,2.3[Ex-321$]; 26:57,1.2[Ex-321$]; 26:59,2.2; 26:63,2.2[Ex-321$]; 26:66,1.2[Ex-321$]; 26:67,1.2[Ex-321$]; 26:70,2.2; 26:71,1.3[Ex-321$]; 26:71,2.2; 26:72,1.2[Ex-321$]; 26:73,1.2[Ex-321$]; 26:73,3.2; 27:1,1.2[Ex-321$]; 27:17,1.2[Ex-321$]; 27:22,1.2; 27:24,1.2[Ex-321$]; 27:26,1.2[Ex-321$]; 27:26,2.2[Ex-321$]; 27:28,1.2[Ex-321$]; 27:28,2.3; 27:32,1.2; 27:33,3.3[Ex-321$]; 27:35,1.2[Ex-321$]; 27:40,2.1; 27:41,1.2[Ex-321$]; 27:41,2.2; 27:42,3.4[Ex-321$]; 27:43,1.2[Ex-321$]; 27:44,1.2[Ex-321$]; 27:46,3.2[Ex-323$]; 27:47,2.2[Ex-321$]; 27:49,1.2[Ex-321$]; 27:51,1.6; 27:54,1.2[Ex-321$]; 27:54,2.2[Ex-321$]; 27:56,3.1[Ex-321$]; 27:65,1.2[Ex-321$]; 27:65,3.2[Ex-321$]; 28:7,1.2[Ex-321$]; 28:9,2.2[Ex-321$]; 28:9,3.2[Ex-321$]; 28:10,2.2[Ex-321$]; 28:11,1.2[Ex-321$]; 28:14,1.2[Ex-321$]; 28:18,1.2; 28:19,1.2; 28:19,2.2[Ex-321$]; 28:20,1.2.

141.4	5:39,3.4	*2 3*
142.2	5:40,1.2	*ο —λων*
161.3	6:4,1.3	*3 4 2 1*
166.2	6:5,3.2	*στηναι*
188.2	6:18,2.2	*κρυφια*
189.2	6:18,3.2	*κρυφαιω*
250.4	8:5,1.4	*μ. δε τ. εισελ. αυτ. εις Κ.*
309.2	9:15,3.2	*π) εν εκειναις ταις ημεραις*
320.3	9:22,2.3	*εστη στραφεις*
323.2	9:25,1.2	*ελ—*
327.4	9:28,1.4	*και ερχεται*
346.2	10:5,1.2	*και λ.*
347.2	10:6,1.2	*υπαγετε*
352.4	10:11,1.4	*η πολις 1 2 4 8 εις αυτην*
354.2	10:13,1.2	*ει δε μη γε*
356.2	10:14,1.2	□ *ομιτ*
362.2	10:16,3.2	*απλουστατοι*
367.2	10:19,2.2	□ *ομιτ*
376.4	10:25,3.4	*καλουσιν*
381.2	10:30,1.2	*αλλα*
382.2	10:30,2.2	*μων*
393.2	10:41,1.2	□ *ομιτ*
401.3	11:5,1.3	—
418.2	11:21,1.2	*και*
437.2	12:5,1.2	*εν*
444.2	12:11,2.2	*εχει*
447.3	12:11,5.3	*κρατει αυτο και εγειρει*
452.2	12:15,2.2	*παντας δε ους εθεραπευσεν επεπληξεν*
454.2	12:18,1.2	*εις*
478.2	12:36,1.2	*λαλουσιν*
481.3	12:40,1.3	—
483.2	12:44,1.2	*τον οικον*
494.2	12:50,1.2	*ποιει*
497.4	13:1,2.4	—
503.3	13:6,1.3	*εκαυματισθησαν*
505.2	13:6,3.2	*—ανθησαν*
509.4	13:13,1.4	*λαλει αυτ.*
Place of Variation	Reference	Reading
511.3	13:14,1.3	*τοτε πληρωθησεται επ*

517.2	13:17,2.2	ηδυνηθησαν ιδειν
519.3	13:19,1.3	το σπειρομενον
529.4	13:29,1.4	λεγει αυτοις
532.3	13:30,3.3	3
546.3	13:40,1.3	κατακαιονται
557.3	13:48,2.3	ανεβιβασαν αυτην
560.2	13:49,1.2	κοσμου
576.5	14:3,3.5	εν τη φυλ.
578.3	14:4,1.3	3 2
580.3	14:6,2.3	αυτου Ηρωδιας
581.2	14:8,1.2	ειπεν
582.2	14:8,2.2	○ ομιτ
583.2	14:8,3.2	□ ομιτ
587.2	14:11,1.2	επι τω
595.4	14:14,2.4	περι αυτων
596.2	14:14,3.2	αρρωστουντας
602.2	14:16,2.2	2 3 1
607.3	14:19,4.3	ελαβεν
609.2	14:21,2.2	3 2 1
613.2	14:22,4.2	○ ομιτ
621.5	14:28,1.5	1 3 4
645.2	15:11,1.2	παν
646.2	15:11,2.2	κοινωνει
647.2	15:11,3.2	εκεινο
648.2	15:11,4.2	κοινωνει
651.2	15:14,1.2	τους τυφλους
654.2	15:14,4.2	εμπεσουνται εις βοθρον
660.3	15:22,2.3	οπισω αυτου
668.7	15:30,1.7	1 2 3
678.2	15:32,4.2	εισιν και
696.2	16:2,2.2	αηρ
698.2	16:4,1.2	□ ομιτ
703.2	16:7,1.2	τοτε
712.2	16:13,3.2	○ ομιτ
713.2	16:14,1.2	□ ομιτ
720.4	16:19,1.4	σοι δ.
734.3	16:22,1.3	ηρξατο αυτω επιτιμαν και λεγειν
Place of Variation	Reference	Reading
735.2	16:22,2.2	τουτο σοι

736.2	16:23,1.2	*π) επιστραφεις*
737.2	16:23,2.2	*ει εμοι*
747.2	17:1,4.2	*λιαν*
758.2	17:7,1.2	*π—ηλθεν ο Ι. κ. ηψατο α. και ειπεν*
764.2	17:11,3.2	*αποκαταστησαι*
766.2	17:12,2.2	*τοτε. αυτοις. ουτως. αυτων*
785.5	17:26,1.5	*λεγει αυτω·*
794.3	18:6,1.3	*επι*
799.2	18:9,1.2	*το αυτο ει και*
813.4	18:16,2.4	*1 3 4*
846.2	18:34,2.2	○ *ομιτ*
859.2	19:6,2.2	*εις ἕν*
867.2	19:10,3.2	*ανδρος*
901.2	20:3,1.2	*ευρεν*
911.3	20:10,2.3	*πλειω*
966.2	21:3,2.2	*και ευθεως*
974.3	21:7,2.3	*αυτον*
986.2	21:16,1.2	○ *ομιτ*
988.3	21:18,2.3	*παραγων*
991.3	21:22,1.3	—
1003.2	21:28,4.2	*εις τον αμπελωνα*
1014.3	21:36,1.3	*π. ουν*
1016.2	21:39,1.2	*1 7 6 2 3 4 5*
1043.2	22:24,1.2	□ *ομιτ*
1073.2	23:3,2.2	*ποιειτε και τηρειτε*
1085.2	23:10,1.2	*1 2 3 5 4*
1088.3	23:15,1.3	*ινα ποιησητε*
1102.3	23:31,1.3	*επληρωσατε*
1124.2	24:19,1.2	*θηλαζομεναις*
1125.2	24:20,1.2	*σαββατου*
1127.2	24:21,2.2	*ουδε*
1129.3	24:24,2.3	*πλανηθηναι*
1132.2	24:29,1.2	*π) εκ*
1133.3	24:30,1.3	*του εν ουρανοις*
1179.3	25:17,2.3	*και αυτος εκερδησεν*
1194.2	25:28,1.2	*πεντε*
1195.2	25:29,1.2	○ *ομιτ*
Place of Variation	Reference	Reading
1209.2	26:1,1.2	□ *ομιτ*

1254.2	26:36,4.2	*αν*
1274.2	26:49,3.2	*2 3 4 1*
1288.2	26:59,2.2	*αυτον θανατωσουσιν*
1304.2	26:70,2.2	*π) ουδε επισταμαι*
1306.2	26:71,2.2	*παιδισκη*
1312.2	26:73,3.2	*ομοιαζει*
1334.2	27:22,1.2	*ποιησωμεν*
1343.3	27:28,2.3	*π) ιματιον πορφυρουν και*
1349.2	27:32,1.2	*εις απαντησιν αυτου*
1360.1	27:40,2.1	°*και*
1362.2	27:41,2.2	*και Φαρισαιων*
1380.6	27:51,1.6	*εις δυο μερη απο ανωθεν εως κατω*
1422.2	28:18,1.2	*ουρανοις*
1425.2	28:19,1.2	*νυν*
1427.2	28:20,1.2	*3 1 2*

The Antiochan Recension

The text of Exemplar Ex-314# is the Antiochan recension, being the ancestral forefather of all the Byzantine-like witnesses. It differs from the autographic text by 318 secondary variants,[9] among which it uniquely originated the following 20 variants peculiar to this entire text tradition:

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[9] 1:10,3.2[Ex-321$]; 1:10,4.2[Ex-321$]; 1:22,1.2[Ex-321$]; 2:8,1.2[Ex-321$]; 2:9,1.2[Ex-321$]; 2:19,1.2[Ex-321$]; 2:23,1.2[Ex-321$]; 3:10,1.2[Ex-321$]; 3:16,1.2[Ex-321$]; 4:5,1.2[Ex-321$]; 4:9,1.2[Ex-321$]; 4:12,1.2[Ex-321$]; 4:13,1.2[Ex-322$]; 4:13,2.2[Ex-321$]; 4:23,1.4; 5:11,5.2[Ex-321$]; 5:25,1.2[Ex-321$]; 5:30,3.2[Ex-321$]; 5:36,1.2[Ex-322$]; 5:39,3.2[Ex-321$]; 5:42,1.2[Ex-321$]; 5:47,2.2[Ex-321$]; 5:47,3.2[Ex-321$]; 5:47,4.2[Ex-321$]; 6:1,2.2[Ex-321$]; 6:4,3.2[Ex-321$]; 6:5,4.2[Ex-321$]; 6:5,5.2[Ex-321$]; 6:6,1.2[Ex-321$]; 6:12,2.3[Ex-321$]; 6:13,1.3[Ex-321$]; 6:15,1.2[Ex-321$]; 6:16,1.2[Ex-321$]; 6:21,1.2[Ex-321$]; 6:21,3.2[Ex-321$]; 6:25,1.2[Ex-321$]; 7:4,2.2[Ex-321$]; 7:9,2.2[Ex-321$]; 7:15,1.2[Ex-321$]; 7:16,1.2[Ex-321$]; 7:29,1.2[Ex-321$]; 8:1,1.2[Ex-321$]; 8:2,1.2[Ex-321$]; 8:5,1.2[Ex-321$]; 8:13,3.1[Ex-321$]; 8:25,1.2[Ex-321$]; 8:28,1.3[Ex-321$]; 8:28,2.3[Ex-321$]; 8:31,1.2[Ex-321$]; 8:32,1.2[Ex-321$]; 8:32,2.2[Ex-321$]; 9:2,1.2[Ex-321$]; 9:2,2.3[Ex-321$]; 9:4,1.2[Ex-321$]; 9:4,3.2[Ex-321$]; 9:5,1.2[Ex-321$]; 9:8,1.2[Ex-321$]; 9:12,1.2[Ex-321$]; 9:12,2.2[Ex-321$]; 9:22,2.2[Ex-321$]; 9:24,1.2[Ex-321$]; 10:4,1.2[Ex-321$]; 10:8,1.6[Ex-321$]; 10:10,1.2[Ex-321$]; 10:19,1.4; 10:31,1.2[Ex-321$]; 10:33,2.2[Ex-321$]; 11:2,2.2[Ex-321$]; 11:8,2.2[Ex-321$]; 11:10,1.2[Ex-321$]; 11:15,1.2[Ex-321$]; 11:16,2.2[Ex-321$]; 11:17,1.2[Ex-321$]; 11:23,1.2[Ex-321$]; 11:23,2.2[Ex-321$]; 11:23,3.2[Ex-321$]; 11:25,1.2[Ex-321$]; 12:4,2.2[Ex-321$]; 12:10,3.2[Ex-321$]; 12:17,1.2[Ex-321$]; 12:18,2.1[Ex-322$]; 12:22,2.2[Ex-323$]; 12:22,3.2[Ex-321$]; 12:27,2.3; 12:38,1.2[Ex-321$]; 12:46,1.2; 12:48,1.2[Ex-321$]; 13:1,2.3; 13:22,1.2[Ex-321$]; 13:23,1.2[Ex-321$]; 13:28,2.3[Ex-321$]; 13:29,1.2[Ex-321$]; 13:30,1.3[Ex-321$]; 13:36,1.2[Ex-321$]; 13:37,1.2[Ex-321$]; 13:39,2.2[Ex-321$]; 13:40,1.2[Ex-321$]; 13:40,2.2[Ex-321$]; 13:44,1.2[Ex-321$]; 13:46,1.2[Ex-321$]; 13:51,1.2[Ex-321$]; 13:51,2.2[Ex-321$]; 13:55,2.2[Ex-322$]; 13:57,1.3[Ex-321$]; 14:3,3.2[Ex-321$]; 14:6,1.3[Ex-321$]; 14:9,1.2[Ex-321$]; 14:14,1.2[Ex-321$]; 14:18,1.2[Ex-322$]; 14:19,3.2[Ex-322$]; 14:22,2.2[Ex-321$]; 14:26,1.3[Ex-321$]; 14:28,2.2[Ex-321$]; 14:32,1.2[Ex-321$]; 14:34,1.3[Ex-321$]; 15:1,1.2[Ex-321$]; 15:1,2.2[Ex-321$]; 15:4,1.2[Ex-321$]; 15:6,1.2[Ex-321$]; 15:6,3.2[Ex-322$]; 15:6,4.3[Ex-321$]; 15:8,1.2; 15:12,1.2[Ex-321$]; 15:12,2.2[Ex-321$]; 15:16,1.2[Ex-321$]; 15:22,2.2[Ex-321$]; 15:23,1.2[Ex-321$]; 15:25,1.2[Ex-321$]; 15:30,1.3[Ex-322$]; 15:30,2.2[Ex-321$]; 15:31,1.2[Ex-321$]; 15:35,1.2[Ex-321$]; 15:35,2.3[Ex-321$]; 15:35,3.2[Ex-321$]; 15:35,5.2[Ex-321$]; 15:35,6.2[Ex-321$]; 15:37,1.2[Ex-321$]; 15:39,1.2[Ex-321$]; 16:4,3.2[Ex-321$]; 16:5,1.2[Ex-321$]; 16:8,1.2[Ex-321$]; 16:11,2.2[Ex-322$]; 16:12,1.2[Ex-322$]; 16:17,1.2[Ex-321$]; 16:19,1.2[Ex-321$]; 16:20,2.2[Ex-321$]; 16:21,2.2[Ex-321$]; 17:3,1.2[Ex-321$]; 17:5,1.2[Ex-321$]; 17:9,1.2[Ex-321$]; 17:11,1.2; 17:11,2.2[Ex-321$]; 17:17,3.2[Ex-321$]; 17:20,1.2[Ex-321$]; 17:20,2.2[Ex-321$]; 17:25,1.5[Ex-321$]; 17:26,1.3[Ex-321$]; 18:6,1.2[Ex-321$]; 18:7,2.2[Ex-321$]; 18:8,1.2[Ex-321$]; 18:12,1.2[Ex-321$]; 18:12,4.2[Ex-321$]; 18:14,3.2[Ex-321$]; 18:18,2.3; 18:18,3.3[Ex-321$]; 18:19,2.3; 18:21,1.2[Ex-321$]; 18:25,1.2[Ex-321$]; 18:26,2.2[Ex-321$]; 18:26,3.2; 18:28,2.2[Ex-321$]; 18:29,1.2[Ex-321$]; 18:31,1.2[Ex-321$]; 18:34,3.2[Ex-321$]; 18:35,1.2[Ex-321$]; 18:35,2.2[Ex-321$]; 19:4,1.2[Ex-321$]; 19:4,3.2[Ex-321$]; 19:9,3.2[Ex-321$]; 19:13,1.2[Ex-321$]; 19:16,2.2[Ex-321$]; 19:16,3.2[Ex-321$]; 19:17,1.2[Ex-321$]; 19:17,3.2[Ex-321$]; 19:21,2.2[Ex-321$]; 19:21,3.2[Ex-

Place of Variation	Reference	Reading
93.4	4:23,1.4	*ολην την Γ—αν ο Ιησ.*
366.4	10:19,1.4	*—διδωσιν*
465.3	12:27,2.3	*1 4 3 2*
485.2	12:46,1.2	*1 δε 2 3*
497.3	13:1,2.3	*απο της οικιας*
643.2	15:8,1.2	*εγγιζει μοι ο λαος ουτος τω στοματι αυτων και*
762.2	17:11,1.2	*Ιησους*
816.3	18:18,2.3	*τω ουρανω*
819.3	18:19,2.3	*υμων συμφωνησωσιν*
832.2	18:26,3.2	*1 2 4 3*
1007.2	21:29,4.2	*και προσελθων*
1034.3	22:13,2.3	*δησαντες αυτου ποδας και χειρας αρατε αυτον και εκβαλετε*
1087.3	23:13,2.3	*ιδ., σεδ πον. π.'σ 12*
1111.2	24:1,1.2	*4 1 2 3*
1160.2	24:46,1.2	*2 1*
1179.2	25:17,2.2	*εκ. και αυτος*
1287.2	26:59,1.2	*και οι πρεσβυτεροι*
1301.2	26:69,1.2	*2 1*
1305.2	26:71,1.2	*εξελθοντα δε αυτον*
1336.2	27:23,1.2	*ο δε ηγεμων εφη*

Tracing Variant History

For various reasons, it may be of interest to trace the history of the genealogical heritage of the alternate readings at particular places of variation. For each variant at the desired place,

321$]; 19:24,3.3[Ex-321$]; 19:29,1.2[Ex-321$]; 20:5,1.2[Ex-321$]; 20:6,1.2[Ex-321$]; 20:7,1.3[Ex-322$]; 20:10,1.2[Ex-321$]; 20:15,2.2[Ex-321$]; 20:20,1.2[Ex-321$]; 20:22,1.2[Ex-321$]; 20:23,1.2[Ex-321$]; 20:23,3.2[Ex-321$]; 20:27,1.2[Ex-321$]; 20:30,1.1[Ex-322$]; 20:31,1.2[Ex-321$]; 20:31,2.1[Ex-321$]; 20:33,1.2[Ex-321$]; 20:34,2.2[Ex-321$]; 21:1,4.2[Ex-321$]; 21:2,1.2[Ex-321$]; 21:3,2.3[Ex-321$]; 21:3,3.2[Ex-321$]; 21:4,1.2[Ex-321$]; 21:6,1.2[Ex-321$]; 21:7,1.2[Ex-321$]; 21:7,3.2[Ex-321$]; 21:9,1.2[Ex-321$]; 21:11,1.2[Ex-321$]; 21:14,1.2[Ex-321$]; 21:15,1.2[Ex-321$]; 21:18,1.2[Ex-321$]; 21:18,2.1[Ex-321$]; 21:23,1.2[Ex-321$]; 21:29,4.2; 21:29,7.2[Ex-321$]; 21:38,1.2[Ex-321$]; 21:46,1.2[Ex-321$]; 22:4,2.2[Ex-321$]; 22:13,2.3; 22:30,1.2[Ex-321$]; 22:30,2.4[Ex-321$]; 22:32,3.3[Ex-321$]; 22:37,1.2[Ex-322$]; 22:39,2.2[Ex-322$]; 22:43,2.3[Ex-321$]; 22:44,1.2[Ex-321$]; 22:44,2.2[Ex-321$]; 23:3,1.2[Ex-321$]; 23:3,2.3[Ex-321$]; 23:4,2.2[Ex-321$]; 23:5,1.2[Ex-321$]; 23:8,3.2[Ex-321$]; 23:10,1.4[Ex-321$]; 23:13,1.2[Ex-321$]; 23:13,2.3; 23:17,1.2[Ex-321$]; 23:19,1.2[Ex-321$]; 23:23,1.2[Ex-321$]; 23:30,1.2[Ex-321$]; 23:37,3.2[Ex-321$]; 24:1,1.2; 24:6,1.2[Ex-321$]; 24:7,1.3[Ex-321$]; 24:16,1.2[Ex-321$]; 24:17,1.2[Ex-321$]; 24:28,1.2[Ex-321$]; 24:30,1.2[Ex-321$]; 24:34,1.2[Ex-321$]; 24:35,2.2[Ex-321$]; 24:36,1.2[Ex-321$]; 24:37,1.2[Ex-321$]; 24:38,2.3[Ex-321$]; 24:38,3.4[Ex-321$]; 24:42,1.2[Ex-321$]; 24:43,1.2[Ex-321$]; 24:45,1.2[Ex-321$]; 24:46,1.2; 25:1,1.2[Ex-321$]; 25:9,1.2[Ex-321$]; 25:13,1.2[Ex-321$]; 25:15,2.2[Ex-321$]; 25:17,2.2; 25:18,2.2[Ex-321$]; 25:20,1.3[Ex-321$]; 25:22,3.3[Ex-321$]; 25:31,1.2[Ex-321$]; 25:39,1.2[Ex-321$]; 26:7,3.2[Ex-321$]; 26:20,1.2[Ex-321$]; 26:22,2.3[Ex-321$]; 26:26,3.2[Ex-321$]; 26:28,1.2[Ex-321$]; 26:29,1.2[Ex-321$]; 26:35,1.3[Ex-321$]; 26:44,1.3[Ex-321$]; 26:53,3.2[Ex-321$]; 26:53,4.2[Ex-321$]; 26:53,5.2[Ex-321$]; 26:59,1.2; 26:59,2.5[Ex-321$]; 26:60,2.2[Ex-321$]; 26:65,1.2[Ex-321$]; 26:65,2.2[Ex-321$]; 26:69,1.2; 26:71,1.2; 26:71,4.2[Ex-321$]; 26:75,1.2[Ex-321$]; 27:2,1.2[Ex-321$]; 27:11,3.2[Ex-321$]; 27:22,2.2[Ex-321$]; 27:23,1.2; 27:24,3.2[Ex-321$]; 27:29,2.2[Ex-321$]; 27:29,3.2[Ex-321$]; 27:34,2.2[Ex-321$]; 27:41,2.3[Ex-321$]; 27:42,1.2[Ex-321$]; 27:42,3.3[Ex-322$]; 27:44,2.3[Ex-321$]; 27:46,3.4[Ex-322$]; 27:51,1.2[Ex-321$]; 27:52,1.2[Ex-321$]; 27:57,1.2[Ex-321$]; 27:59,1.2[Ex-321$]; 28:3,1.2[Ex-321$]; 28:3,2.2[Ex-321$]; 28:4,1.2[Ex-321$]; 28:4,2.2[Ex-321$]; 28:15,3.2[Ex-321$]; 28:17,1.2[Ex-321$]; 28:18,2.2[Ex-321$]; 28:19,1.3[Ex-321$]; 28:20,2.2[Ex-321$].

one may want to see where it originated in genealogical history and how it was subsequently distributed by genetic inheritance. Upon request, software program Lachmann-10 displays the genealogical history of the variants at any selected place of variation. It constructs the historical tree diagram (like the one in Appendix D) and displays on the monitor screen the generation and index number of the variant contained in each and every witness. The following section presents typical examples of possible studies of interest.

Typical Examples

Four typical examples follow: (1) binary alternatives, (2) multiple alternatives, (3) many alternatives, and (4) places where the autograph differs from the text of NA-27.

Binary Alternatives

Figure 7.1 displays the distribution of the alternative readings at variation unit 50 (reference 3:2,1) where only the following two alternatives occur:

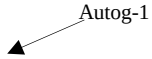
(1) 3:2,1.1—*και*
(2) 3:2,1.2—omit

The choice is between the presence or absence of the conjunction. This stemma displays the historical distribution of the variants at this place of variation. In this case, the distribution is very simple. The autographic reading is the first variant, the NA-27 reading; it is widely distributed, being the only reading in all the witnesses in the Old Latin branch (Ex-313), the Antiochan branch (Ex-314), and the Egyptian branch (Ex-313), except for its second-generation sub-branch headed by Ex-304, and by its third-generation sub-branch headed by Ex-277, both having the second alternate reading: the absence of the conjunction. These sub-branches are the sources of Codex Vaticanus (B*) and Codex Sinaiticus (01*) and their related witnesses. This is an instance where the editors of the NA-27 text departed from the readings of both Aleph and B*. Also this stemma is an example of perfect hereditary persistence.

Multiple Alternatives

Figure 7.2 displays the distribution of four alternatives at variation unit 59 (reference 4:21,1). The following alternative readings occur at this place of variation:

Figure 7.1
Distribution of variants at 3:2,1



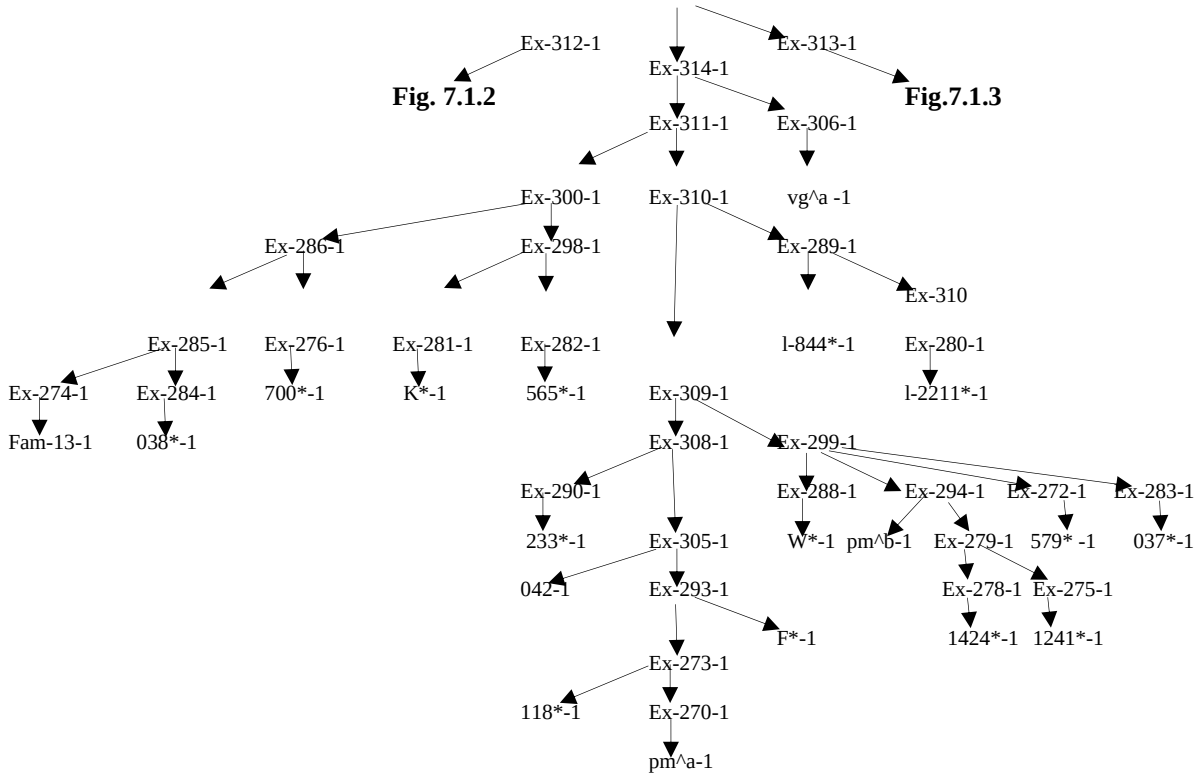


Fig. 7.1.2

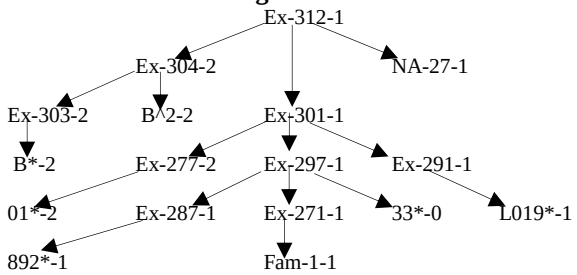
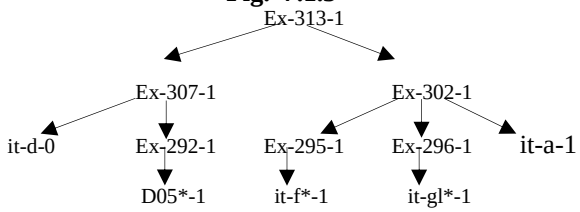


Fig. 7.1.3



(1) 3:12,1.1—*αὐτου εἰς την ἀποθηκην*
(2) 3:12,1.2—*αὐτου εἰς την ἀποθηκην αὐτου*
(3) 3:12,1.3—*εἰς την ἀποθηκην αὐτου*
(4) 3:12,1.4—*εἰς την ἀποθηκην*

Figure 7.2
Distribution of variants at 3:12,1

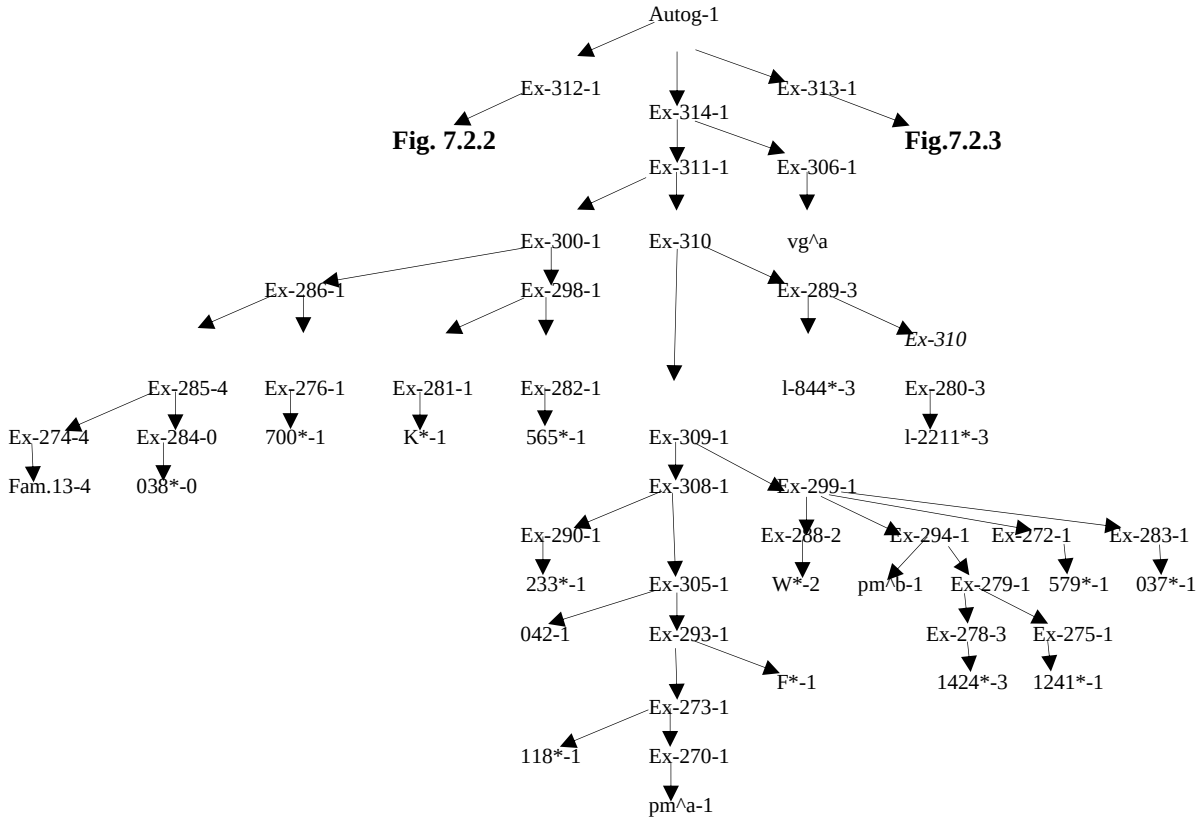


Fig. 7.2.2

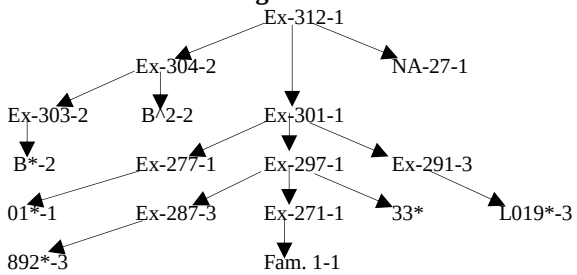
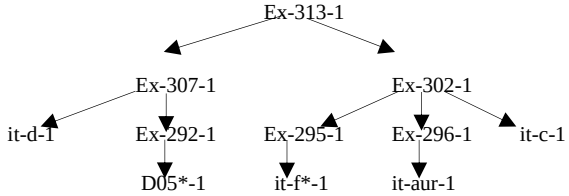


Fig. 7.2.3



The differences amount to alternate word order and the presence or absence of a pronoun, with little difference in meaning, if any. The autographic reading is the first variant, the NA-27 reading, being dominant in all three text traditions. It totally dominated the Old Latin branch, and the Antiochan branch except for its fourth-generation sub-branch headed by Ex-289, its fifth-generation sub-branch headed by Ex-285, its sixth-generation sub-branch headed by Ex-288, and its eighth-generation sub-branch headed by Ex-278. It was dominant in the Egyptian branch except for its second-generation sub-branch headed by Ex-304, its third-generation sub-branch headed by Ex-291, and its fourth-generation sub-branch headed by Ex-287. The alternate readings mostly appear in small late-generation sub-branches.

The second alternate was introduced only in a second-generation sub-branch of the Egyptian branch headed byEx-304, the source of Codex B* and its related witnesses, and in a sixth-generation sub-branch of the Antiochan branch headed by Ex-288, the source of W* and its corrector. The third alternate reading was first introduced in the Egyptian branch in its third-generation sub-branch headed by Ex-291, the source of L019* and its corrector; and again by mixture in its fourth-generation sub-branch of headed by Ex-287, the source of 892* and its corrector; it was also introduced in the Antiochan branch by mixture in its fourth-generation sub-branch headed by Ex-289, the source of l-844* and its corrector, and in its eighth-generation sub-branch headed by Ex-278, the source of 1424* and its corrector. The fourth alternate was initiated only in a fifth-generation sub-branch of the Antiochan branch headed by Ex-285, the source of the witnesses in Family-1. A few random Old Latin versions have alternates three or four, evidently by mixture. This stemma also exhibits perfect hereditary persistence.

Many Alternatives

Figure 7.3 displays the distribution of the variants at variation unit 314 (reference 9:18,1) where the following seven alternative readings occur:

(1) 9:18,1.1—*ϵις ἐλθων*
(2) 9:18,1.2—*ϵἰς προσϵλθων*
(3) 9:18,1.3—*τις προσϵλθων*
(4) 9:18,1.4—*προσϵλθων*
(5) 9:18,1.5—*τις ἐλθων*
(6) 9:18,1.6—*ΕΙΣΕΛΘΩΝ*
(7) 9:18,1.7— *ϵισἐλθων*

The autographic reading is the first alternative, the NA-27 reading, being supported by two of the first-generation recensions: the Egyptian (Ex-312) and the Antiochan (Ex-314), against the sixth alternative supported by the Old Latin recension (Ex-313).

Figure 7.3
Distribution of variants at 9:18,1

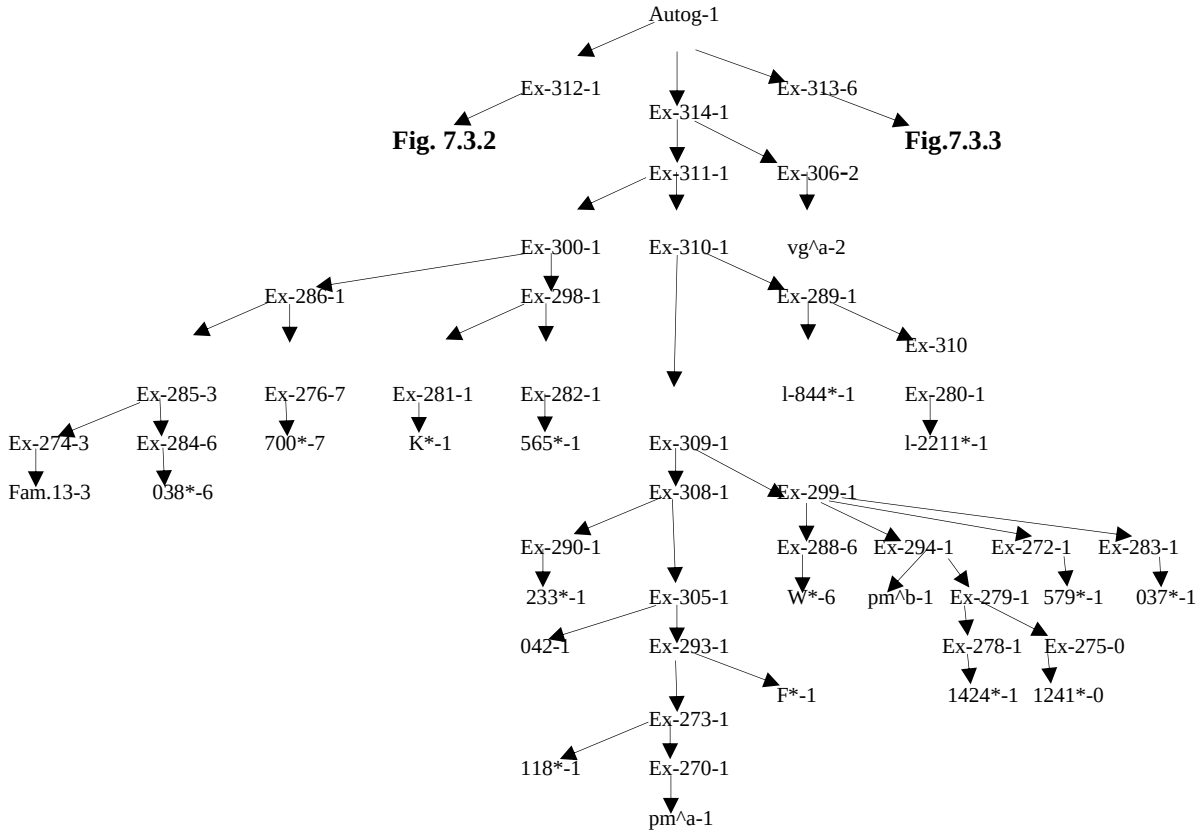


Fig. 7.3.2

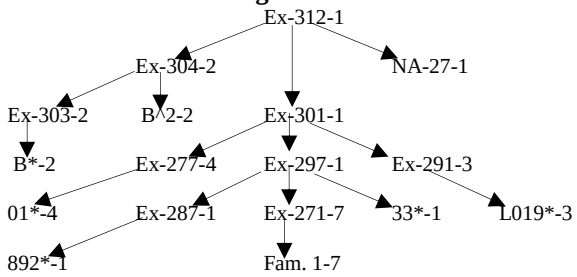
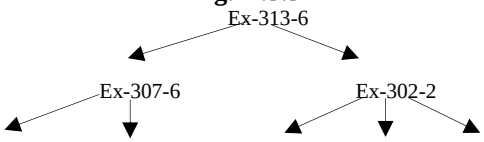
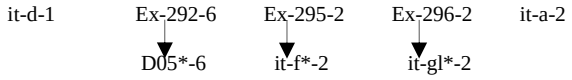


Fig. 7.3.3





It persisted in the Antiochan branch except for a second-generation sub-branch headed by Ex-306, and in five small remote sub-branches: (1) a fifth-generation sub-branch headed by Ex-285, (2) a fifth-generation sub-branch headed by Ex-276, (3) a sixth-generation sub-branch headed by Ex-274, (4) a sixth-generation sub-branch headed by Ex-284, and (5) a sixth-generation sub-branch headed by Ex-288. However, the first alternative was less supported in the Egyptian branch (Ex-312), which, for this place of variation was quite diverse, having sub-branches supporting the second (Ex-304), third (Ex-291), fourth (Ex-277), and seventh (Ex-271) alternatives.

The second alternative was a good competitor, showing up in a second-generation sub-branch of each of the three text traditions: (1) in the Egyptian branch at its sub-branch headed by Ex-304, the source of B* and its correctors; (2) in the Old Latin branch at sub-branch headed by Ex-302, the source of the OL witnesses; and in the Antiochan branch at sub-branch headed by Ex-306. Once initiated, the reading persisted to all descendant witnesses.

The third alternative first appeared in a third-generation sub-branch of the Egyptian branch headed by Ex-291, the source of L019* and its corrector; and by mixture in a fifth-generation sub-branch of the of the Antiochan branch headed by Ex-285, the source of Family-13. The fourth alternative first appears in a small third-generation sub-branch of the Egyptian branch headed by Ex-277, the source of 01* and its correctors. The fifth alternative occurs only once in MS 036*, a descendant of ninth-generation sub-branch of the Antiochan branch.

The sixth alternative occurs first in Ex-313, the head of the Old Latin branch, and again by mixture in a sixth-generation sub-branch of the Antiochan branch headed by Ex-284, the source of 038* and its corrector; and in its sixth-generation sub-branch headed by Ex-288, the source W* and it corrector. Finally, the seventh alternative first occurs in a fourth-generation sub-branch of the Egyptian branch headed by Ex-271, the source of the Family-1 witnesses, and by mixture in a fifth-generation sub-branch of the Antiochan branch headed by Ex-276, the source of 700* and its corrector.

Lachmann-10 Differs from NA-27

An interesting example is a place where Lachmann-10 recovered an autographic reading different from that of the NA-27 text. One occurs at place of variation 819 (reference 18:19,2) where the following five alternative readings occur:

(1) 18:19,2.1— *συμφωνησωσιν ἐξ υμων*
(2) 18:19,2.2—*ἐξ υμων συμφωνησωσιν*
(3) 18:19,2.3— *υμων συμφωνησωσιν*
(4) 18:19,2.4— *υμων συμφωνησουσιν*
(5) 18:19,2.5— *συμφωνησουσιν εξ υμων*

Figure 7.4 displays the distribution of these five alternate readings. For this place of variation, Lachmann-10 recovered the fifth alternative as the reading of the autograph, being the dominant reading of two of the first-generation recensions: the Egyptian (Ex-312) and the Old Latin (Ex-313); standing against the third alternative supported by Antiochan recension (Ex-314). Although these two branches are somewhat diverse for this place of variation, the fifth alterative dominates, having the earliest and most persistent support.

The first alternative, the reading of NA-27, occurs first in a small second-generation sub-branch of the Egyptian branch headed by Ex-304, the source of *B** and its related witnesses. By mixture, it next occurred in a small third-generation sub-branch of the Egyptian branch headed by Ex-297, the source of Family-1. Finally, it occurs in a small sixth-generation of the Antiochan branch headed by Ex-272, the source of 579* and its corrector. Metzger gave no explanation of why the NA-27 editors selected this reading strictly on the witness of B* as opposed to 01*.

The second alternative first occurred in a second-generation sub-branch of the Antiochan branch headed by Ex-306, the source of the Latin Vulgate witnesses. By mixture it next occurred in a second-generation sub-branch of the Old Latin branch headed by Ex-302, the source of most of the Old Latin versions. Also by mixture, it occurred in the fourth-generation sub-branch of the Antiochan branch headed by in Ex-286, the source of Family-13 and its related witnesses.

The third alternative first occurred in Ex-314, the head of the Antiochan branch, maintaining persistence through the branch except for a few of its sub-branches. By mixture it occurred in the third-generation sub-branch of the Old Latin branch headed by Ex-295, the source of a small group of OL witnesses. By mixture it also occurred in a fourth-generation sub-branch of the Egyptian branch headed by Ex-271, the source of Family-1. The fourth alternative occurs only in a few isolated manuscripts, such as fourth-generation Egyptian MS *33** and seventh-generation Byzantine *ma^b*.

Figure 7.4
Distribution of variants at 18:19,2

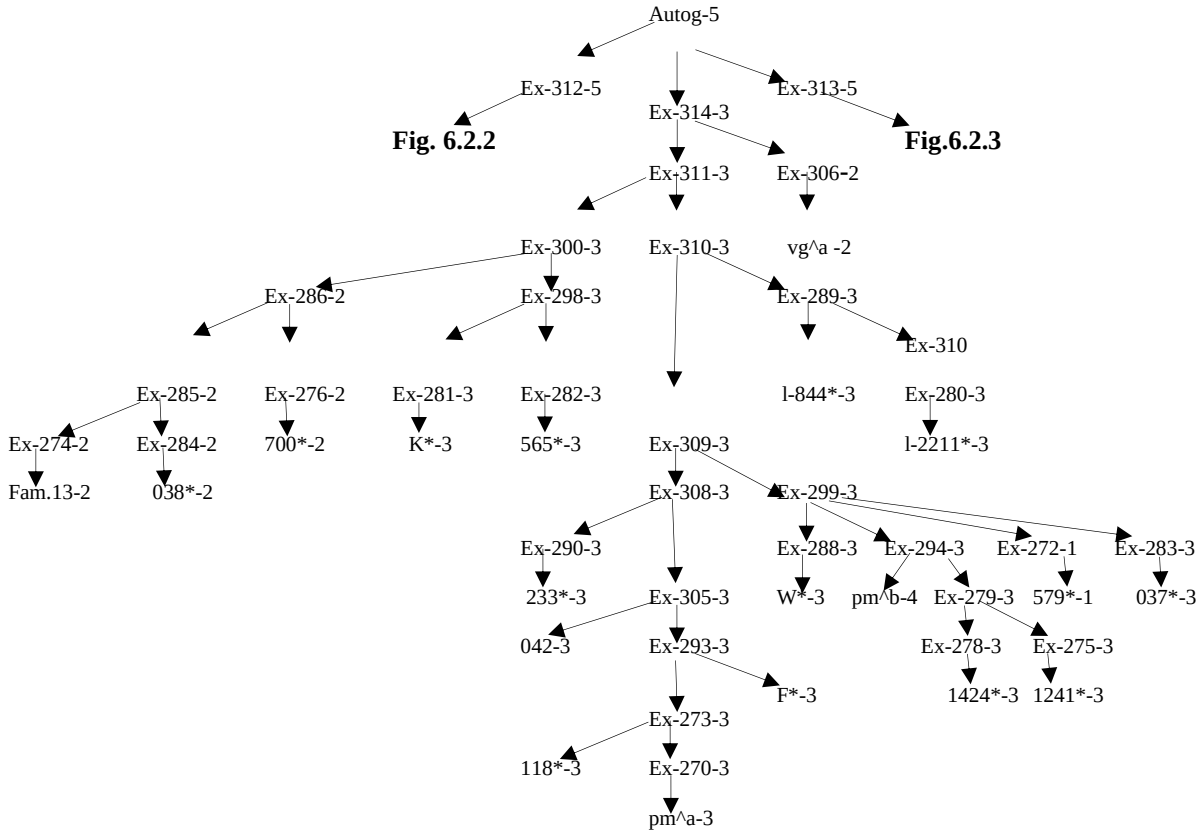
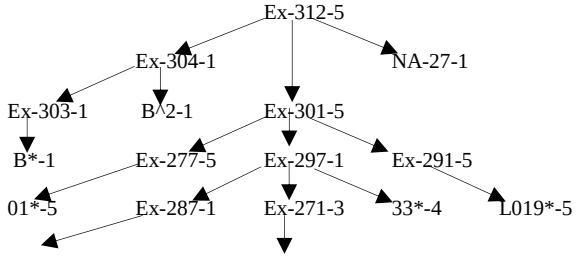
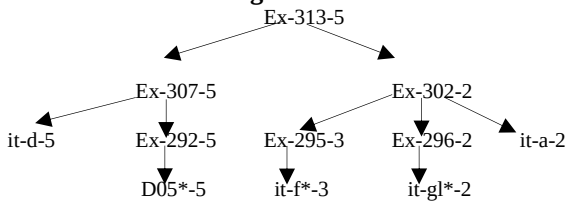


Fig. 6.2.2



892*-1 Fam. 1-3

Fig. 6.2.3



Variants of Theological Interest

Although most textual variations have little or no practical theological significance, a number are found in theological discussions. For example, Bart D. Ehrman argued that the earliest form of the Greek New Testament was less "orthodox" than the canonical form that emerged at the end of the "proto-orthodox" debates that culminated in the dominance of the "orthodox" parties in the fourth century. He wrote:

> It was within this milieu of controversy that scribes sometimes changed their scriptural texts to make them *say* what they were already known to *mean*. In the technical parlance of textual criticism—which I retain for its significant ironies—these scribes "corrupted" their texts for theological reasons.[10]

He is right about the ante-Nicene debates over the various heretical issues of the time and the emerging dominance of the orthodox parties, but his thesis that the doctrine of the apostles and first-century church, and the earliest form of the New Testament text were less "orthodox" is hypothetical and subject to testing. Of course, he provided what he regards as evidence. However, my own evaluation of the evidence he presented to establish his thesis indicates that the readings supported by the "consensus of ancient independent witnesses" are genuinely orthodox as normally interpreted, having genealogical roots deep into the first century. On the other hand, his "orthodox corruptions"—those intended to make orthodox doctrine more explicit—are usually found in peripheral sources having little possibility of being textually authoritative. The same may be said of any alleged "unorthodox" variants. So I must conclude that what Ehrman really means is that the traditional canons of textual criticism are of no value for understanding the early text, that the "canonical text" of the New Testament is an "orthodox corruption," and that the original text, if there ever was one original, is forever lost. The one thing he was sure of according to his "socio-historical" research is that the earliest text was less "orthodox" and the current form of the text is an "orthodox corruption." The following is the evidence he presented regarding the doctrine of Christ in Matthew.[11]

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[10] Bart D. Ehrman, *The Orthodox Corruption of Scripture* (New York: Oxford University Press, 1993), xii; italics are his.

[11] The information used in the discussions that follow is obtained directly from Lachmann-10. The abbreviations in the variant readings are those of the NA-27 textual apparatus.

Mary's Virginity

The first passage of interest is at place of variation 17 (ref.1:16,1) where some alternate readings affirm Mary's virginity. The NA-27 textual apparatus provides the four prominent alternate readings:

1:16,1.1— *τον ανδρα Μαριας ἐξ ης ἐγεννηθη 'Ιησους ο λεγομενος χριστος*
1:16,1.2--*ω μνηστευθεισα παρθενος, Μαριαμ εγενν. Ιησουν τον λεγομενον χριστον*
1:16,1.3 reads: *Ιωσηφ, ω μν—θεισα ην Μ. παρθ., εγενν. Ι. τ. λ. χρ.*
1:16,1.4 reads: *ω μν. ην Μ. παρθ., ἣ ετεκεν Ι. χρ.*

Figure 7.5 displays the distribution of the heritage of the above variants in the genealogical history of the text. The evidence indicates that the first alternative reading—"Joseph *the husband of Mary of whom was born Jesus who is called Christ*"—is that of the autograph. It dominates two of the main branches of the stemma: the Egyptian branch headed by Ex-312, and the Antiochan branch headed by Ex-314, except for one fifth century sub-branch headed by Ex-285 that introduced the second alternative by mixture from the Old Latin branch. This first alternative was also introduced by mixture into one third-generation sub-branch of the Old Latin branch headed by Ex-296.

The second alternative—"Joseph *to whom being betrothed the virgin Mary bore Jesus who is called Christ*"—originated in Ex-313 the head of the Old Latin branch, which includes the witness of Codex Bezae (D058*) to the underlying Greek source of this text tradition. By mixture the reading was also introduced in Ex-285, the head of a fifth-generation sub-branch of the Antiochan branch, being the source of Family-13 and its associated witnesses.

The third alternative—"Joseph, *to whom was betrothed Mary the virgin, begot Jesus who is called Christ*"—is contained in the Sinaitic Syriac version. And the fourth alternative—"Joseph *to whom was betrothed Mary the virgin who gave birth to Jesus Christ*"—is contained in the Curetonian Syriac version.

Figure 7.5
Distribution of Variants at 1:16,1

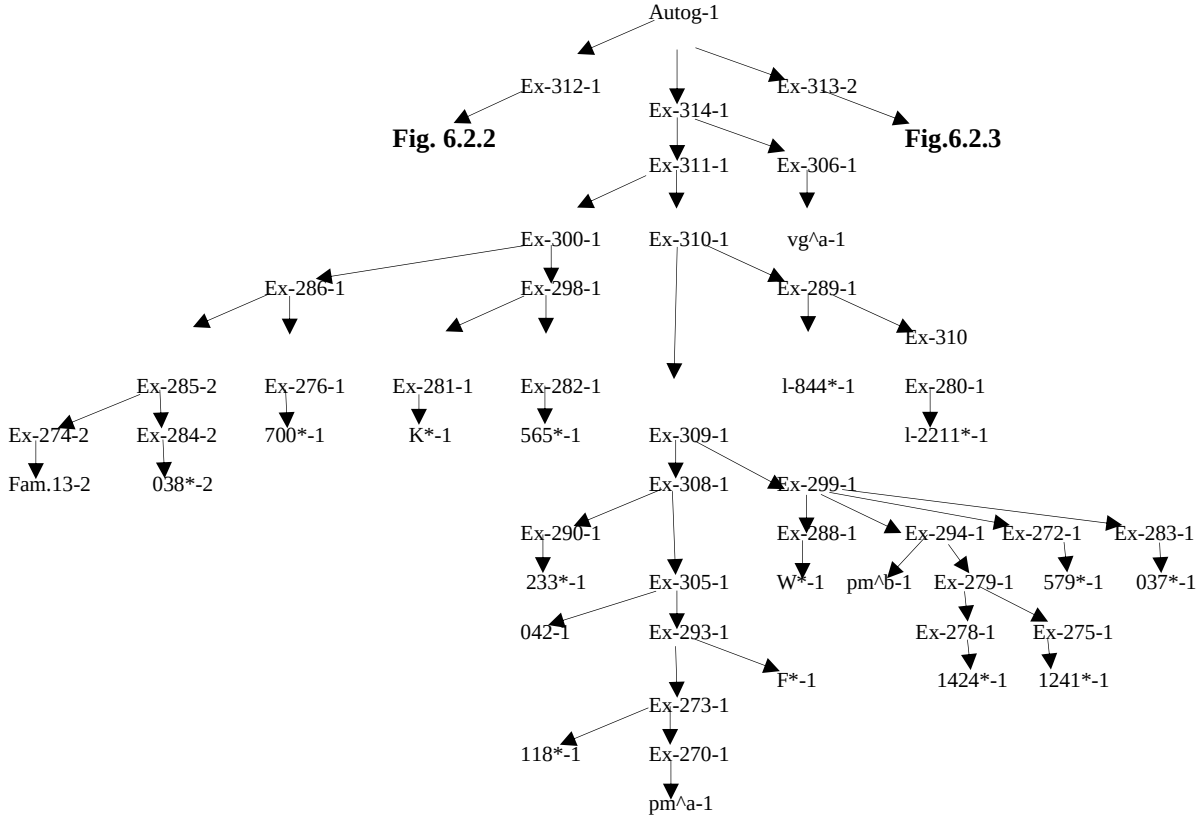


Fig. 6.2.2

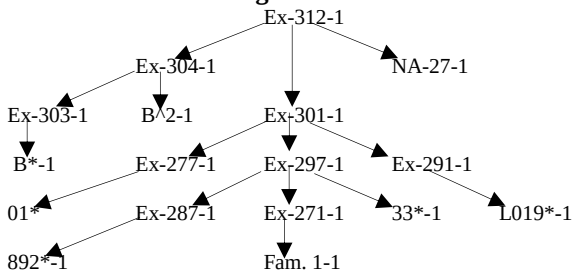
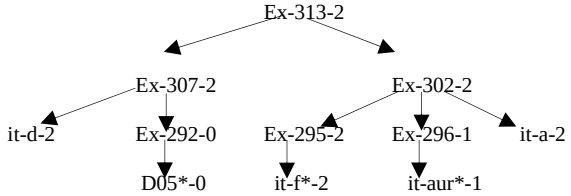


Fig. 6.2.3



Erhman is right that several attempts were made to enhance the orthodox doctrine of the virgin birth by adding that concept to this passage. But these attempts were peripheral to the main stream of genealogical inheritance that reaches back into the first century. These alterations did not make the text of Matthew more orthodox with respect to the doctrine of the virgin birth, because that doctrine is unambiguously declared in 1:23-25 without significant textual variants.

Beginning or Birth

A second passage of doctrinal interest occurs at place of variation 19 (ref. 1:18,2) where the alternate readings are:

1:18,2.1 reads *γενεσις*—origin or birth
1:18,2.2 reads *γεννησις*—a begetting or birth

Erhman regarded the second reading to be an "orthodox corruption"[12] because it more easily permits the inference of Christ's pre-existence than the first. Figure 7.6 displays the distribution of the heritage of the above variants in the genealogical history of the text. Lachmann-10 identified the second alternative as the autographic reading. It dominates all three major branches, with the first appearing in only a few sub-branches: (1) in the Egyptian branch—second-generation Ex-304, third-generation Ex-277, and fourth-generation Ex-271, the sources of B*, 01*, and Family-1 respectively, together with their associated correctors; and (2) in the Antiochan branch—the fifth-generation sub-branch headed by Ex-280, and in the sixth-generation sub-branch headed by Ex-284, the sources of Lectionary l-2211* and 038* respectively, together with their associated correctors. The first alternative was introduced randomly in textual history without any evident genetic relationships. Such evidence strongly suggests that the first alternate reading was the result of random, accidental scribal haplography, not deliberate theological alteration.

Did Jesus Know or Not?

Another passage of doctrinal interest occurs at 24:36 relating to Jesus' knowledge of the future. Did Jesus know the time of His second coming or not? Ehrman thought that the second variant, the omission, was an orthodox corruption.[13] The alternative readings are:

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[12] Ehrman, 76.

[13] Ehrman, 91-92.

24:36,1.1 reads *οὐδε ο υιος*—nor the Son
24:36,1.2 lacks these words

Figure 7.6
Distribution of Variants at 1:18,2

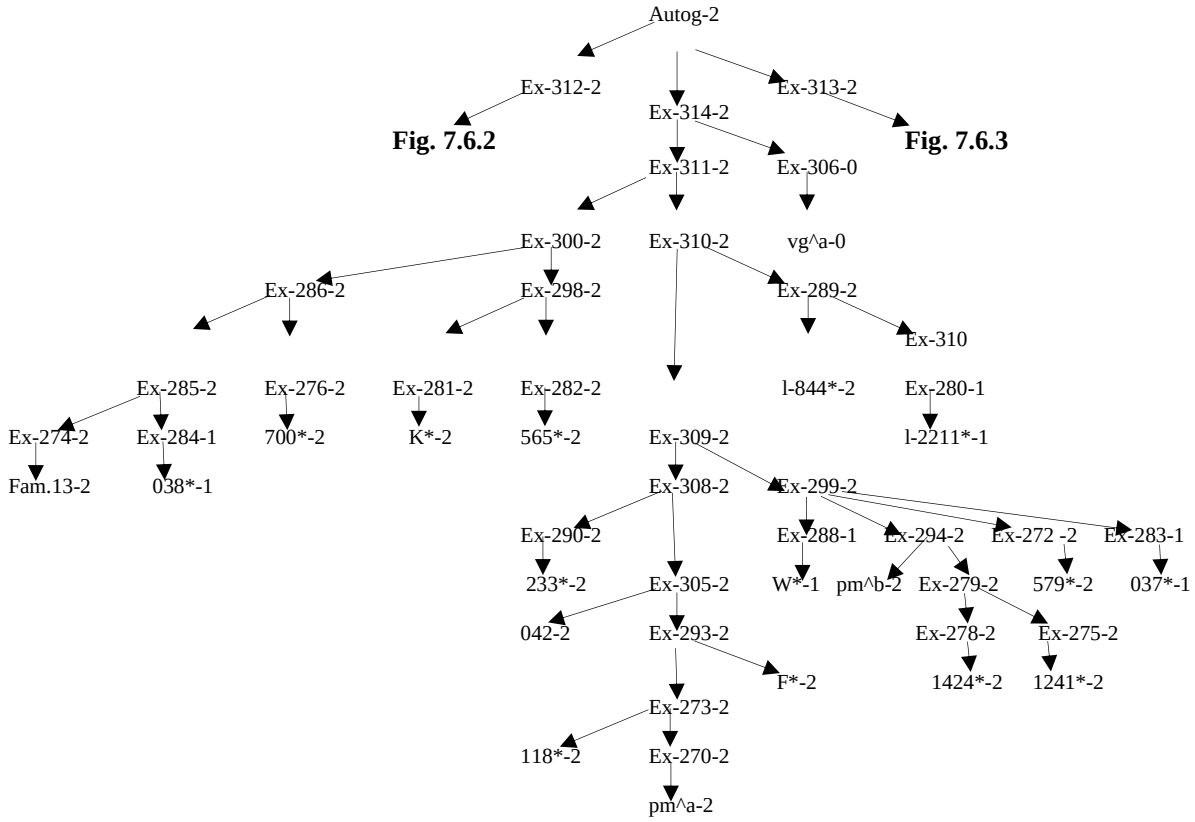


Fig. 7.6.2

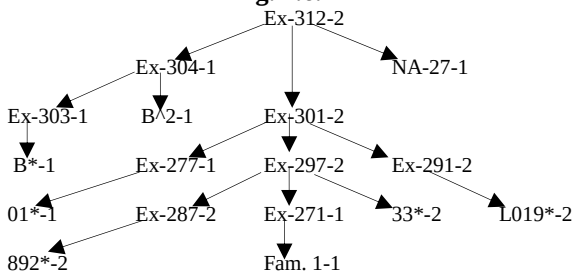
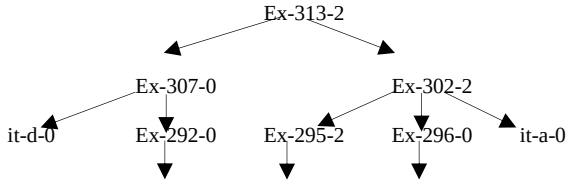


Fig. 7.6.3



D05*-0 it-f*-2 it-gl*-0

Figure 7.7 displays the distribution of the heritage of the above variants in the genealogical history of the text.

Figure 7.7
Distribution of Variants at 24:36,1

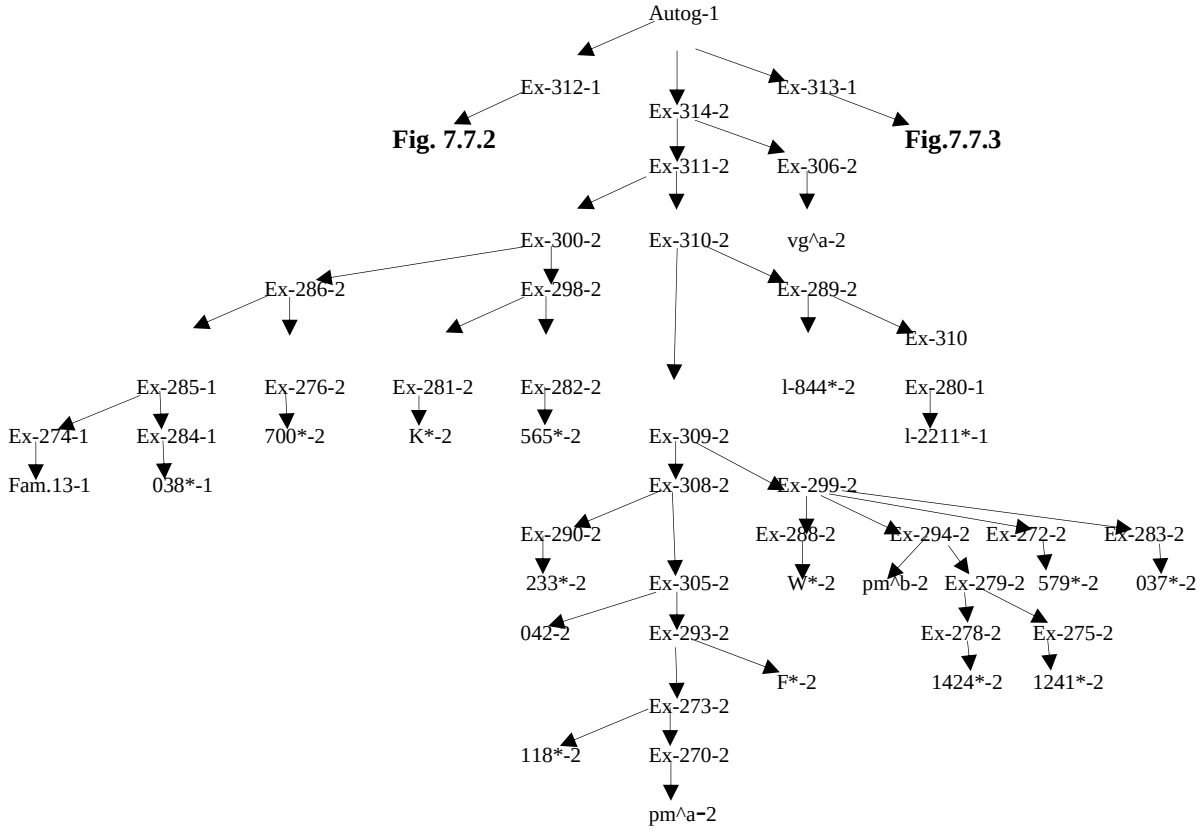


Fig. 7.7.2

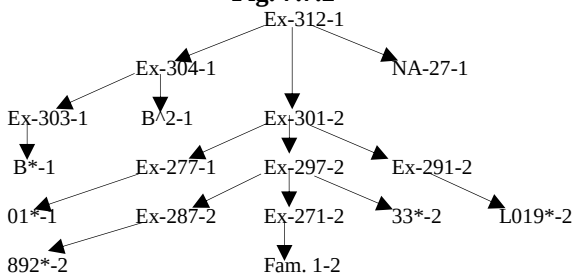
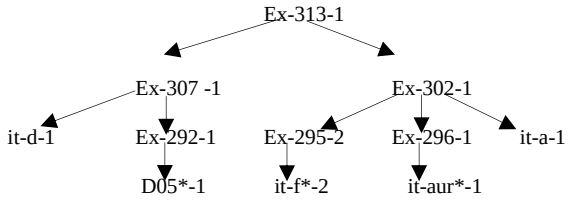


Fig. 7.7.3



Lachmann-10 selected the first alternative as the autographic reading because it is present in two of the major branches: the Egyptian branch headed by Ex-312, and the Old Latin branch headed by Ex-313. The second alternative dominates the Antiochan branch headed by Ex-314 except for two sub-branches: a fifth-generation sub-branch headed by Ex-285, and a fifth-generation sub-branch headed by Ex-280. So Ehrman may be right in this instance. However, there is considerable ambiguity in this case because (1) the Antiochan branch has the earliest genetic roots in the first century (c. AD 55) as compared with that of the Egyptian branch (c. AD 180) and of the Old Latin branch (c. AD 165), and (2) the Egyptian branch supports the second alternative except for B* and 01* and their associated correctors. Apart from those witnesses, the rest of the Egyptian witnesses support the second alternative, and Lachman-10's choice of the first alternative here was based on the principle of deference to NA-27, which may not have been the best choice in light of the broader context. In addition, the second alternative is supported by a third-generation sub-branch of the Old Latin branch headed by Ex-295.

The bottom line is that these alternate readings are both very ancient and were involved in the early theological debates. The issue was not resolved by the time the alleged canonical form of the text emerged, and the textual debate over these readings continues to this day.

Did Matthew Call Jesus Lord?

Bruce Metzger stated: "In Matthew the word *κυριος* is never applied to Jesus except in his reported sayings."[14] A passage of doctrinal interest occurs in verse 28:6 where some witnesses have Matthew applying the word *κυριος* to Jesus while others do not. Is this an exception to Metzger's claim?

The alternative readings are:

[14] Bruce M. Metzger, *A Textual Commentary on the Greek New Testament* (New York: The United Bible Societies, 1971), p. 71. Surely he must have something different in mind, for the word *κυριος* because the word occurs 21 times in Matthew with reference to Jesus: Matt. 8:2; 8:6; 8:8; *8:21; *8:25; 9:28; 13:51; *14:28; *14:30; 15:22; 15:25; 15:27*2; *16:22: *17:4; 17:15; *18:21; 20:30; 20:31; *26:22; 28:6. Those marked with * were spoken by His disciples.

28:6,1.1 has the inferred pronoun encoded in the verbal form
28:6,1.2 reads *ο κυριος*—the Lord
28:6,1.3 reads *το σωμα του κυριου*—the body of the Lord
28:6,1.4 reads *ο Ιησους*—Jesus

Figure 7.8 displays the distribution of the heritage of the above variants in the genealogical history of the text. Lachmann-10 selected the second alternative as the autographic reading because it is present in two of the three major branches: the Old Latin branch headed by Ex-313, and the Egyptian branch headed by Ex-314.

Figure 7.8
Distribution of Variants at 28:6,1

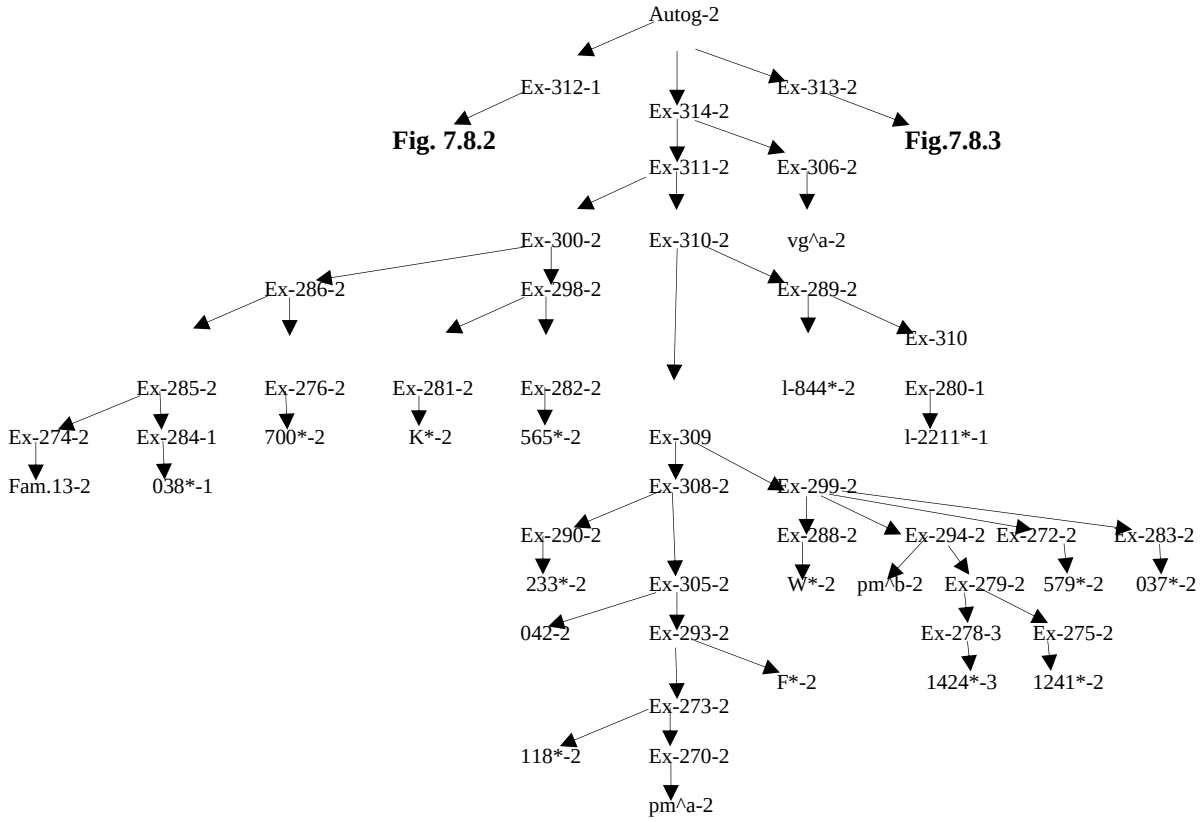


Fig. 7.8.2

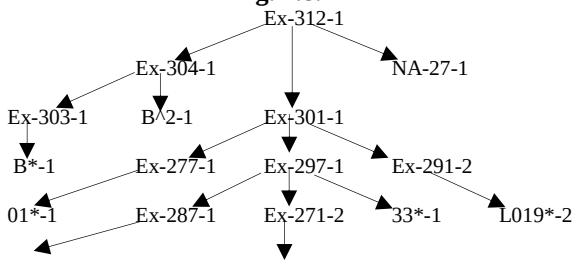


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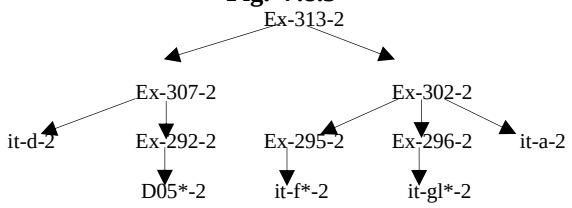
Fig. 7.8.3



This reading totally dominated the Old Latin branch, and also the Antiochan branch except for three remote sub-branches: fifth-generation sub-branches headed by Ex-280 and Ex-284, and eighth-generation sub-branch headed by Ex-278. This reading also occurs in two sub-branches of the Egyptian branch: in its third-generation sub-branch headed by Ex-291, the source of L019* and its corrector; and in its fourth-generation sub-branch headed by Ex-271, the source of Family-1.

The first alternative dominates the Egyptian branch except for two of its sub-branches: the third-generation sub-branch headed by Ex-291, and the fourth-generation sub-branch headed by Ex-271. Metzger said the NA-27 editors chose this reading on the basis of internal evidence.

The third alternative occurs only in an eighth-generation sub-branch of Antiochan branch headed by Ex-278, the source of 1424*. The fourth alternative occurs only in 043, alone witness tenth-generation sub-branch of the Antiochan branch headed by Ex-270. The evidence strongly supports the second alternative which refers to Jesus as Lord. Evidently Metzger is wrong at least in this instance. It is not clear why when Jesus referred to Himself as Lord there was not at least an inference to His deity, particularly in 7:21-22 and 22:43-45.

From the Dead or Not?

Another passage of doctrinal importance occurs at 28:7 where some witnesses have the phrase “from the dead” and others do not. Ehrman regarded the phrase “from the dead” as another orthodox corruption.[15] So the question is: did Matthew regard Jesus’ resurrection to have been from the dead or otherwise?

[15] Ehrman, p. 158.

The alternate readings are:

28:7,1.1 reads *ἀπο των νεκρων*—from the dead
28:7,1.2 lacks this phrase

Figure 7.9 displays the distribution of the heritage of the above variants in the genealogical history of the text. Lachnann-10 selected the first alternative as the autographic reading because it totally dominated the Egyptian branch and the Antiochan branch except for its its second-generation sub-branch headed by Ex-306, and its fifth-generation sub-branch headed by Ex-282. The reading is widely distributed and early.

The second alternative dominates the Old Latin branch without exception, but is late and of limited distribution. There is strong reason to doubt that the phrase "from the dead" was an orthodox "corruption." The evidence places the origin of this reading deep in the first century. If anything, the orthodox text was subsequently corrupted for non-orthodox reasons.

Figure 7.9
Distribution of Variants at 28:7,1

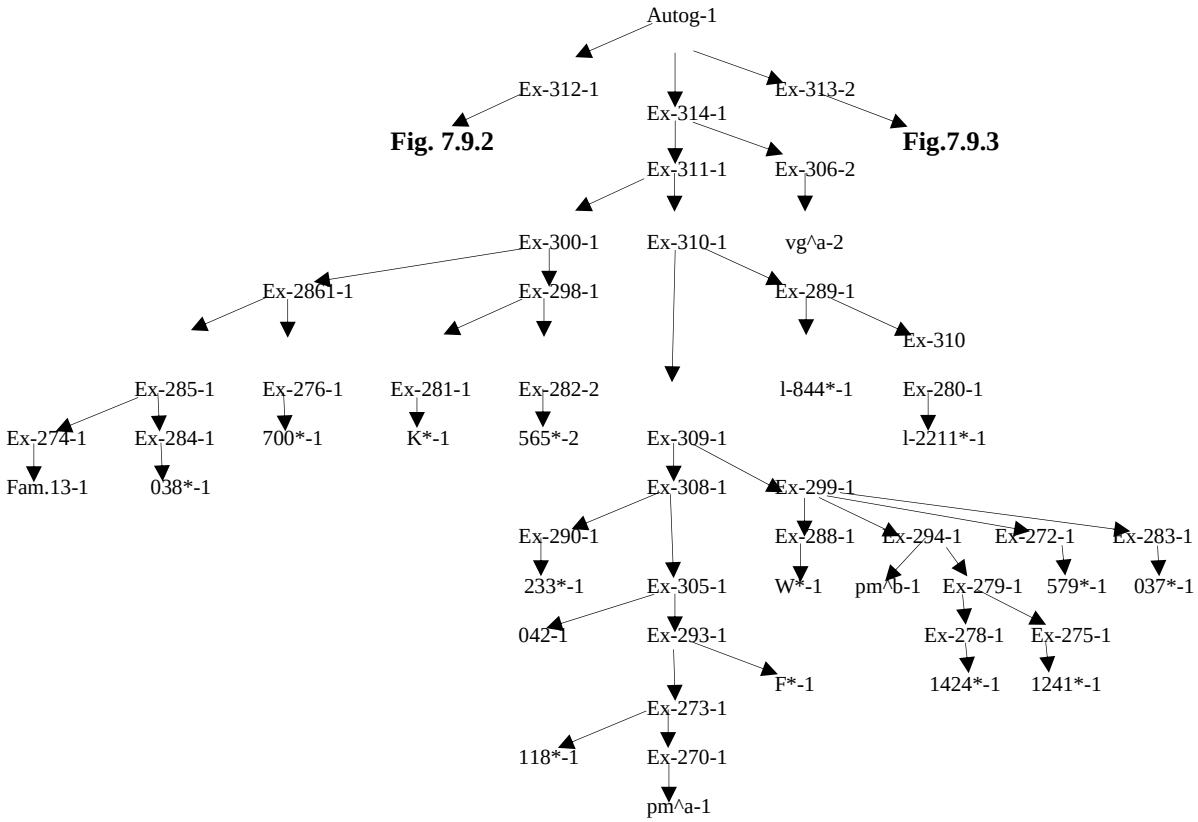


Fig. 7.9.2

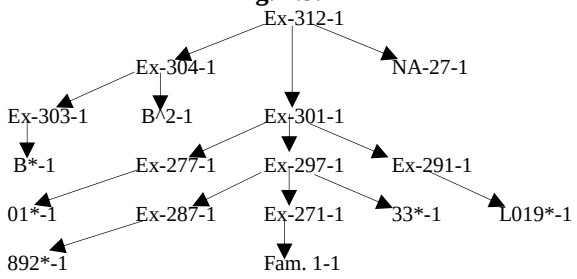
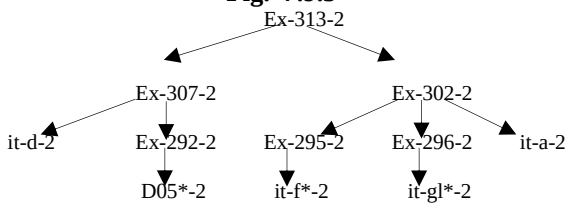


Fig. 7.9.3



Did the Disciples Worship Jesus?

Another passage of theological significance occurs in Matthew 28:17 where some witnesses lack an object for the verb "worshipped" while others have the pronoun 'Him" as the object. Ehrman regarded the pronoun as another "orthodox corruption."[16] The alternate readings are:

28:17,1.1 the pronoun is lacking
28:17,1.2 reads *αυτω* (dative case)
28:17,1.3 reads *auton* (accusative case)

Figure 7.10 displays the distribution of the heritage of the above variants in the genealogical history of the text. Lachmann-10 selected the first alternative because it was the dominant reading in the Egyptian branch headed by Ex-312, and in the Old Latin branch headed by Ex-313. However, the second alternative occurred in a few sub-branches of the branches; in the Egyptian branch: fourth-generation sub-branches headed by Ex-287 and Ex-271, the sources of 892* and Family-1 respectively; in the Old Latin branch: third-generation sub-branch headed by Ex-292, the source of a small group of OL witnesses.

The second alternative reading dominated the Antiochan branch except for two sub-branches: second-generation sub-branch headed by Ex-306, the source of the Latin Vulgate

[16] Ehrman, pp. 158-59.

witnesses, and eighth-generation sub-branch headed by Ex-275, the source of 1241* and its corrector, the only witnesses having the third alt4ernative.

Ehrman was right that the pronoun was very likely a later addition to the text, but not in order to make Matthew more orthodox, because Matthew had previously recorded two other instances where Jesus was worshipped (14:33; and 28:9) by His disciples and where the text is unambiguous and without textual variant. The added pronoun in 28:17 was to harmonize this verse with the other two instances all of which had the dative pronoun.

Summary

These six examples are sufficient to demonstrate that, under careful scrutiny, the alleged "orthodox corruption" of the text of the Gospel of Matthew turns out to be an unwarranted supposition.

Figure 7.10
Distribution of Variants at 28:17,1

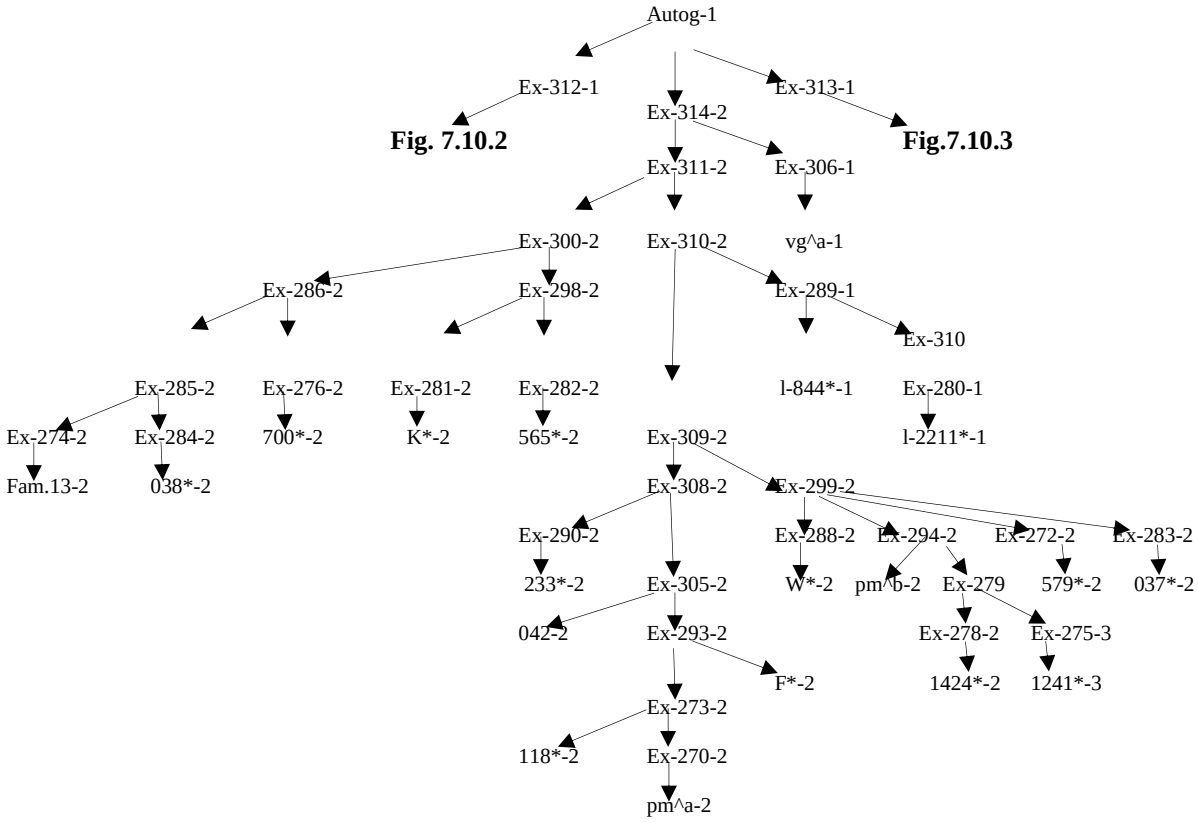


Fig. 7.10.2

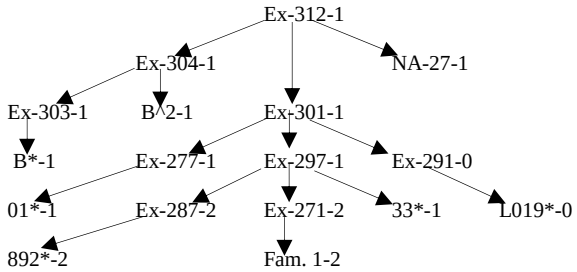
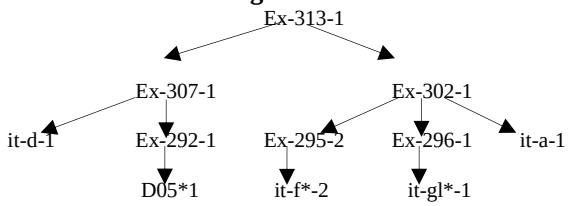


Fig. 7.10.3



A scribe's altering of a doctrinal passage to harmonize it with a previous explication of the same doctrine, having been plainly and unambiguously articulated, does not amount to making the doctrine more orthodox. It merely makes more explicit what is already implicit from prior information. An author's acquaintance with the common doctrinal knowledge his readers possessed is an important factor in determining how explicit his statements need to be at any particular place in his discourse. In order for the articulation of a doctrine to be made more "orthodox," a scribe must have altered every passage in the manuscript discussing the doctrine; the evidence indicates that this did not happen for the Gospel of Matthew. The problem with Ehrman's "socio-historical" research is that it did not have access to the genealogical history of the witnesses to the Greek text of the New Testament. The genealogical evidence places the origin of his orthodox "canonical text" deep in the first century where ecclesiastical history places the original autograph; and it usually locates the origin of his "orthodox corruptions" in peripheral branches that have no possibility of improving the orthodoxy of the text as a whole.

Other Variants of Theological Significance

The following is a discussion of some other passages in Matthew where doctrinal issues have been raised. The discussion is limited to the text of the Gospel of Matthew.

Anger Without Cause or Not?

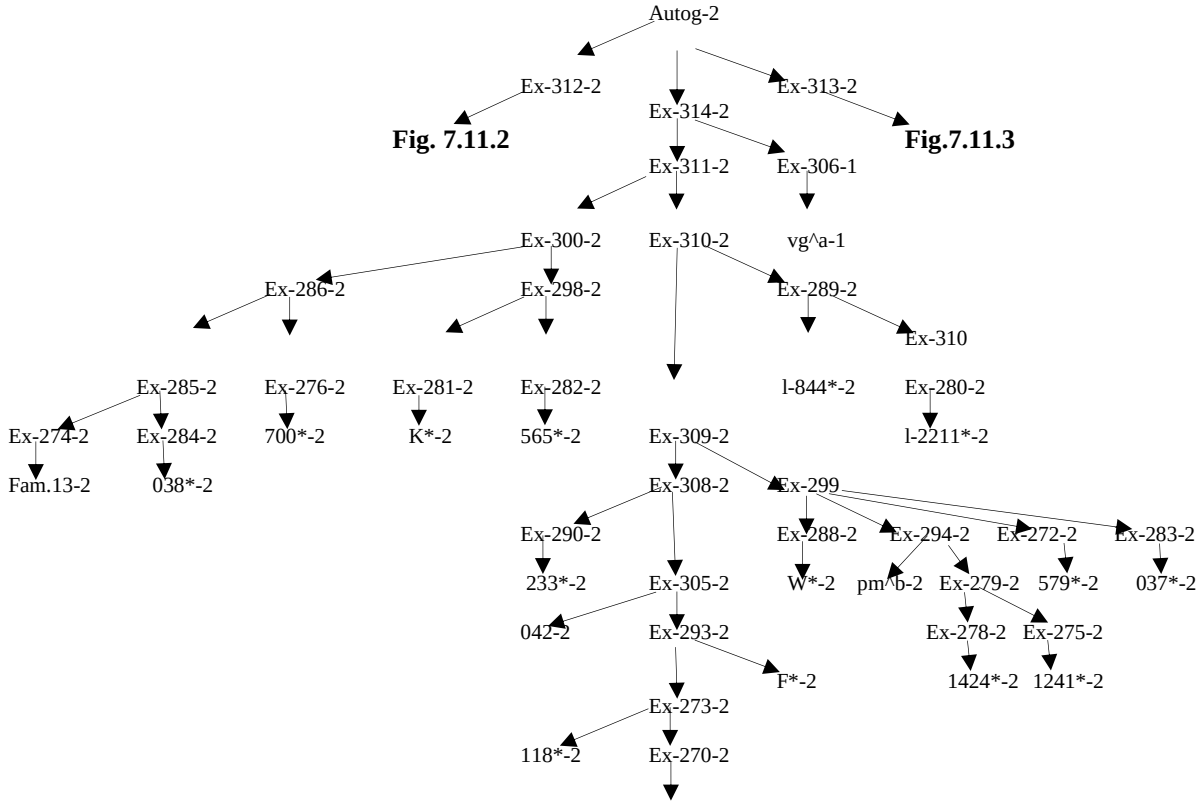
Another textual variation of theological interest occurs at 5:22 where the question arises whether anger in general is blameworthy or just anger without cause. Figure 7.11 displays the

historical distribution of the alternate readings at this place of variation. The alternate readings at 5:22,1 are:

5:22,1.1 lacks the phrase “without cause”
5:22,1.2 reads εικη (without cause)

Lachmann-10 selected the second alternative because it dominated all three main branches, having the first alternative only in three sub-branches; in the Antiochan branch: second-generation sub-branch headed by Ex-306, the source of the Latin Vulgate witnesses; and in the Egyptian branch: the second-generation sub-branch headed by Ex-304 and the third-generation sub-branch headed by Ex-277, the sources of B* and 01* respectively, together with their corresponding correctors.[17] The evidence is overwhelmingly in favor with the second alternative, having both greater antiquity and greater distribution. Metzger reported that the NA-27 editors selected the first alternative by internal evidence.[18]

Figure 7.11
Distribution of Variants at 5:22,1



[17] Note that the second corrector of Codex Sinaiticus (01*) supports the second alternative (without cause).

[18] Metzger, p. 13.

pm^a-2

Fig. 7.11.2

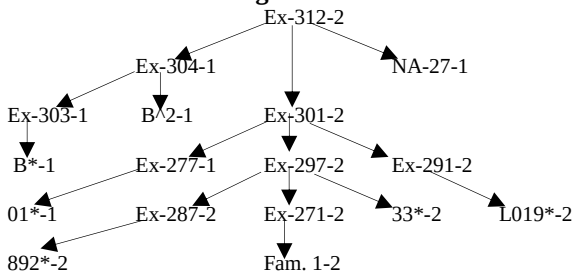
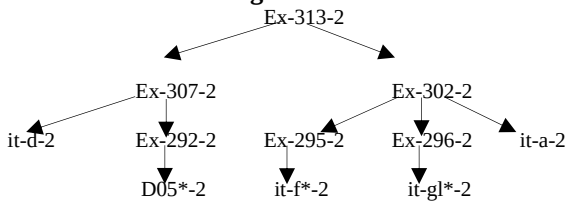


Fig. 7.11.3



Called to Repentance or Not?

Another place of textual variation of theological significance occurs at 9:13 where some witnesses have the phrase "unto repentance" and others do not. Did Jesus come to call sinners in general, or did He come to call them unto repentance? The alternate readings are:

9:13,1.1 lacks the phrase
9:13,1.2 reads εις μετανοιαν (unto repentance)

Figure 7.12 displays the historical distribution of the alternate readings at this place of variation. Lachmann-10 selected the first alternative because it was the dominant reading in all three major branches, with the second alternative appearing in genetically scattered sub-branches. In the Antiochan branch headed by Ex-314, the second alternative was first introduced in the sub-branch headed by Ex-300, the source K*, 700*,038*, and Family-13 and their associated correctors; also in the sixth-generation sub-branches headed by Ex-294 and Ex-272, the sources of pm^b, 579*, 1241*, and 1424* and their associated correctors; and finally, in sixth-generation sub-branch headed by Ex-305, the source of all the later Byzantine witnesses.

In the Egyptian branch, the second alternative was introduced in the third-generation sub-branch headed by Ex-291 and in fourth-generation sub-branch headed by Ex-289, the sources of L019* and 892* respectively, along with their associated correctors. In the Old Latin branch, the second alternative was introduced in third-generation sub-branch headed by Ex-295, the source of a small group of OL witnesses. It is possible that the introduction of repentance here was to harmonize with Luke 5:32. So it seems that Jesus came to call sinners in general, although His message clearly contained an appeal for repentance (Matt. 4:17; 11:20; Mark 6:12; Luke 13:3, 5).

Elijah First or Not?

Another theologically significant place of variation occurs at 17:11 where some witnesses have the word "first" and others do not. Did Jesus say that Elijah will come *first* or only that he will come? The alternate readings are:

17:11,2.1 lacks the word
17:11,2.2 reads πρωτον (first)

Figure 7.13 displays the historical distribution of the alternate readings at this place of variation. Lachmann-10 selected the first alternative because it was the dominant reading in two of the three main branches: the Egyptian branch headed by Ex-312, and the Old Latin branch headed by Ex-313.

Figure 7.12
Distribution of Variants at 9:13,1

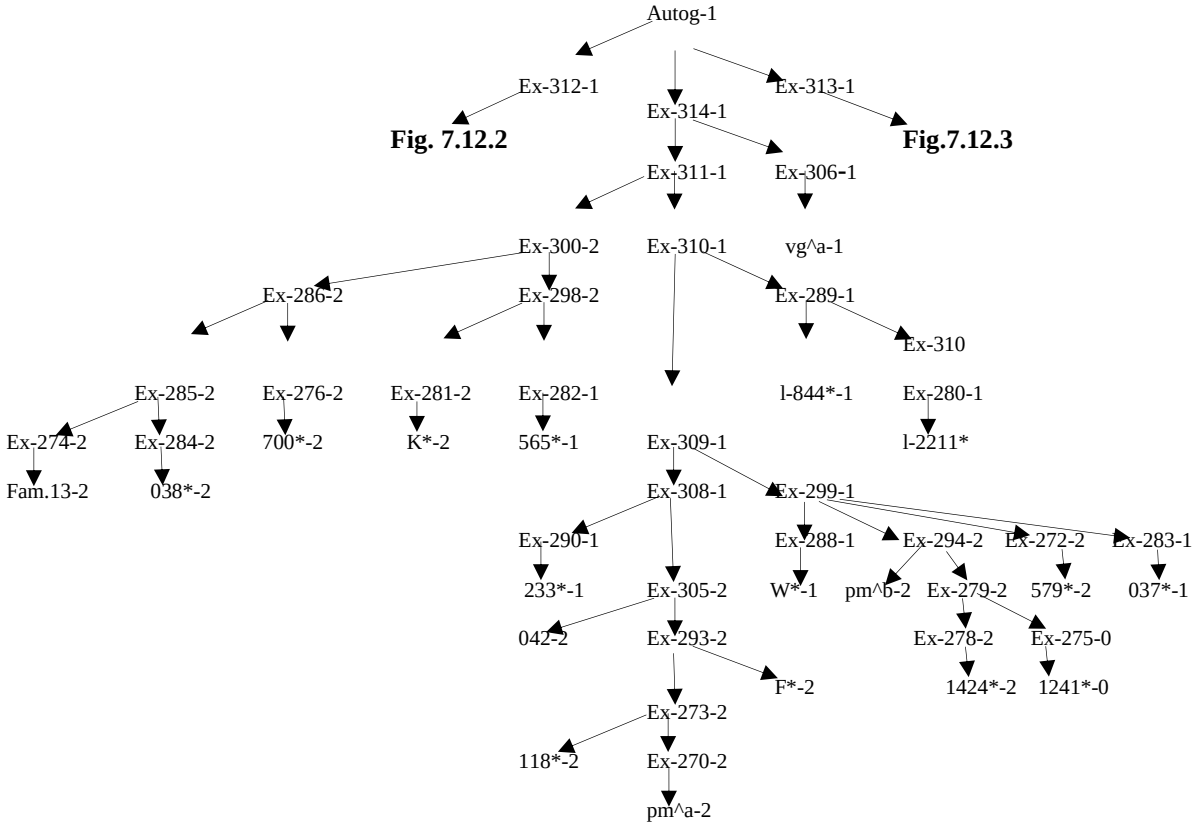


Fig. 7.12.2

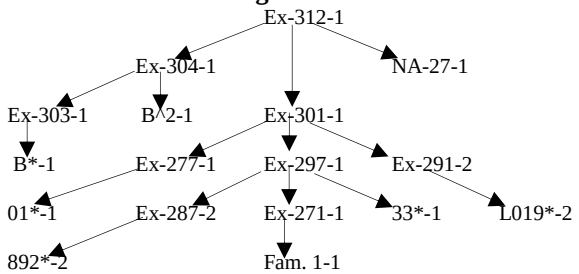


Fig. 7.12.3

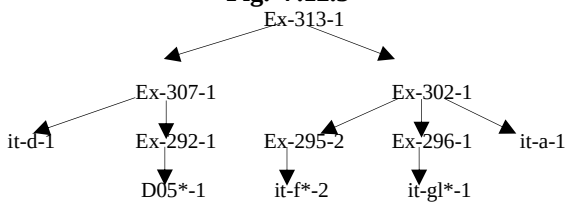


Figure 7.13
Distribution of Variants at 17:11,2

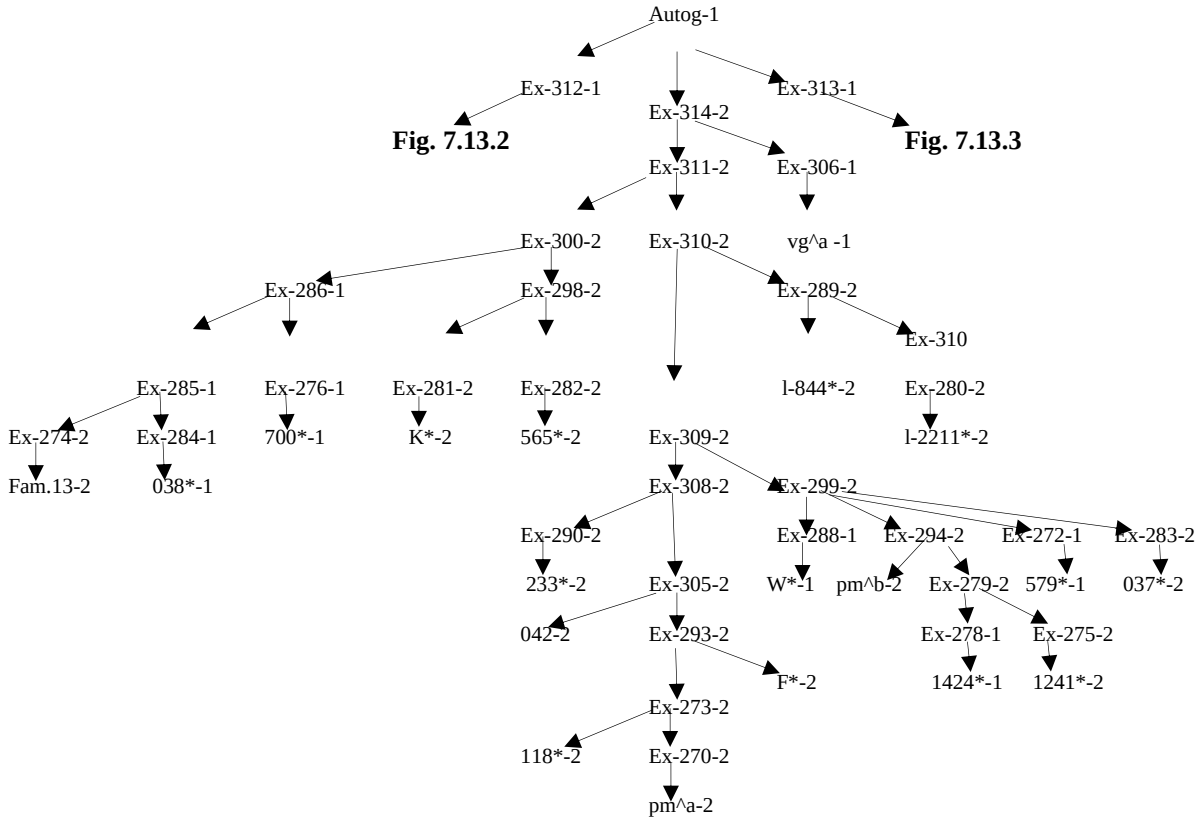


Fig. 7.13.2

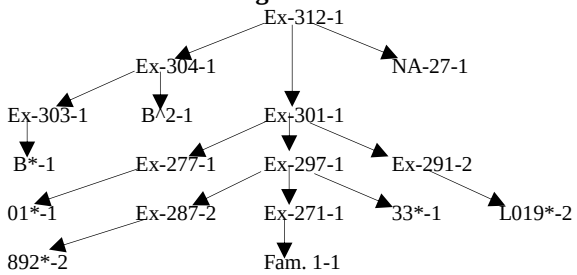
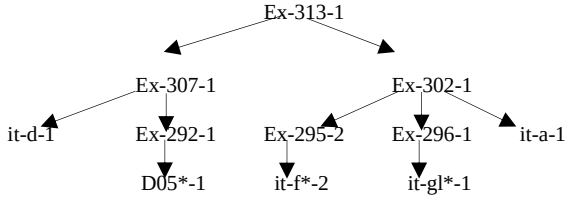


Fig. 7.13.3



Three exceptions occur in small sub-branches—in the Egyptian branch: the third-generation sub-branch headed by Ex-291, and the fourth-generation sub-branch headed by Ex-287; in the Old Latin branch: the third-generation sub-branch headed by Ex-295. This alternative was also introduced by mixture in a number of sub-branches of the Antiochan branch: in the second-generation sub-branch headed by Ex-306, the source of the Latin Vulgate witnesses; the fourth-generation sub-branch headed by Ex-286, the source of 700* and 038* along with their corresponding correctors, but not including Family-13; the sixth-generation sub-branches headed by Ex-288 and Ex-272, the sources of W* and 579* respectively along with their corresponding correctors; and the eighth-generation sub-branch headed by Ex-278, the source of 1424* and its corrector.

The second alternative is the dominant reading of the Antiochan branch, but with some exceptions: the second-generation sub-branch headed by Ex-306, the fourth-generation sub-branch headed by Ex-286; the sixth-generation sub-branches headed by Ex-288 and Ex-272; and eighth-generation sub-branch headed by Ex-278. This alternative also occurs by mixture in two sub-branches of the Egyptian branch: in the third-generation sub-branch headed by Ex-291, the source of L019* and its corrector, and in the fourth-generation sub-branch headed by Ex-287, the source of 892* and its corrector. It also occurs in the Old Latin branch at the third-generation sub-branch headed by Ex-295, the source it-f* and it-g*.

The evidence indicates that the first variant (lacking "first") was the autographic reading and the second alternative ("first") was introduced into the text independently in the Antiochan Recension, although very early. This reading seems to have been added to more explicitly identify Elijah with John the Baptist—something plainly stated in verse 13 in any case. It seems clear that Elijah was indeed to come, but his coming was not sequentially related to other significant prophetic events.

Prayer and Fasting or Not?

Another theologically significant place of variation occurs at 17:21 where some witnesses have the verse and others do not. Did Jesus say that prayer and fasting were necessary for casting out demons? The alternate readings are:

17:20,5.1 verse 21 is lacking
17:20,5.2 include verse 21

Figure 7.14 displays the historical distribution of the alternate readings at this place of variation. Lachmann-10 selected the second alternative because it was the dominant reading in two of the three main branches: the Antiochan branch headed by Ex-314, and the Old Latin branch headed by Ex-313.

Figure 7.14
Distribution of Variants at 17:20,5

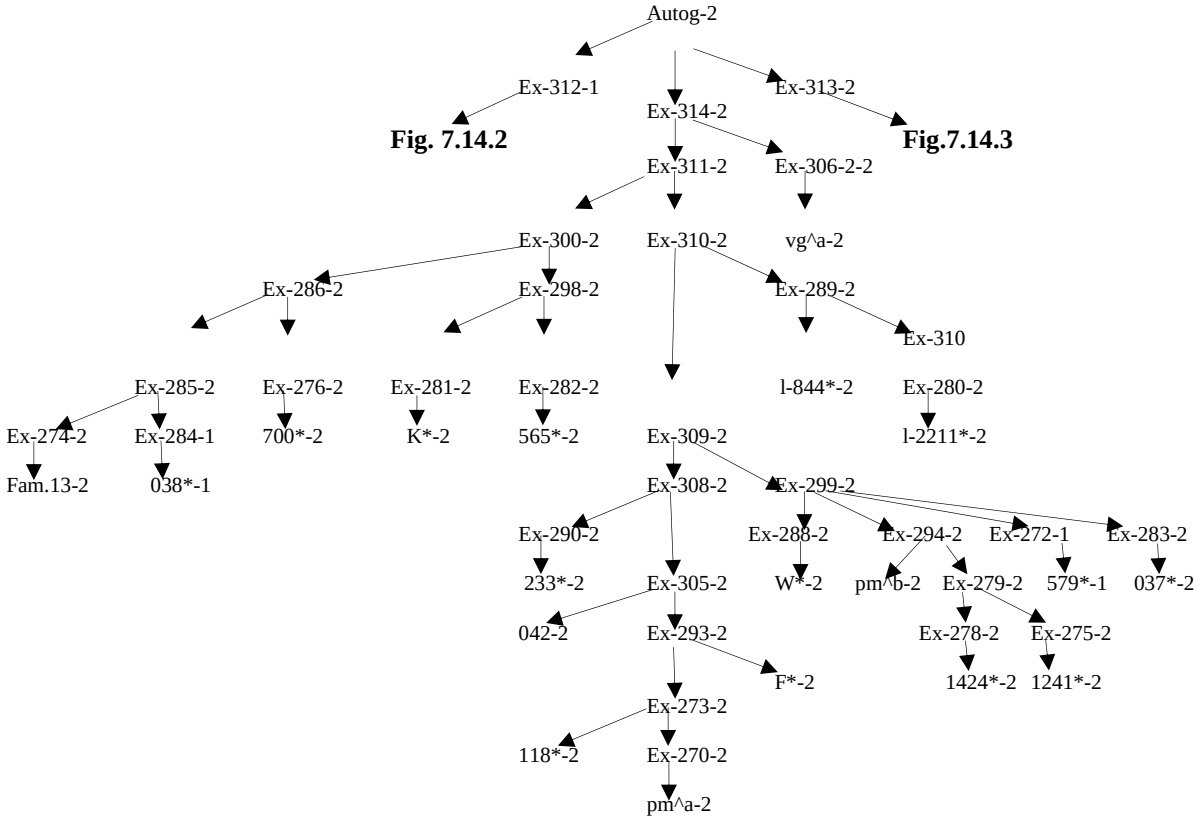


Fig. 7.14.2

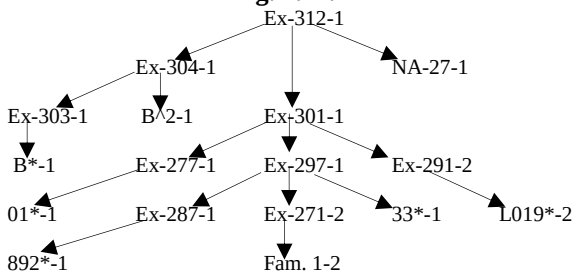
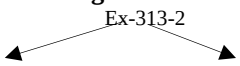
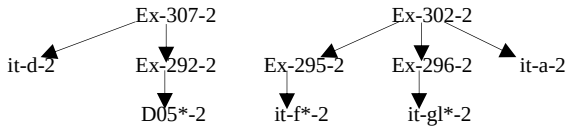


Fig. 7.14.3




Ex-307-2
it-d-2
Ex-292-2
D05*-2
Ex-302-2
Ex-295-2
Ex-296-2
it-a-2
it-f*-2
it-gl*-2

It was totally dominant in the Old Latin Branch, and nearly so in the Antiochan branch except for two small remote sub-branches: the sixth-generation sub-branches headed by Ex-284 and Ex-272, the sources of 038* and 579* respectively, along with their corresponding correctors.

The first alternative is the dominate reading of the Egyptian branch headed by Ex-312 except for two sub-branches that also support the second alternative: the third-generation sub-branch headed by Ex-291, the source of L019*, and the fourth-generation sub-branch headed by Ex-271, the source of Family-1. Metzger provided no reason for why the NA-27 editors chose this reason. There is good reason to accept the verse as coming from the hand of Matthew.

Come to Save the Lost?

Another theologically significant place of variation occurs at 18:11 where some witnesses have the verse and others do not. Did Jesus say He came to save the lost or not? The alternate readings are:

18:10,3.1 verse 11 is lacking
18:10,3.2 include verse 11

Figure 7.15 displays the historical distribution of the alternate readings at this place of variation. Lachmann-10 selected the second alternative because it was the dominant reading in two of the three main branches: the Antiochan branch headed by Ex-314, and the Old Latin branch headed by Ex-313. It was totally dominant in the Old Latin branch, and also in the Antiochan branch except for one remote sub-branch: the fifth-generation sub-branch headed by Ex-285, the source of 038* and Family-13. Metzger reported that the NA-27 editors rejected the verse because it was "omitted by the earliest witnesses representing several textual types (Alexandrian, pre-Caesaren, Egyptian, Antiochian)."[19] There is good reason to accept the verse as coming from the hand of Matthew.

[19] Metzger, p. 45.

Figure 7.15
Distribution of Variants at 18:10,3

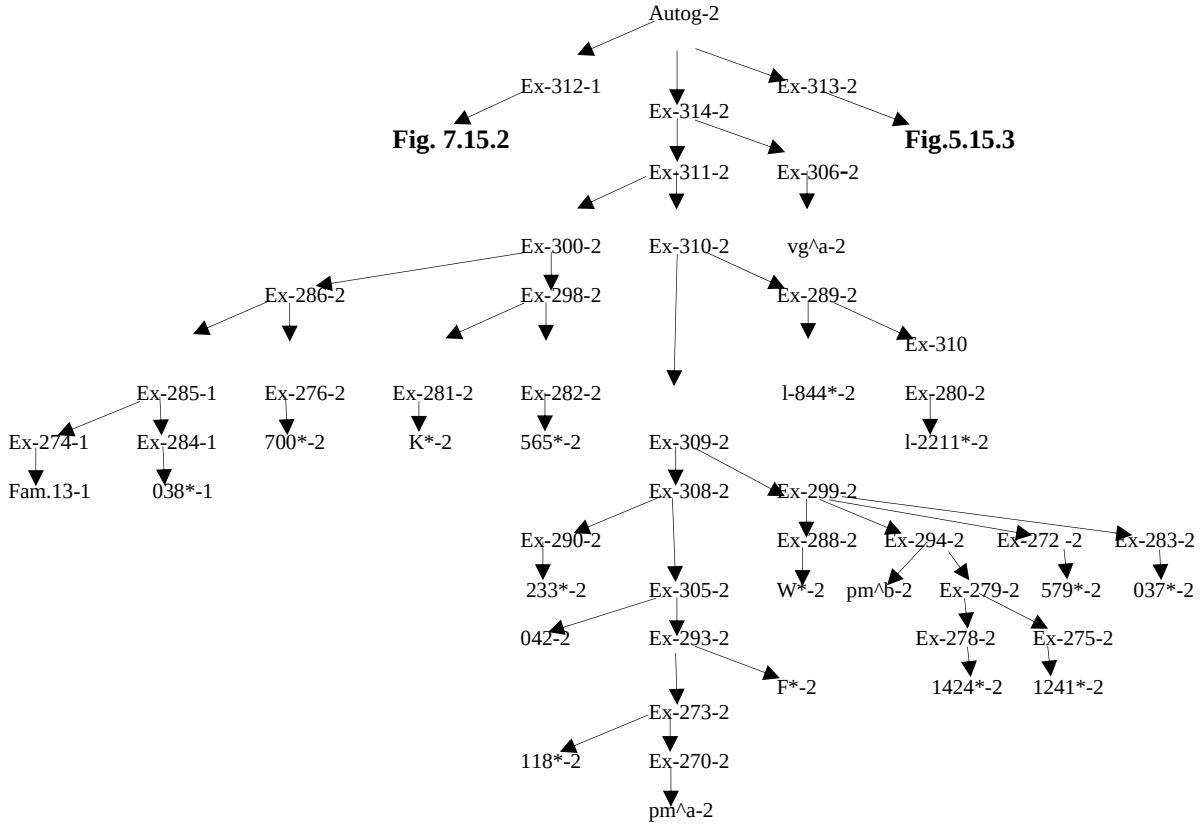


Fig. 7.15.2

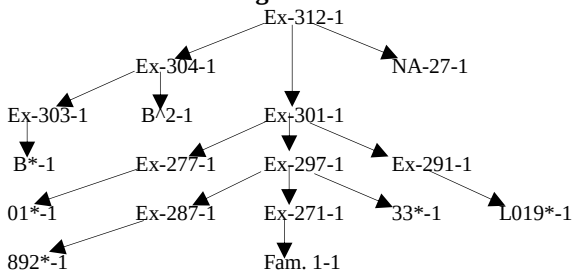
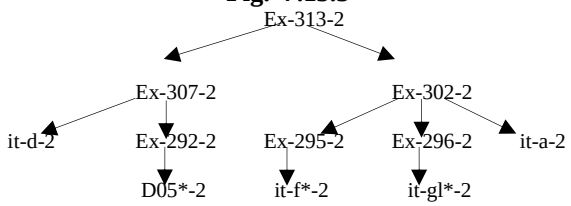


Fig. 7.15.3



Rebuke for Long Prayers or Not?

Another theologically significant place of variation occurs at 23:14 where some witnesses have the verse and others do not. Did Jesus include this rebuke of the Pharisees or not? The alternate readings are:

23:13,2.1 verse 14 is lacking
23:13,2.2 include verse 14
23:13,2.3 include verse 14 after verse 12

Figure 7.16 displays the historical distribution of the alternate readings at this place of variation. Lachmann-10 selected the first alternative because it was the dominant reading in two of the three main branches: the Egyptian branch headed by Ex-312, and the Old Latin branch headed by Ex-313.

It was totally dominant in Egyptian the branch, and also in the Old Latin except the third-generation sub-branch headed by Ex-295, the source of OL witnesses it-g* and it-f*, which support the third alternate reading; and a number of loosely related OL witnesses which support the second alternative.[20]

The second alternative occurs only in the sixth-generation sub-branch of the Antiochan branch headed by Ex-274, and in the OL witnesses mentioned above.

The third alternative dominates the Antiochan branch except for its fifth-generation sub-branch headed by Ex-285, the source of 038* and its corrector, and its sixth-generation sub-branch headed by Ex-274, the source of Family-13.

The evidence indicated that the autographic text lacks the verse because it lacks first-generation consensus. The presence of this verse either before or after verse 13 must be an interpolation from Mark 12:40.

[20] it-b*, it-b^c, it-c, it-d, it-ff2, it-h*, it-h^c, it-rl—not all in the same group, and not in agreement with the group in which they are counted sisters.

Figure 7.16
Distribution of Variants at 23:13,2

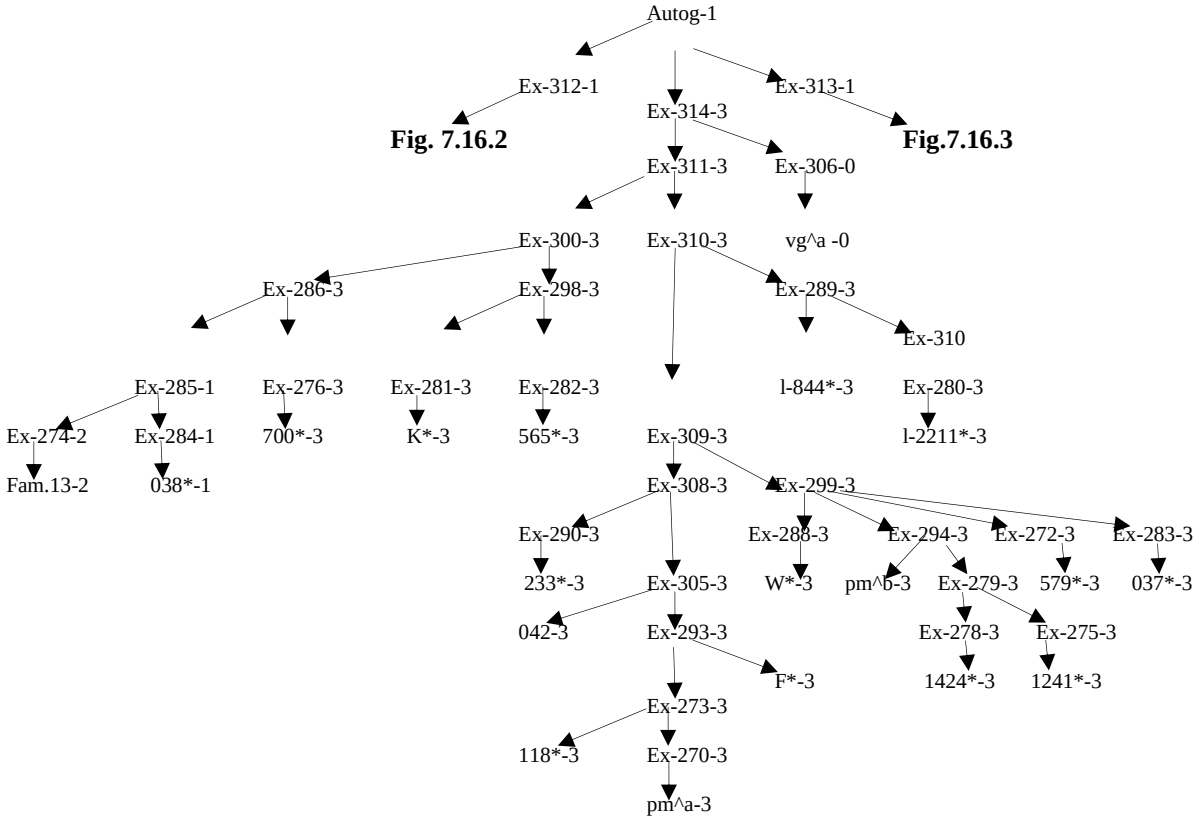


Fig. 7.16.2

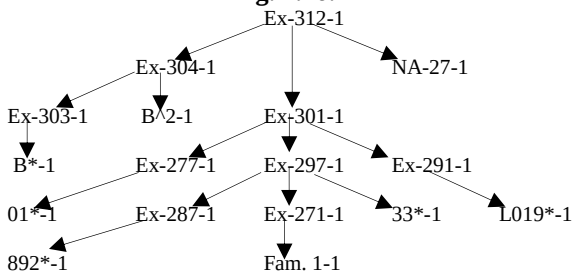
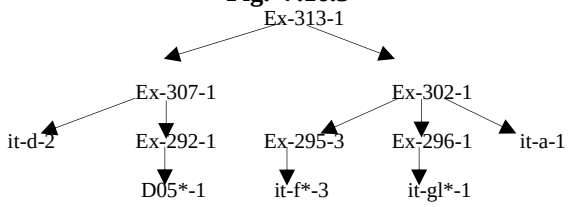


Fig. 7.16.3



Jeremiah, Zechariah, or Isaiah?

Another theologically significant place of variation occurs at 27:9 where some witnesses attribute the quotation to Jeremiah, others to Zechariah, others to Isaiah, and some omit a name. The alternate readings are:

27:9,1,1 reads Ἰερεμιου (Jeremiah)
27:9,1.2 reads Ζαχαριου (Zechariah)
27:9,1.3 reads Ιησαιου (Isaiah)
27:9,1.4 lacks a name

Figure 7.17 displays the historical distribution of the alternate readings at this place of variation. Lachmann-10 selected the first alternative (Jeremiah) because it was the dominant reading in all three main branches: It was totally dominant in Egyptian the branch except for one lone witness (33*) in the third-generation sub-branch headed by Ex-297; also in the Old Latin branch except for a few witnesses in its second-generation sub-branch headed by Ex-302 (it-a, it-b*, it-b^c); and in the Antiochan branch except for its fourth-generation sub-branch headed by Ex-289.

The second alternative (Zechariah) occurs in one lone witness (22) in the sibling group headed by Ex-270, the ninth sub-group of the Antiochan branch. The third alternative (Isaiah) occurs in the fourth-generation sub-group of the Antiochan branch headed by Ex-289, the source of Lectionaries l-844* and l-221* along with their corresponding correctors. The fourth alternative (omit name) occurs as a lone witness to this reading in the sibling group headed by third-generation sub-branch of the Egyptian branch headed by Ex-297; it occurs also in a few of the witnesses of the sibling group headed by second-generation Ex-302 of the OL branch.

The overwhelming evidence indicates that the autographic text has the name Jeremiah. There is little room for doubt that Matthew attributed the quotation to Jeremiah for whatever reason he may have had.

Divided My Garments or Not?

Another theologically significant place of variation occurs at 27:35 where some witnesses have the last part of the verse and others do not. The alternate readings are:

27:35,2.1 lacks the last part of the verse
27:35,2.2 includes the last part
27:35,2.3 reads “for it”

Figure 7.17
Distribution of Variants at 27:9.1

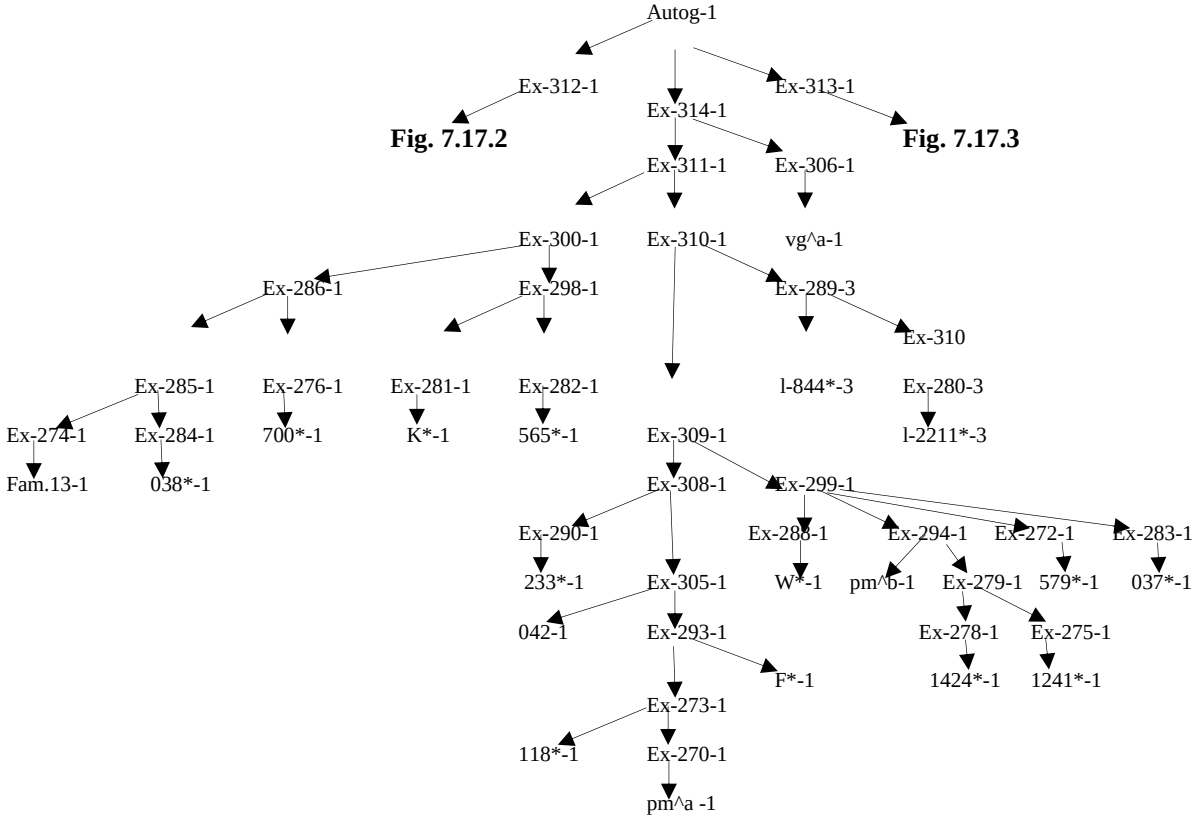


Fig. 7.17.2

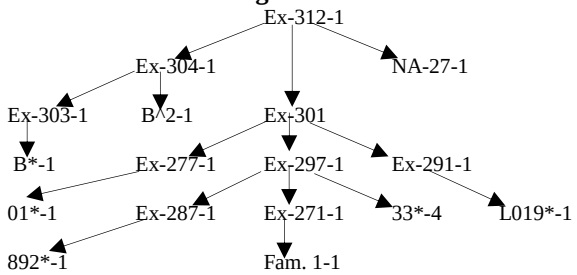


Fig. 7.17.3

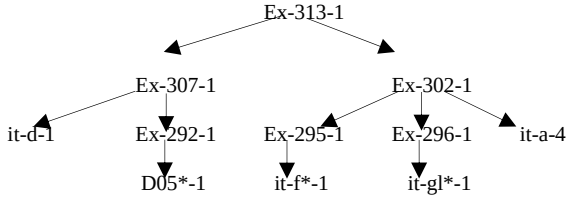


Figure 7.18 displays the historical distribution of the alternate readings at this place of variation.

Figure 7.18
Distribution of Variants at 27:35.2

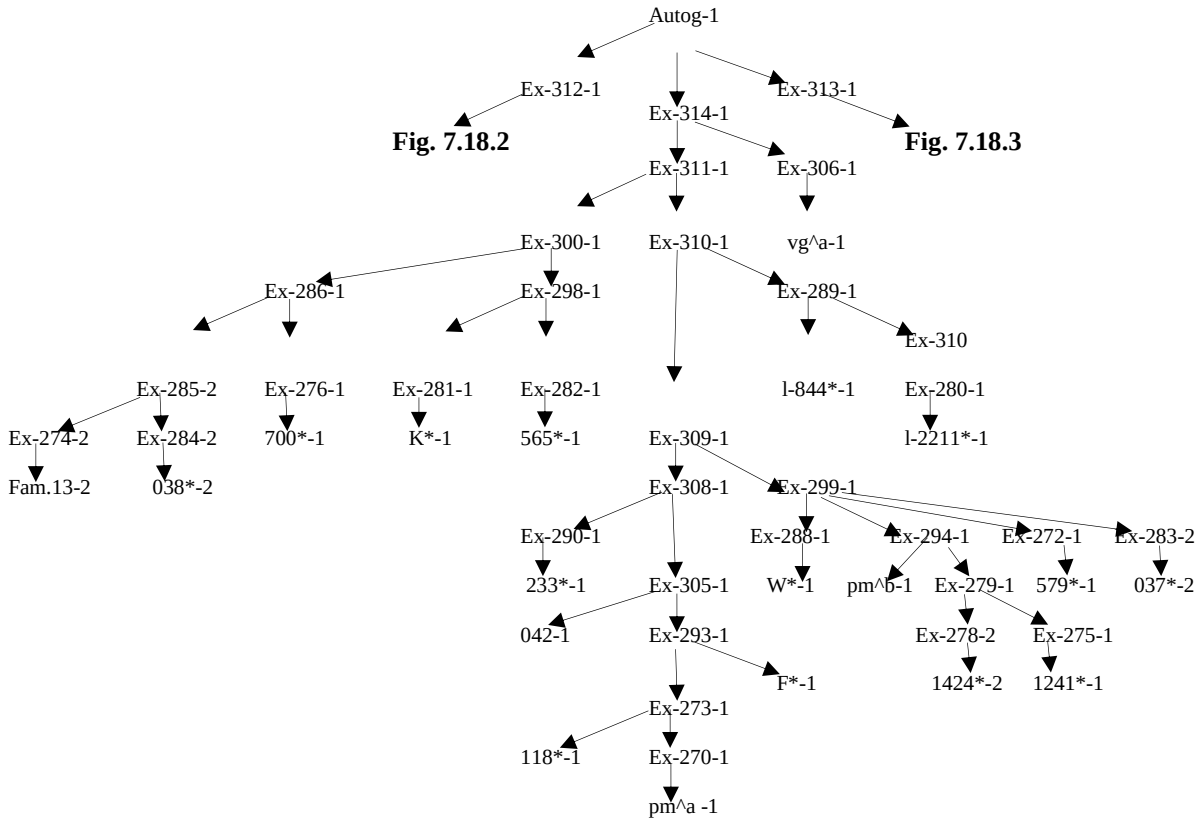


Fig. 7.18.2

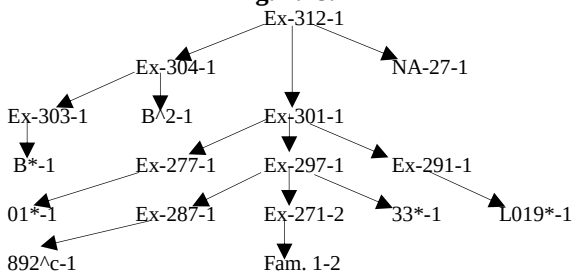
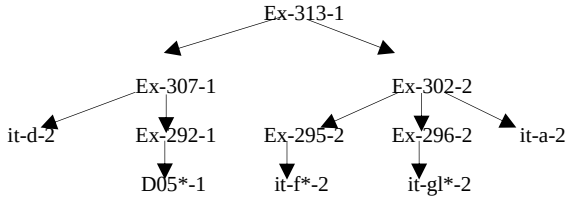


Fig. 7.18.3



Lachmann-10 selected the first alternative because it was the dominant reading in all three main branches: It was totally dominant in the Antiochan branch except for the fifth-generation sub-branch headed by Ex-285, the source of Family-13 and 038* and its corrector; it was dominant in the Egyptian branch except for the fourth-generation sub-branch headed by Ex-271, the source of Family-1; it was dominant in the Old Latin branch because Lachmann-10 grants priority to Greek witnesses when versions differ.

The second alternative occurs only in remote genetically independent sub-branches: in the Egyptian branch it occurs in the fourth-generation sub-branch headed by Ex-271, the source of Family-1; in the Old Latin branch it occurs in the second-generation sub-branch headed by Ex-302, the source of the OL witnesses; and in the Antiochan branch it occurs in the fifth-generation sub-branch headed by Ex-285, the source of Family-13 and 038* along with their associated correctors; in the sixth-generation sub-branch headed by Ex-283, the source of 037* and its corrector; and in the seventh-generation sub-branch headed by Ex-278, the source of lectionary 1424* and its corrector.

It also occurs in a few lone independent witnesses: 0250, vg^cl, it-d, mae, and the TR. It is likely that several copyists inserted the parallel passage in John 19:24 into Matthew's text here. The third alternative (for it) occurs only in only two lone independent witnesses: 892* and sy^s, having no possibility of being from the hand of Matthew.

Conclusion

This chapter identifies the autographic readings of the Greek text of the Gospel of Matthew and explains how they were determined. It provides the genealogical history of each variant reading, locating where each reading originated, and describing how each reading was distributed by inheritance throughout that history. It discusses the principal recensions, locating their origin in history, and identifying their characteristic readings. It discusses doctrinally significant passages and shows that the variant readings there do not alter the orthodoxy of Christian doctrine expressed in the earliest form of the text of Matthew, but appear in peripheral, inconsequential branches.

Chapter 8 presents the genealogical history of the Greek text of the book of Ecclesiastes as reconstructed by software application Lachmann-10.

CHAPTER 8
GENEALOGICAL HISTORY OF THE WITNESSES TO TEXT OF ECCLESIASTES

As previously stated in Chapter 3, one of the ancient texts used to test the accuracy of this genealogical theory and its software implementation consisted of the witnesses to the Greek translation of the Book of Ecclesiastes. The database was prepared by Peter J. Gentry, Professor of Old Testament Interpretation at the Southern Baptist Theological Seminary, Louisville, KY. Professor Gentry has studied the witnesses to Greek Ecclesiastes for a good number of years using a genealogical method for determining the various genealogically related groups of witnesses and determining the readings of the ancestral source from which the translations were made. This chapter presents the results of the study as reconstructed by computer program Lachmann-10. The chapter is divided into four sections: (1) A discussion of the suitability of the database for reconstructing a reasonably accurate genealogical history; (2) a presentation of the reconstructed history of the witnesses; (3) a discussion of the reconstructed history of the variants in the text, and (4) an evaluation of the results.

The Suitability of the Witnesses

The witnesses to the text of an ancient document must have several characteristics before a reasonably reliable reconstruction of its genealogical history can be made. Among these are (1) number of witnesses, (2) date, (3) completeness, (4) limited variableness, (5) commonness of text, and (6) mutual affinity. These characteristics of the available witnesses to the text of Ecclesiastes are discussed below and are shown to be suitable for a reasonable reconstruction of its textual history.

Number of Witnesses

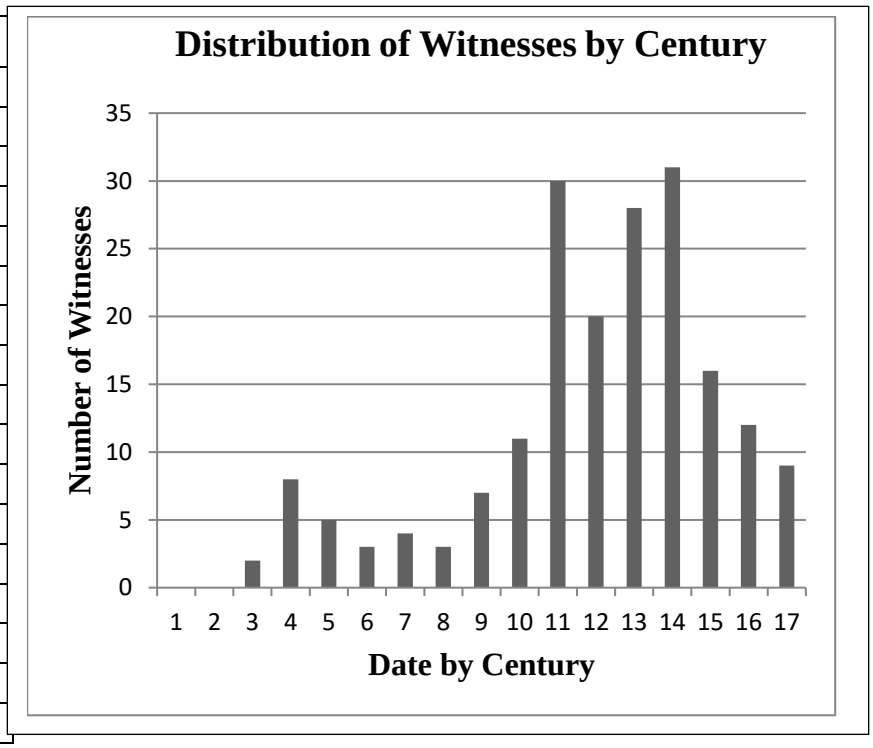
This study made use the data from 203 witnesses to the Book of Ecclesiastes at 2,158 places of variation as recorded by Peter Gentry. This number includes witnesses to the Old Latin translations, as well as several other ancient translations. There is good reason to believe that sufficient witnesses to the Greek text of Ecclesiastes exist to reconstruct its genealogical history.

Date of Witnesses

The witnesses should be distributed throughout history, particularly in the early centuries where they tend to be few. The dates of the witnesses to Ecclesiastes range from the third to the seventeenth centuries. Table 8.1 and its associated graph display the distribution of the witnesses by date. These dates have a margin of error of about ± fifty years. Experience indicates that this is a sufficient number.

Table 8.1:
Distribution of Extant Witnesses by Century

Century	Number of Witnesses
1	0
2	0
3	3
4	9
5	6
6	3
7	5
8	3
9	7
10	11
11	31
12	21
13	28
14	34
15	19
16	14
17	9



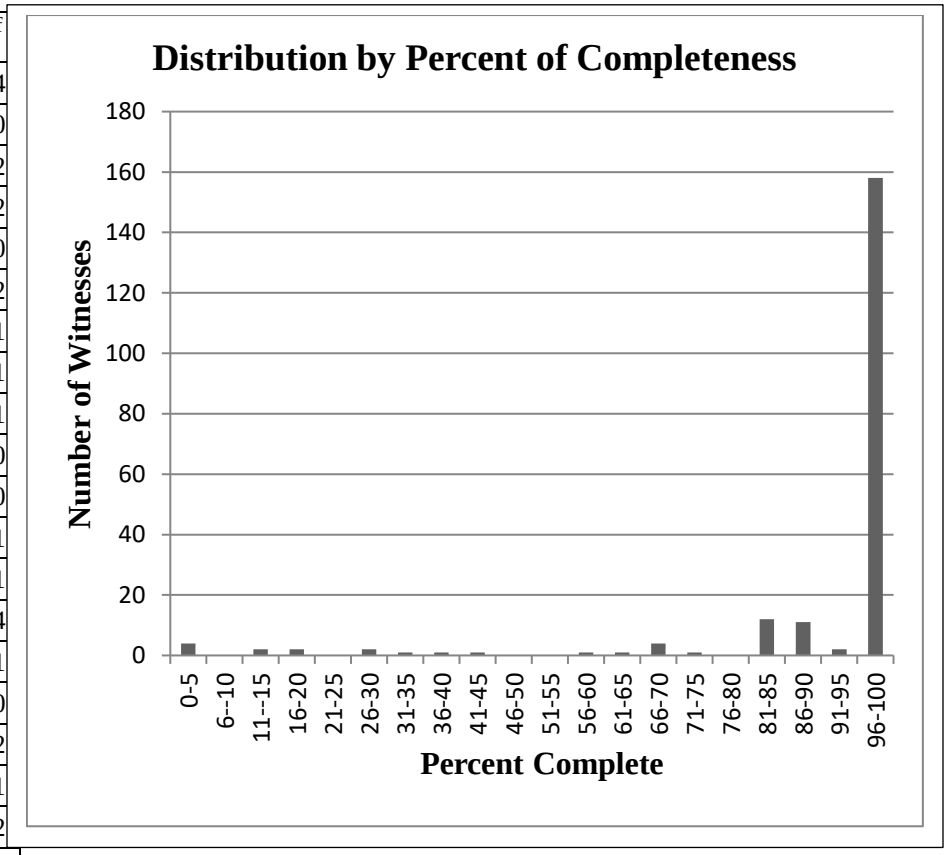
Completeness

Completeness is important for the reconstruction of the textual history, because the computer reconstructs the genealogical history on the basis of witnesses having at least 60% of their text complete; the more fragmentary witnesses are added to the genealogical tree where they best fit after the tree is constructed. The fragmentary witnesses are still important and are not excluded from the study because they contribute to establishing fixed dates in the textual history. A number of the witnesses are fragmentary, not all their text having survived the passage of time. Only 158 of the 203 witnesses have 95-100% of their text complete, and 189 of them are greater than 60% complete. Table 8.2 and its associated graph display the distribution of completeness for the witnesses used in this study.

Because some of the witnesses are fragmentary, it is of interest to know the historical distribution of those witnesses having 60% or greater completeness. They are the ones that contribute to the reconstruction of the genealogical history. Table 8.3 and its associated graph display the distribution of these witnesses. It is evident that numerous contributing witnesses are from as early as the third century, so a reasonably good reconstruction can be expected.

Table 8.2
Distribution of Witnesses
by Completeness:

% Complete	Number of Witnesses
0-5	4
6-10	0
11-15	2
16-20	2
21-25	0
26-30	2
31-35	1
36-40	1
41-45	1
46-50	0
51-55	0
56-60	1
61-65	1
66-70	4
71-75	1
76-80	0
81-85	12
86-90	11
91-95	2
96-100	158



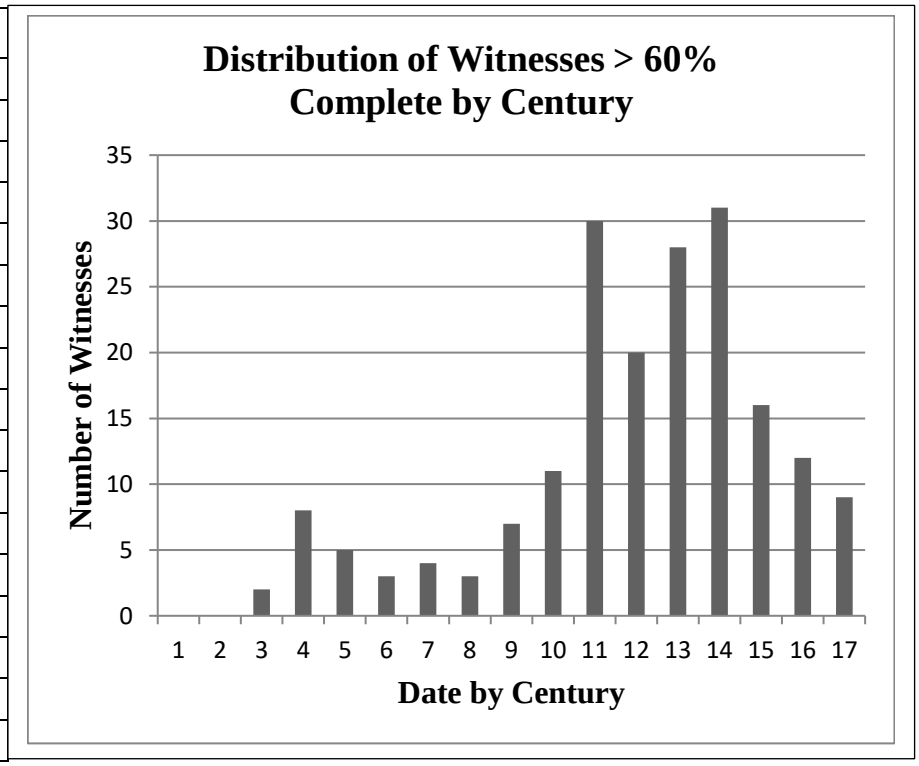
Commonness of Text

Commonness is a measure of the percentage of text two witnesses have in common. When two witnesses both have complete texts, that is, they are not fragmentary, having readings at every place of variation, they have 100% commonness, regardless of the agreement or disagreement of their readings. Fragmentary witnesses, however, are less than complete and may actually have no commonness of text with some of the other witnesses. For example, witness A may be 40% complete, lacking the text for the last 60% of the places of variation, and witness B may be 40% complete, lacking the text for the first 60% of the places of

variation. As a result, the two witnesses have no commonness of text. The greater the commonness of text two witnesses have with one another, the greater potential they have for genealogical affinity. Table 8.4 and its associated graph display the distribution of commonness each witness shares with every other witness for the Book of Ecclesiastes.

Table 8.3
Distribution of the Date of Witnesses
Having 60% or Greater Completeness
by Century:

Century	Number of Witnesses
1	0
2	0
3	2
4	8
5	5
6	3
7	4
8	3
9	7
10	11
11	30
12	20
13	28
14	31
15	16
16	12
17	9



Limited Variableness

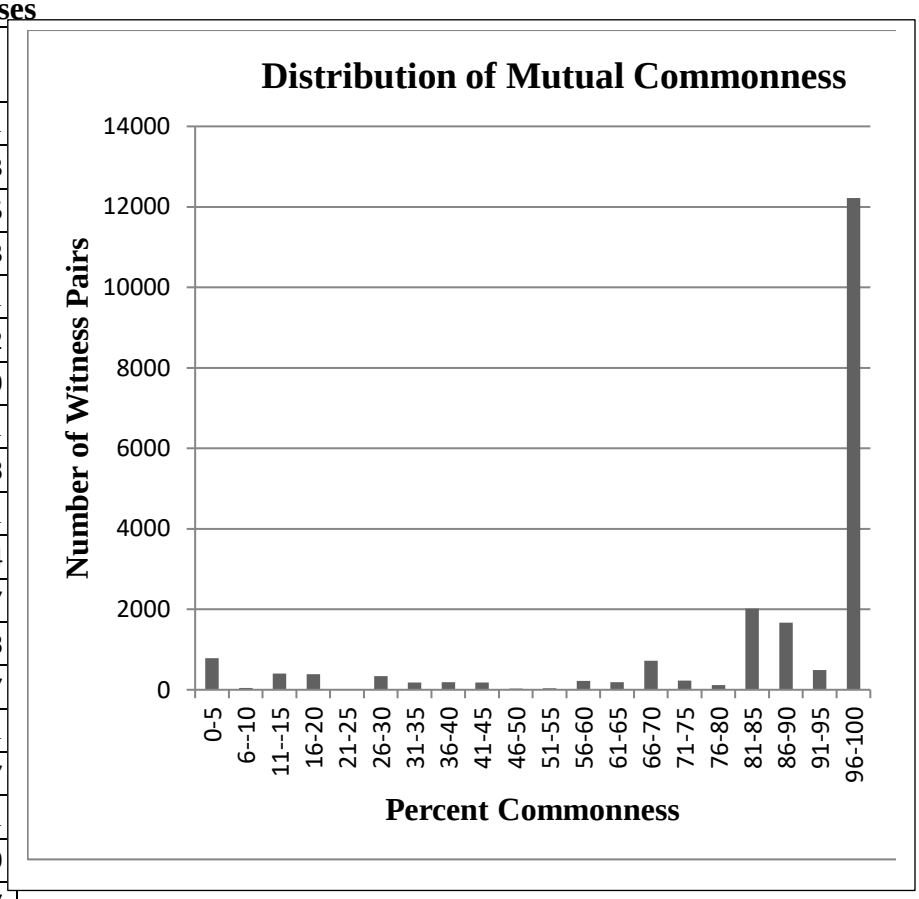
The more diverse the text the more difficult is the reconstruction of its textual history. In the overall picture, all witnesses to Ecclesiastes agree in over 90% of the text. The places of variation and the number of variants at those sites provide the data for reconstruction. However, even so, the number of places of variation and the number of variants constitute a limit to what can be reconstructed because of the magnitude and complexity of the problem. Gentry recorded 2,158 places of variation[1] for Ecclesiastes with a total of 6,093 variant

[1] Of course there are more places of variation than this, but Gentry weeded out those that are insignificant for reconstruction and meaning.

readings distributed among them. This averages out to 2.82 variants per place of variation. Table 8.5 and its associated graph display the distribution of the number of variations per place of variation. For example, 1,193 places of variation have only two variations whereas only thirteen places of variation have eight variations.

Table 8.4
Distribution of Commonness of Text among Witnesses

% Commonness	Number of Witness Pairs
0-5	781
6-10	43
11-15	405
16-20	383
21-25	11
26-30	342
31-35	179
36-40	191
41-45	178
46-50	31
51-55	34
56-60	217
61-65	188
66-70	717
71-75	231
76-80	117
81-85	2,021
86-90	1,669
91-95	487
96-100	12,221



However, this measure of diversity is a little misleading because, at any instant where the software decides between the variants among sibling witnesses, not all alternatives are present. Table 8.6 and its associated graph display the diversity of readings at any instance of choosing variants among sibling witnesses. This indicates that of the 244,154 instances of deciding among sibling alternatives, 233,888 had only one alternative (95.97%), that is, the decision was certain. Of the remaining instances, 9,846 instances had only two alternatives (4.03%). This means that, although considerable diversity exists among extant witnesses in

general, considerably less diversity exists at decision time. This fact favors the likelihood of a good reconstruction.

Table 8.5
Distribution of Number of Variations per Place of Variation

Number of Variants	Number of Places of Variation
1	0
2	1193
3	527
4	226
5	119
6	49
7	25
8	13
9	0

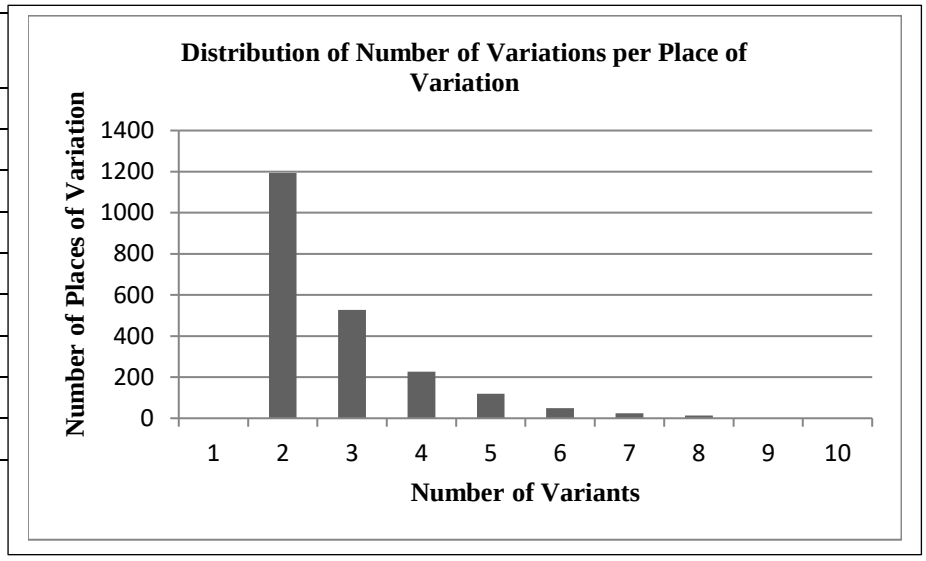
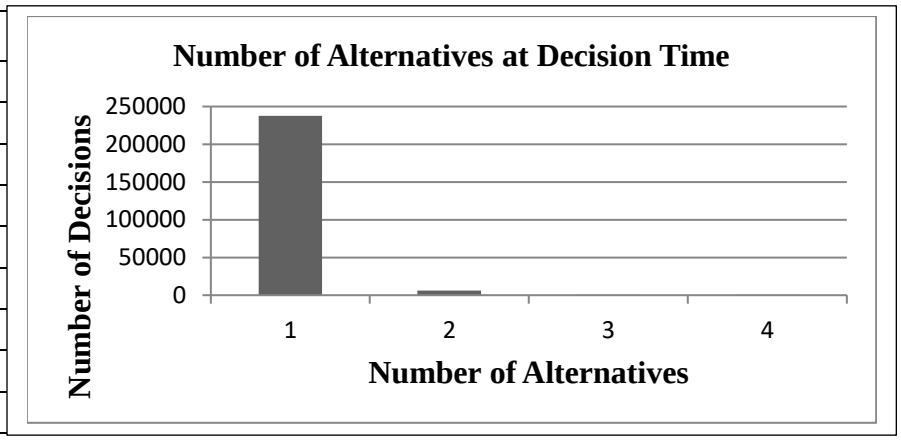


Table 8.6
Number of Alternatives at Decision Time

Number of Alternatives	Number of Decisions
1	233,888
2	9,846
3	399
4	20
5	0
6	1
7	0
8	0
Total	244,154



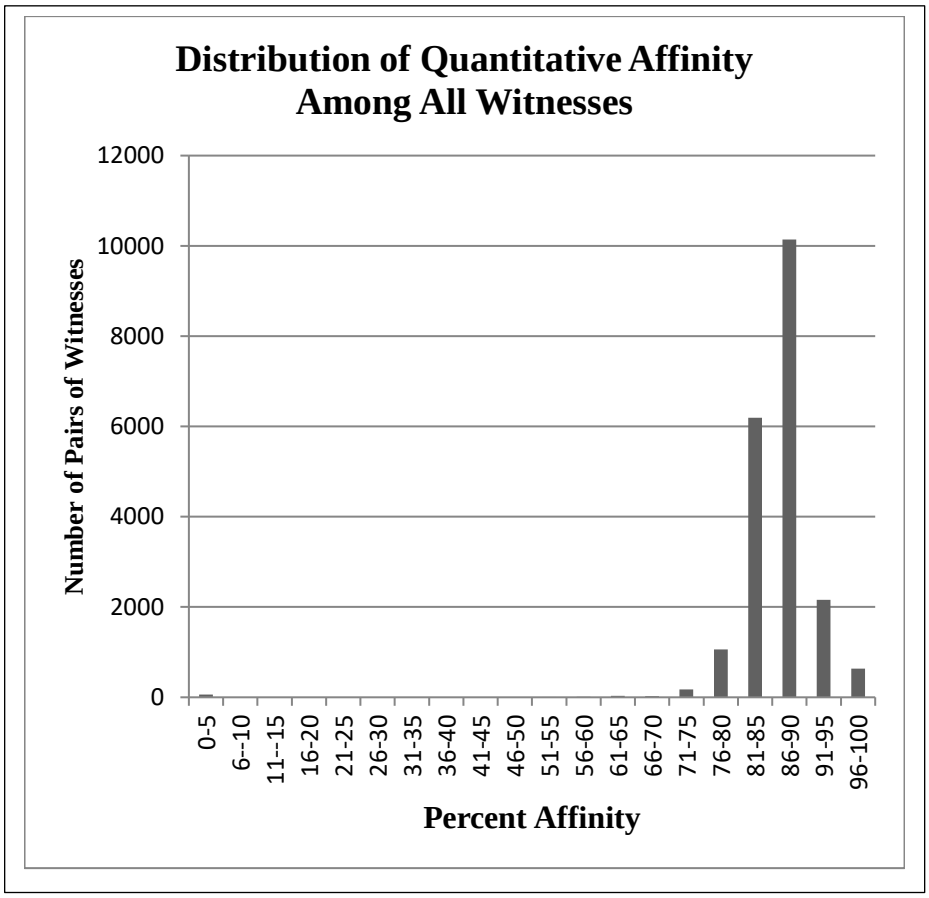
Mutual Affinity

Mutual affinity[2] is a measure of how strongly two witnesses are genealogically related. Witnesses are genealogically related when they have many of the same readings at their shared

places of variation. Quantitative affinity is determined by the number of places of variation where the witnesses have the same reading divided by the number of places of variation the witnesses have in common. For example, if witness A and witness B have 1,000 places of variation in common, and in 952 places they have the same reading, the quantitative affinity of A with B is 952 ÷ 1,000 = 0.952 or 95.2%. Table 8.7 and its associated graph display the distribution of quantitative affinity among all the pairs of witnesses for Ecclesiastes. Genetic affinity is a measure of how well witnesses share sibling genes.

Table 8.7
Distribution of Quantitative Affinity Among all Witnesses

% Affinity	Number of Witnesses
0-5	59
6-10	0
11-15	0
16-20	0
21-25	0
26-30	0
31-35	0
36-40	0
41-45	0
46-50	0
51-55	3
56-60	8
61-65	31
66-70	29
71-75	176
76-80	1,063
81-85	6,194
86-90	10,144
91-95	2,159
96-100	637



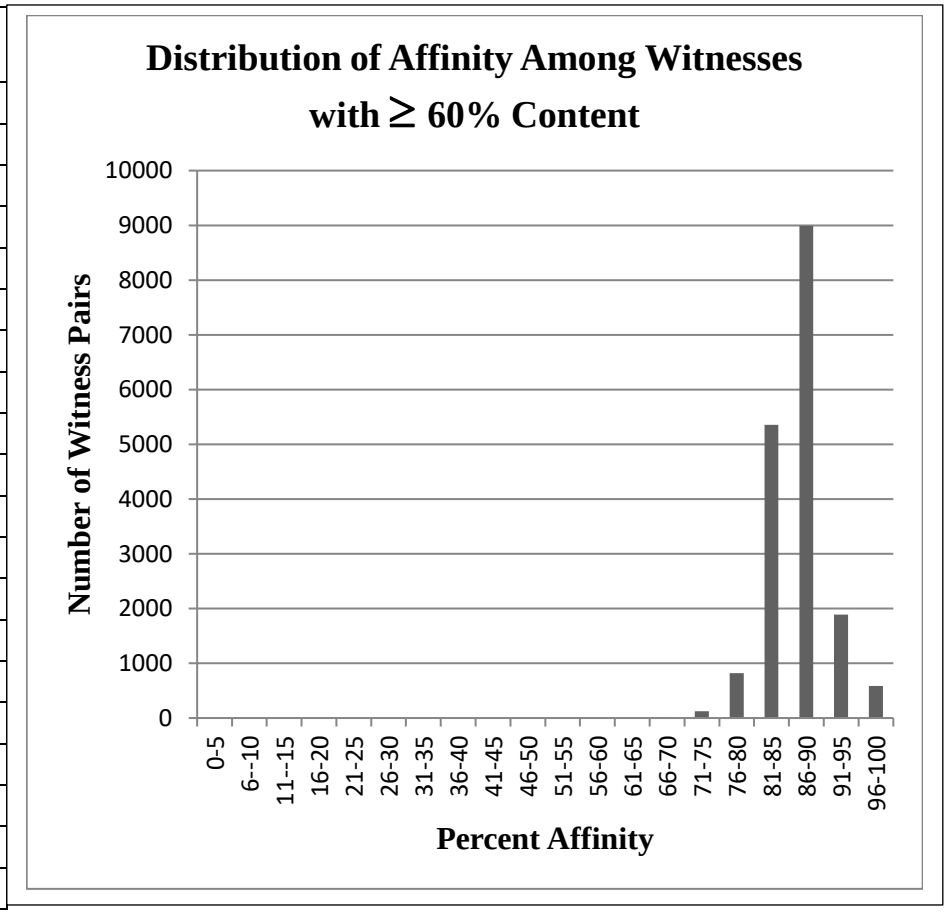
These data are skewed because of the many fragmentary witnesses. A better picture of the significant affinity is that which is among witnesses having 60% content or greater. These

[2] Affinity among witnesses may be measured in different ways, which, although related, produce different results. Appendix A contains a discussion of the various means for measuring mutual affinity and the optimal method employed by the current form of software implementation.

witnesses are the ones used to reconstruct the genealogical history. Table 8.8 and its associated graph display the distribution of the affinity among witnesses having 60% content or greater. The mean quantitative affinity among these extant witnesses is 86.77%. It is evident that many of the extant witnesses to Ecclesiastes have relatively strong affinity with one another. This suggests that reconstruction of the genealogical history is reasonably feasible. This is confirmed by the fact that the average quantitative affinity of a witness with its reconstructed parent exemplar is 98.11%.

Table 8.8
Distribution of Quantitative Affinity Among Witnesses with 60% or Greater Content

% Affinity	Number of Witness Pairs
0-5	0
6-10	0
11-15	0
16-20	0
21-25	0
26-30	0
31-35	0
36-40	0
41-45	0
46-50	0
51-55	0
56-60	0
61-65	0
66-70	1
71-75	124
76-80	819
81-85	5377
86-90	8961
91-95	1893
96-100	586



In summary the witnesses in the database seem sufficient for reconstructing a reasonable approximation of the genealogical history of the text of Ecclesiastes, but there is room for improvement.

The Reconstructed History of the Witnesses to Ecclesiastes

This section presents the genealogical history of the witnesses to the Greek text of the Book of Ecclesiastes as reconstructed by computer program Lachmann-10. Beginning with a database of 203 existing witnesses, 2,158 places of variation, and 6,093 variants, the program reconstructed 114 intermediate exemplars, arranging them in the genealogical stemma (tree diagram) presented in its full form in Appendix E, but in a condensed form in Figures 8.1.1 through 8.1.3.[3] This condensed form portrays the stemma of the entire reconstructed genealogical history of the witnesses to Ecclesiastes.

Figures 8.2.1 through 8.2.3 display a second stemma in which the principle line of descent from the autograph to the most remote witness appears in a straight line from which the other text traditions branch off. This second diagram shows the place of origin of Gentry's various groups but not the genealogical development of the groups.

The software is designed to stop when only three witnesses remain in the data base. These remaining witnesses are the ancient independent witnesses from which the text of the autograph is recovered. They may be regarded as the text of three ancient independent recensions which were the sources of three text traditions.

First Recension

The stemma begins with three main branches headed by exemplars Ex-312, Ex-315, and Ex-316 respectively. Exemplar Ex-312 (c. AD 250), the heading the first main branch (Figures 8.1.2 and 8.2.2) was the recension from which fragmentary Ms 813 appears to have been derived. This branch is genealogically independent from all other witnesses, differing from its sibling exemplar Ex-315 by 58 readings, from exemplar Ex-316 by 153 readings, and from all other witnesses by significantly more. This branch has three second generation sub-branches headed by exemplars Ex-207, Ex-283, and Ex-285 respectively:

(1) Exemplar Ex-207 (c. AD 300) is the source from which Ms S* and its correctors derived their text.

[3] The full diagram, displayed in Appendix D, requires seven pages. The condensed form here deletes all the technical information except the name of the witnesses.

Figure 8.1.1
Stemma for Ecclesiastes

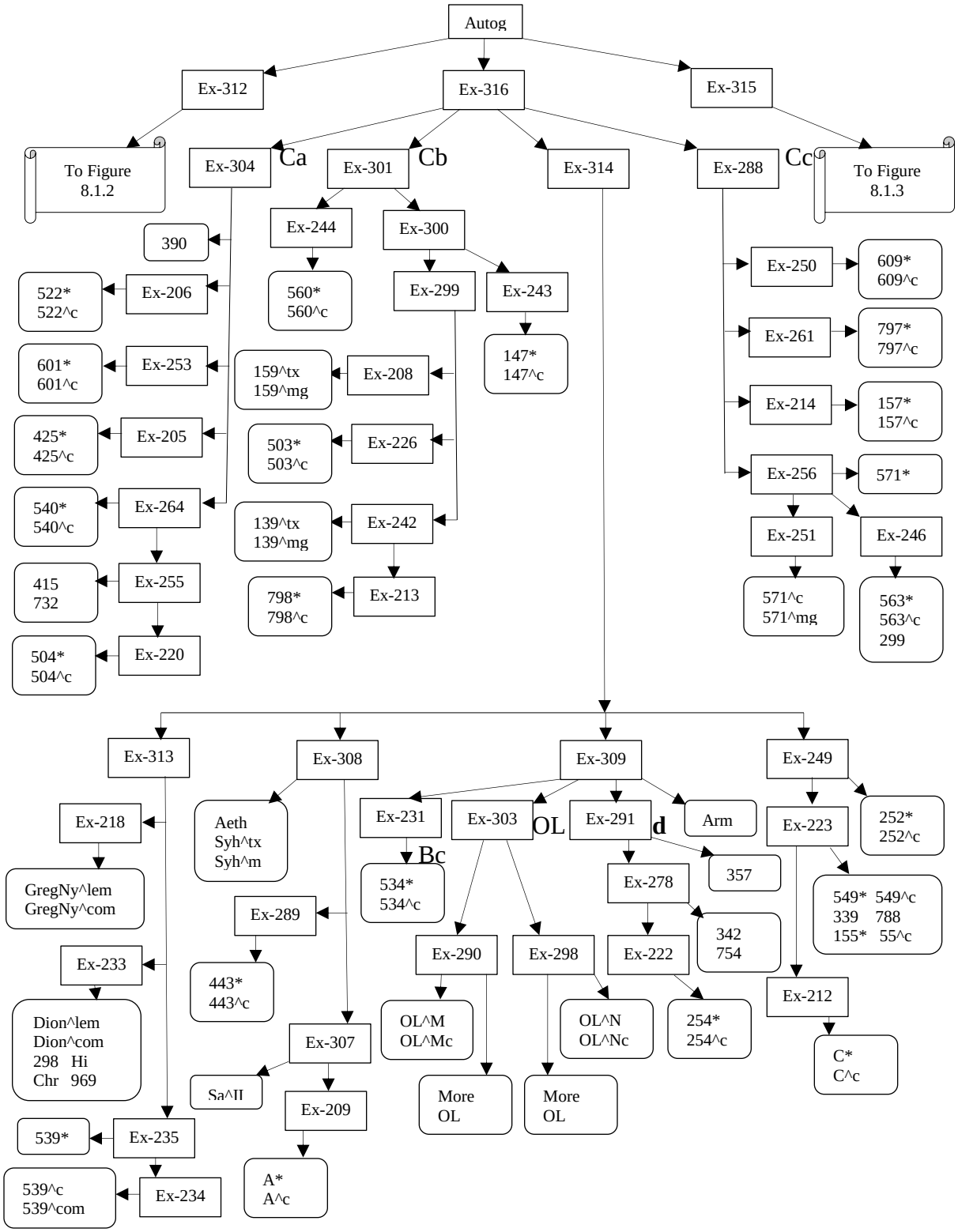
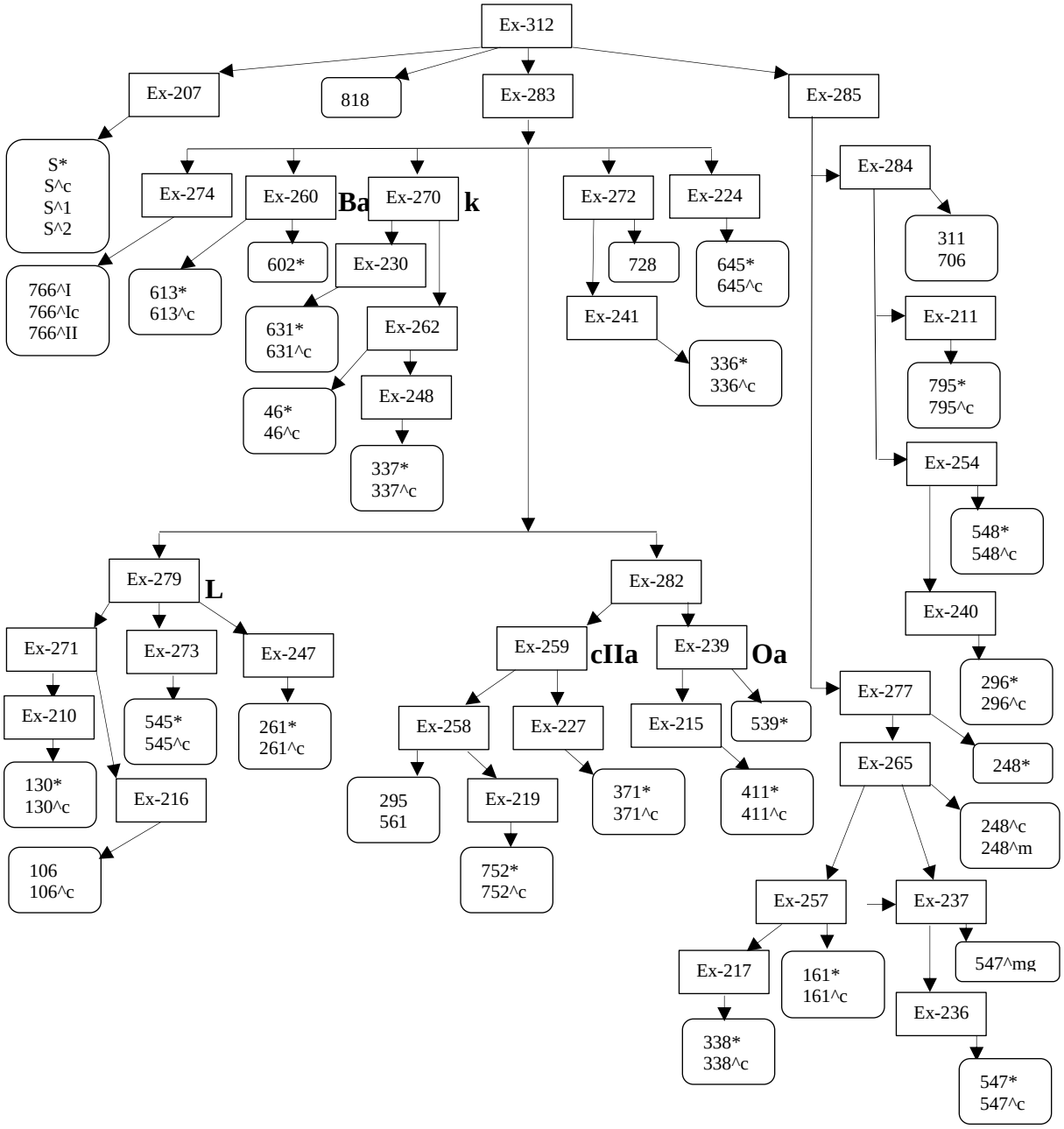


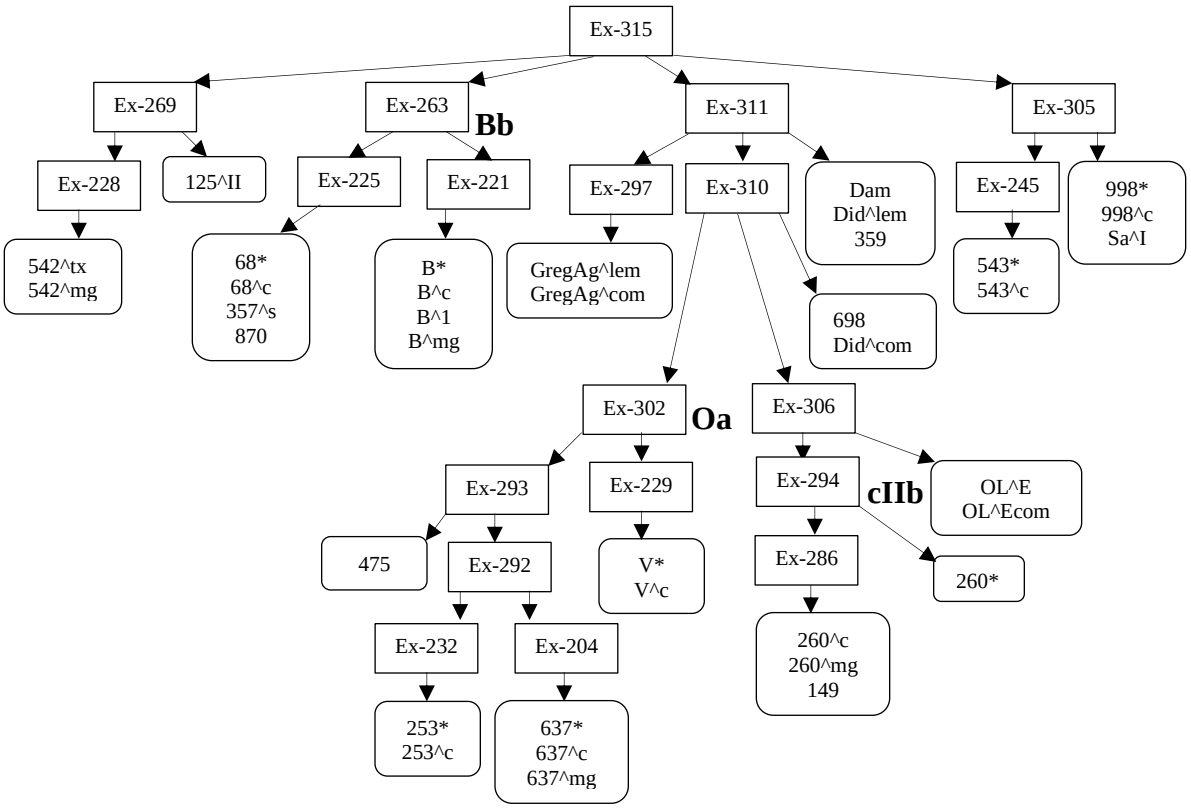
Figure 8.1.2



(2)Exemplar Ex-283 (c. AD 1050) is the source from which Gentry's Group *Ba* was derived by way of Exemplar Ex-260, Group *k* by way of Exemplar Ex-270, Group *L* by way of Exemplar Ex-279, Group *cIIa* and Group *Oa* by way of Exemplar Ex-282.

(3) Exemplar Ex-285 (c. AD 850) heads a sub-branch extending for five generations but containing none of Gentry's groups.

Figure 8.1.3



Second Recension

Exemplar Ex-315 (c. AD 250) is the head of the second main branch (Figures 8.1.3 and 8.2.3). This branch is genealogically independent from all other witnesses, differing from its sibling Exemplar Ex-312 by 58 readings, from Exemplar Ex-316 by 165 readings, and from all other witnesses by significantly more. This branch has four second generation sub-branches headed by exemplars Ex-269, Ex-263, Ex-311, and Ex-305 respectively:

(1) Exemplar Ex-269 (c. AD 750) was the source from which Ms 125^II derived its text, and from which Ms 542^tx and its marginal readings derived their text by means of Exemplar Ex-228.

(2) Exemplar Ex-263 (c. AD 275), is the head the second sub-branch, was the recension from which the members of Gentry's Group *Bb* derived their text: Mss B* and 68* together with their correctors.

Figure 8.2.1
Second Stemma for Ecclesiastes

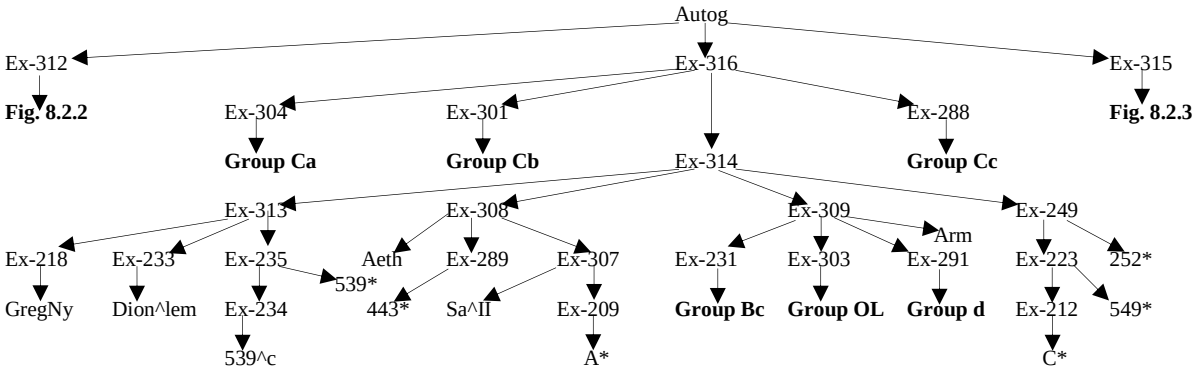


Fig. 8.2.2

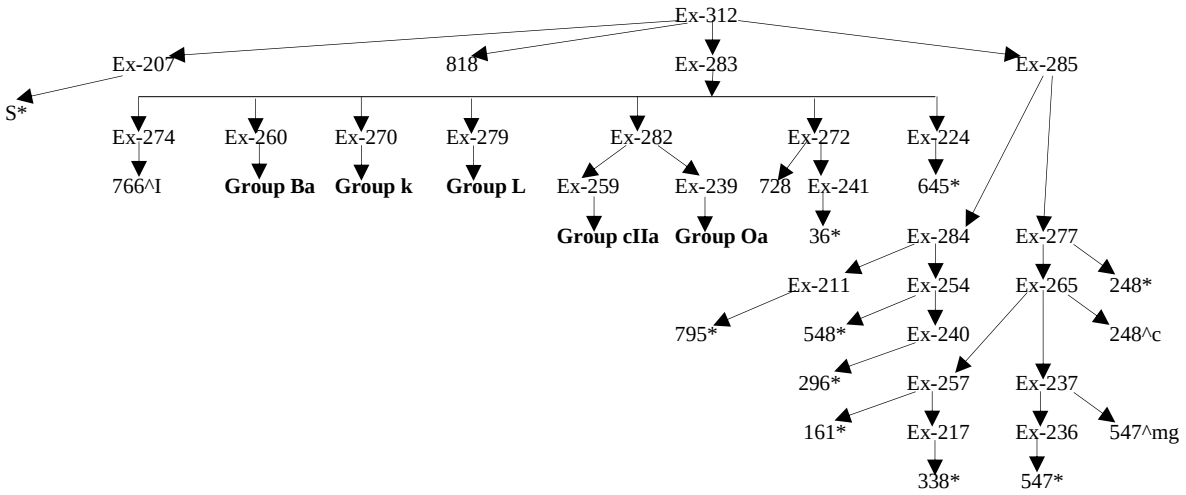
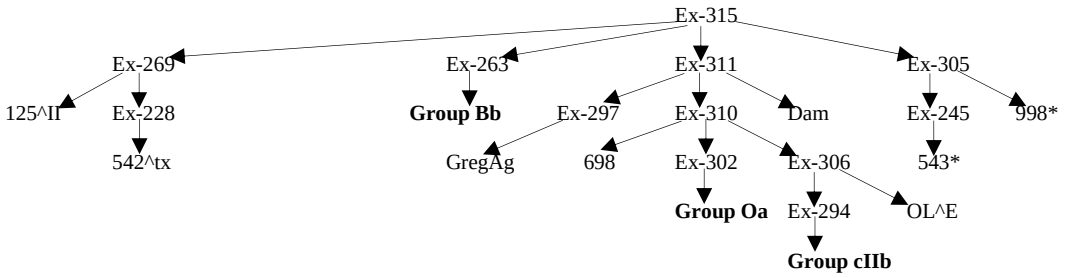


Fig. 8.2.3



(3) Exemplar Ex-311 (c. AD 275) is the head of the third sub-branch. It was the source of the lemma of Didymus (Did^lem c. AD 350), of Iohannes Damascenus (Dam c. AD 700), and possibly of Ms 359 (c. AD 1300). It was also the source used by Gregory (GregAg, c. AD 950) by way of Exemplar Ex-297. It was the source of Gentry's Group *Ob*, by way of Exemplar Ex-310, and of Gentry's Group *cIIb* by way of exemplars Ex-310 and Ex-306.

(4) Exemplar Ex-305 (c. AD 275) is the head of the fourth sub-branch. It was the source of Ms 998* and its corrector, and the text used by the translator of the Sahidic version I (Sa^I). Also it was the source of Ms 543* and its corrector by way of Exemplar Ex-245.

Third Recension

Exemplar Ex-316 (c. AD 50) is the head of the third main branch. This branch is genealogically independent from all other witnesses, differing from its sibling Exemplar Ex-312 by 153 readings, from Exemplar Ex-315 by 165 readings, and from all other witnesses by significantly more. This branch has four second generation sub-branches headed by exemplars Ex-304, Ex-301, Ex-314, and Ex-288 respectively. Exemplars Ex-304, Ex-301, and Ex-288 each are the head of a sub-group of Gentry's Group *C*, with the members of his Group *cI* intermingled, as he suspected. Thus Exemplar Ex-316 is the source of all of Group *C*.

Exemplar Ex-314 is the head of the fourth second generation sub-branch (Figures 8.1.1 and 8.2.1). It has four third generation sub-branches headed by Exemplars Ex-313, Ex-308, Ex-309, and Ex-249. Exemplar Ex-309 is of interest because it the source of Gentry's Group *Bc*, of his Group *d*, and of Group *OL*. The other three sub-branches are unrelated to any of Gentry's groups.

Since both Gentry and I employ genealogical principles, similar results are expected. One such expectation is that our procedures reconstruct similar groups of genealogically related witnesses having a common near ancestor exemplar. As noted above, that expectation was essentially met. Lachmann-10 perfectly reconstructed Gentry's groups *C*,[4] *d*, *k*, and *L*. These groups each have a common near ancestor exemplar and share most of its distinctive[5] variants. Group *C* is taken as an illustration of this characteristic of groups. The common near ancestor of Group *C* is first-generation Exemplar Ex-316 having 132 distinctive variants. The following table[6] lists the names of each witness in Group *C*, the number of Exemplar Ex-316's distinctive variants it shares, the percentage of its shared distinctive variants, and the generation of the witness.

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[4] Just as Gentry suspected, his *cI* group is interspersed within his *C* group.

[5] Distinctive variants of a group are those initiated in their nearest common ancestor exemplar. They tend to be the most infrequent readings common to the group.

[6] Only the text of the first-hand copyist is included in the table because the other witnesses are correctors which differed very little from their corresponding first-hand text.

The Descendants of Exemplar Ex-307

Witness	Ex-316	Percent	Generation	Witness	Ex-316	Percent	Generation
390	123	93.18%	3	147*	125	94.69%	5
157*	115	87.127%	4	299	61	46.21%	5
425*	122	92.42%	4	415	128	96.96%	5
522*	130	98.48%	4	563*	125	94.69%	5
540*	126	95.45%	4	732	129	97.72%	5
560*	125	94.69%	4	139^tx	124	93.93%	6
571*	125	94.69%	4	159^tx	126	95.45%	6
601*	126	95.45%	4	504*	129	97.72%	6
609*	120	90.90%	4	503*	126	95.45%	6
797*	125	94.69%	4	798*	121	91.66%	7

The evidence sustains the expectation: the group members share nearly all of the distinctive variants of their common near ancestor exemplar. The one exception is Ms 299 with only 46.21%. But as it turns out, this witness is quite diverse, having an affinity of only 0.92 as compared with the others in the group, but fitting into this group better than anywhere else. This example also illustrates the principle of hereditary persistence, because generational depth has no effect on percent agreement. Gentry's groups *d*, *k*, and *L* also meet the same expectation. Gentry did not identify the Old Latin witnesses as a group, but they cluster in a single sub-branch headed by Exemplar Ex-303 and meet the above expectation.[7]

However, Lachmann-10 split into smaller independent sub-groups Gentry's groups *B*, *cII*, and *O* groups. The reasons for these splits are worth investigating. His Group *B* is taken as an illustration of this situation. Lachmann-10 split Group *B* into three sub-groups: one sub-group (534* and 534^c) headed by Exemplar Ex-231, another (B*, B^c, B^1, B^2, B^mg, 68*, 68^c, and 870) headed by Exemplar Ex-263, the third sub-group (602, 613*, and 613^c), headed by Exemplar Ex-260. In this reconstruction, these sub-groups are genetically independent, each occurring in a different main branch of the stemma. The following table displays the number of times each witness[8] differs from the others in Group *B*:

[7] One exception is Ms OL^E and its associated commentary. However, it also meets the above expectation, but occurs in a remote branch for some unexplained reason.

[8] As in the case of Group C, Only the text of the first-hand copyist is included in the table because the other witnesses are correctors which differed very little from their corresponding first-hand text.

Number of Differences Between Witnesses

	Ms-B*	Ms-68*	Ms-534*	Ms-613*	Ms-602
Ms-B*	0	76	159	235	241
Ms-68*	76	0	185	242	252
Ms-534*	159	185	0	228	242
Ms-613*	235	242	228	0	36
Ms-602	241	252	242	36	0

The following table displays the mutual quantitative affinity each witness has with the others in Group *B*:

Mutual Quantitative Affinity

	Ms-B*	Ms-68*	Ms-534*	Ms-613*	Ms-602
Ms-B*	1.00	0.9648	0.9263	0.8911	0.8832
Ms-68*	0.9648	1.00	0.9142	0.8878	0.8832
Ms-534*	0.9263	0.9142	1.00	0.9069	0.8878
Ms-613*	0.8911	0.8878	0.9069	1.00	0.9833
Ms-602	0.8883	0.8832	0.8878	0.9833	1.00

The evidence indicates that all the witnesses in Group *B* have reasonably good affinity with each other, and if Gentry used the criterion of 0.88 for determining group membership, all these witnesses qualify. However, members of the same group of witnesses are expected to have a common near ancestor exemplar from which each inherited most of its distinctive variants. In the present reconstructed stemma of Ecclesiastes, Exemplar Ex-231 has 127 distinctive variants, Exemplar Ex-263 has 101, and Exemplar Ex-260 has 131. The distinctive variants of each ancestral exemplar mainly differ from each other. The following table displays the number of distinctive variants each witness of Group *B* has of the designated ancestral exemplars.

Number of Distinctive Variants per Exemplar

	Ms-B*	Ms-68*	Ms-534*	Ms-613*	Ms-602	Total
Ex-231	38	34	127	31	28	127
Ex-263	97	99	61	23	19	101
Ex-260	34	35	50	126	131	131

The following table displays the same data in terms of percentage.

Percent of Distinctive Variants per Exemplar

	Ms-B*	Ms-68*	Ms-534*	Ms-613*	Ms-602	Total
Ex-231	29.92%	26.77%	100%	24.41%	22.05%	127
Ex-263	96.04%	98.02%	60.39%	22.77%	18.81%	101
Ex-260	25.76%	26.51%	37.88%	95.45%	100%	131

The evidence indicates that although these witnesses have mutual quantitative affinity in the range of 88% and greater, the witnesses having lower mutual affinities failed to share a significant percentage of distinctive variants with the others, and found greater affinity elsewhere in the data base as the stemma developed. This occurred because Lachmann-10 assembled the small sub-groups separately and connected them to developing branches as the procedure reconstructed the stemma in historical order. In the reconstruction process, as new branches develop, the head exemplars of the sub-groups were found to have greatest affinity with different branches. What is said of Gentry's Group *B* is also true of groups *cII*, *O*, and *OL*.

The Reconstructed History of the Variants of Ecclesiastes

The previous section presents the genealogical history of the witnesses to the Greek translation of the Book of Ecclesiastes. That history is necessary before the genealogical history of an individual variant may be explicitly discussed, because the history of a textual variant is totally dependent upon the history of the manuscripts in which it occurs. This section discusses the history and distribution of the variants in the text of Ecclesiastes. Gentry's database records 2,158 places of textual variation in the book of Ecclesiastes and 6,093 variant readings. This averages out to a variableness index of 2.82 variants per place of variation—a relatively low value. Previous Table 8.5 and its associated graph display the distribution of the number of variants per place of variation. The following discussion covers four significant areas of importance for variants: (1) the intuitive expectations concerning variants in a historical stemma; (2) the reconstructed autographic text; (3) the significance of distinctive variants; and (4) the distribution of the variants at significant places of variation.

Intuitive Expectations

The variants in a well-constructed stemma have a number of intuitive expectations: (1) except for very common scribal errors, a variant is expected to have been initiated only once in history with all other instances being the result of inheritance or of a new initiation resulting from mixture; (2) once a variant has been initiated it is expected to have hereditary persistence; (3) the principle of deferred ambiguity is expected to usually be successful, minimizing uncertainty.

Single Initiation. Lachmann-10 was able to identify the initial location in the reconstructed stemma where each of the 6,093 variants in the database originated in history, and to identify the most likely source of each of the 6,626 instances of mixture. It may be said of the present reconstructed stemma of Ecclesiastes that all its variants, including the autographic readings, were initiated only once, the other instances of initiation being the result of identifiable mixture. Of course, the software was designed to do this task, including identifying a source for those frequent common scribal errors. These sources turn out to be hypothetical exemplars residing in the unrecoverable history between the first-generation exemplars and the autograph; they are actually unreal because such frequent random accidents have no relative genealogical relationship.

Hereditary Persistence. A variant has heredity persistence if, after it is initiated, it is inherited unaltered by the descendants of the exemplar in which it originated. In the present reconstructed stemma of Ecclesiastes, of the 95,574 instances where a variant was initiated, 71,362 of them persisted to the end twigs of the branch in which the variant originated; that is 74.67%. Of the 22,224 times the variant was altered, the variant was corrected in later history 20,632 times, resulting in only 3,580 instances where there was total loss of inheritance, resulting in an overall average of 96.25% persistence.

Deferred Ambiguity. At places of ambiguity the principle of deferred ambiguity is designed to distinguish an inherited variant from one that is newly initiated. In a well-constructed stemma that principle is expected to be mainly successful, minimizing ambiguity. In the present reconstructed stemma of Ecclesiastes, of the 2,526 instances of ambiguity, 1,968 were successfully resolved by the principle of deferred ambiguity (77.91%), and 543 were resolved by default to Gentry's choice (21.50%),[9] leaving only 15 instances to be resolved by arbitrary choice (0.59%).

Although the present reconstructed stemma does not meet these expectations perfectly, the expectations are idealistic and no one really expects them to be perfectly achieved in reality. So the theory, and the software implementation, met the ideal expectations fairly well, but not some measure of uncertainty.

[9] Default to Gentry's choice is based on the assumption that at places of ambiguity Gentry used internal evidence to resolve the ambiguity, something the software is unable to do.

Reconstructed Autograph

Understanding the reconstructed text requires a discussion of three significant topics: (1) the method for determining exemplar readings in general; (2) the reconstructed autographic text; and (3) how the reconstructed text agrees with Gentry's text.

Determining Exemplar Readings. Whenever the genealogical software creates a new exemplar as the parent of a group of sibling witnesses, at each place of variation, the reading of the exemplar is decided on the basis of four ordered rules:

(1) Majority consensus among all the immediate sibling witnesses;

(2) If one alternative is supported by original-language witnesses, and the other alternative is supported exclusively by non-original-language witnesses, grant priority to the original-language reading;[10]

(3) if no majority, then postpone the decision until a sibling emerges for the exemplar currently being reconstructed, that sibling will have the inherited reading;[11]

(4) if, in the case of deciding the readings of the autograph, majority consensus fails, then accept the first variant (Gentry's reading) if it is an option;

(5) if the first variant is not an option, then by default arbitrarily select the smallest variant number that is an option.[12]

Table 8.9 lists the number of times each of the above rules was used in the process of constructing the genealogical history of the text of Ecclesiastes.

The evidence indicates that the vast majority of exemplar readings (97.99%) were determined by "consensus among independent witnesses," leaving an ambiguity of only 2.01% to be resolved by language deference, deferred ambiguity, or default to Gentry's choice. The same set of rules does not apply to determining the readings of the autograph—the last exemplar to be created—because rule (3) is not relevant in the first generation.

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[10] This is consistent with one of the assumptions of the genealogical theory.

[11] I call this practice *deferred ambiguity*. Since sibling witnesses rarely have scribal errors at the same place of variation, where the reading of one sibling is ambiguous—that is, it is uncertain which of two readings is the inherited reading and which is a newly initiated error—the other siblings will have the inherited reading. Of the 233,888 decisions the software made, only 420 had more than two alternatives.

[12] Next to the first variant—Gentry's choice—the reading with the smaller variant number is usually supported by more witnesses than those with larger variant numbers. While this option is purely arbitrary, it turns out to be rarely significant for determining the readings of the autograph. For determining the readings of the autograph the algorithm treats the exemplars of the last three branches to be constructed as siblings constituting the ancient independent witnesses.

Table 8.9
Frequency of Exemplar Reading Rules

(1)	by greater probability:	239,784	97.99%
(2)	by language deference	1,840	0.75%
(3)	by deferred ambiguity:	2,526	1.03%
(4)	by default to Gentry:	543	0.23%
(5)	by arbitrary choice	0	0.0%
Total		244,693	100.00%

Autographic Readings. The readings of the autographic text of the Book of Ecclesiastes were determined on the basis of consensus among the three most ancient independent witnesses. Table 8.10 lists the number of times each of the above rules was used in the process of determining the autographic readings of the text of Ecclesiastes. The evidence indicates that 99.91% of the readings were determined by "consensus among ancient independent witnesses," and only 0.09% were determined by default to Gentry's reading; and none were determined by arbitrary choice.

Table 8.10
Frequency of Exemplar Reading Rules
for the Autographic Text

(1)	by greater probability:	2,154	99.81%
(2)	by language deference	0	0%
(3)	by delayed ambiguity:	0	0%
(4)	by default to Gentry:	4	0.19%
(5)	by arbitrary choice	0	0.00%
Total		2,156	100.00%

Table 8.11 displays the distribution of autographic readings by consensus probability. The evidence indicates that 1,972 of the autographic readings were determined by 100% quantitative affinity, 182 by 66% affinity, and 4 by 33% (the ones deferred to Gentry's choice).

Agreement with Gentry's Text. In the database used in this work, the first variant at each place of variation is the reading of Gentry's text. The second and subsequent variants are the alternate readings listed in his database. Table 8.12 lists how often the various alternate readings were determined to be original. The evidence indicates that the autographic text reconstructed by the genealogical software agrees with the text of Gentry in 2,058 of the 2,158 places of variation or 95.37% of the time, and differs from Gentry's text 100 times or 4.63% of the time. Table 8.13 lists the 100 places where the Lachmann-10 text differs from that of Gentry.

Table 8.11
Distribution of Autographic Readings by Probability

Probability	Number of Readings
0.1	0
0.2	0
0.3	4
0.4	0
0.5	0
0.6	182
0.7	0
0.8	0
0.9	0
1.0	1,972

Table 8.12
Frequency of Variants

Variant 1	2,058
Variant 2	49
Variant 3	19
Variant 4	16
Variant 5	9
Variant 6	6
Variant 7	1
Total	2,158

Table 8.13
Places Where Lachmann-10 and Gentry Differ

Reference	Gentry	Lachmann-10	Probability
2:3,3.2	εν	ει η	[1.00]
2:3,4.6	ελκυσαι	ελκυσει	[0.67]
2:3,13.2	εν	με εν	[1.00]
2:3,17.4	αφροσυνη	ευφροσυνη	[0.67]
2:3,22.2	του ανθρωπου	των ανθρωπων	[0.67]
2:10,7.4	ουχ υφειλον	ουκ απειχον	[0.67]
2:12,5.2	ο	ομιτ	[0.67]
2:12,11.2	εποιησαν	εποιησεν	[1.00]
2:12,12.2	αυτην	αυτη	[0.67]
2:16,8.6	αι ημεραι αι ερχομεναι	ταις ημεραις ταις ερχομεναις	[0.67]
2:18,2.6	συν παντα	συμπαντα	[0.67]
2:19,6.3	και	και ει	[1.00]
2:20,4.2	την καρδιαν	τη καρδια	[1.00]
2:22,1.2	οτι τι	οτι	[1.00]
2:24,3.4	εν ανθρωπω	τω ανθρωπω	[0.67]
2:24,4.5	ο	ει μη ο	[1.00]
4:1,6.6	συν πασας τας συκοφαντιας	συμπασας τας συκοφαντιας	[1.00]
4:4,4.4	συν παντα	συμπαντα	[1.00]
4:4,6.7	συν πασαν	συμπασαν	[0.67]
4:5,1.2	ο	ομιτ	[0.67]
4:6,5.2	πληρωμα	πληρωματα	[1.00]
4:8,5.2	και	και γε	[1.00]
4:10,4.2	εγερει	εγειρει	[0.67]
4:11,5.3	δυο	οι δυο	[1.00]
4:14,2.2	δεσμιων	δεσμων	[0.67]
4:14,8.2	εγεννηθη	εγενηθη	[1.00]
4:15,3.3	συν παντας τους ζωντας	συμπαντας τους ζωντας	[1.00]
4:15,11.2	στησεται	αναστησεται	[1.00]
4:17,2.3	ποδα	τον ποδα	[1.00]
4:17,6.3	εαν	αν	[1.00]
4:17,25.2	ποιειν	ποιησαι	[1.00]
4:17,26.4	κακον	καλον	[0.67]
5:1,11.4	ταχυνατω	ταχυνετω	[0.67]
5:2,4.4	περισπασμου	πειρασμου	[1.00]
5:3,2.5	καθως	καθως αν	[1.00]
5:5,6.4	εξαμαρτησαι	εξαμαρτειν	[1.00]
5:9,7.5	αυτων	αυτου	[0.67]
5:9,8.2	γενημα	γενηματα	[0.67]

Reference	Gentry	Lachmann-10	Probability
5:10,4.3	εσθοντες	εσθιοντες	[0.67]
5:14,11.2	ου	ομιτ	[0.67]
5:14,12.3	λημψεται	ληψεται	[1.00]
5:15,11.2	περισσεια	η περισσεια	[1.00]
5:15,12.3	αυτω	αυτου	[1.00]
5:17,23.2	εαν	αν	[0.67]
5:17,24.4	μοχθη	μοχθηση	[0.67]
5:18,2.2	ο	ομιτ	[1.00]
5:18,15.2	του	ομιτ	[1.00]
5:19,4.6	πολλα	πολλας	[1.00]
6:2,27.3	τουτο	και γε τουτο	[1.00]
6:3,11.5	ο τι	οτι	[1.00]
6:3,16.2	ψυχη	η ψυχη	[1.00]
6:3,18.3	ου πλησθησεται	ουκ εμπλησθησεται	[1.00]
6:3,20.2	της	ομιτ	[0.67]
6:8,7.2	δια τι	διοτι	[1.00]
6:12,7.2	ζωη	ζωη αυτου	[1.00]
6:12,15.2	αυτας	αυτα	[0.67]
7:7,7.5	απολλυσι	απολλυει	[1.00]
7:14,8.3	και γε	ιδε και γε	[1.00]
7:14,9.2	συν	ομιτ	[1.00]
7:14,16.2	ο ανθρωπος	ανθρωπος	[0.67]
7:18,13.4	ανης	μιανης	[1.00]
7:22,10.2	οπως	οτι ως	[0.67]
7:25,6.2	ζητησαι	του ζητησαι	[0.67]
7:25,12.3	σκληριαν	οχληριαν	[0.67]
7:26,7.3	και ερω	ομιτ	[1.00]
7:26,8.2	πικροτερον	πικροτεραν	[0.67]
7:26,16.3	θηρευματα	θηραμα	[0.67]
7:26,36.5	συλλημφθησεται	συλληφθησεται	[1.00]
7:28,2.5	ετι εζητησεν	επεζητησεν	[0.67]
8:1,1.2	τις ωδε σοφος	τις οιδεν σοφους	[0.67]
8:4,2.4	λαλει βασιλευς ελουσιαζων	βασιλευς ελουσιαζων	[0.67]
8:8,9.3	ελουσια	ελουσιαζων	[1.00]
8:9,3.4	συν παν τουτο	συμπαν τουτο	[1.00]
8:10,9.2	τοπου	του	[1.00]
8:16,10.4	και γε	και	[1.00]
8:17,2.3	συν παντα	συμπαντα	[1.00]
8:17,16.2	ο ανθρωπος	ανθρωπος	[0.67]
9:1,2.4	συν παν τουτο	συμπαν τουτο	[1.00]

Reference	Gentry	Lachmann-10	Probability
9:1,9.3	*συν παν*	*συμπαν*	[1.00]
9:1,14.2	*εργασιαι*	*αι εργασιαι*	[1.00]
9:7,4.2	*αρτον*	*τον αρτον*	[1.00]
9:9,1.2	*ιδε ζωην*	*και ιδε ζωην*	[1.00]
9:11,19.2	*αρτος*	*ο αρτος*	[1.00]
9:11,23.2	*πλουτος*	*ο πλουτος*	[1.00]
9:12,2.4	*και γε*	*και γε τουτο*	[0.67]
9:12,23.2	*υιοι*	*οι υιοι*	[1.00]
9:14,10.2	*κυκλωση*	*κυκλωσει*	[1.00]
9:14,12.2	*οικοδομηση*	*οικοδομησει*	[1.00]
12:1,9.2	*ημεραι*	*αι ημεραι*	[0.67]
12:3,2.3	*εαν*	*αν*	[1.00]
12:5,8.2	*ανθηση*	*ανθησει*	[0.67]
12:6,5.3	*συνθλιβη*	*συντριβη*	[0.67]
12:6,9.2	*υδρια*	*η υδρια*	[0.67]
12:9,5.5	*ετι*	*και οτι*	[0.67]
12:11,5.4	*πεφυτευμενοι*	*πεπυρωμενοι*	[0.67]
12:12,2.6	*φυλαξαι*	*φυλασσου*	[0.67]
12:13,4.2	*ακουεται*	*ακουε*	[1.00]
12:13,7.2	*ο ανθρωπος*	*ανθρωπος*	[0.67]
12:14,1.5	*συν παν το ποιημα*	*συμπαν το ποιημα*	[1.00]
12:14,3.2	*ο θεος αξει*	*3 1 2*	[0.67]

Distinctive Variants

Distinctive readings are those that distinguish one branch of the stemma from all others. They are the variants initiated the head exemplar of a branch. Together, but not necessarily individually, they distinguish branches. This section identifies the distinguishing variants of the first-generation exemplars heading the three main branches of the stemma.

First Recension. Exemplar Ex-312 is the head exemplar of the first main branch of the stemma. It differs from the text of the autograph by 22 readings.[13] These variants constitute the distinctive variants of this text tradition. The head exemplar may be regarded as a recension that is the source of an independent major text tradition. It is the source from which Gentry's

[13] 2:10,7.2[Ex-325$]; 2:16,5.2[Ex-325$]; 2:18,2.1[Ex-325$]; 2:18,10.2[Ex-325$]; 2:19,7.2; 2:20,7.3; 4:4,13.2; 4:17,9.2; 5:3,17.3; 5:7,13.3[Ex-326$]; 5:18,10.4[Ex-325$]; 6:8,2.3[Ex-325$]; 6:12,15.1[Ex-325$]; 7:26,16.1[Ex-325$]; 8:4,2.1[Ex-327$]; 8:17,16.1[Ex-325$]; 9:1,11.2[Ex-325$]; 9:8,4.2; 9:12,2.1[Ex-325$]; 12:1,6.2; 12:1,9.1[Ex-325$]; 12:6,5.1[Ex-325$]. The exemplar listed in brackets is the most likely mixture source of its associated variant. Those marked with *$* are hypothetical exemplars created by the software to account for the multiple initiation of the associated variant elsewhere in textual history.

Groups *k* and *L* ultimately derive their text. It is also the source from which sub-groups of Gentry's Groups *B*, *O*, and *cII* ultimately derive their texts.

Second Recension. Exemplar Ex-316 is the head exemplar of the second main branch of the stemma. It differs from the text of the autograph by 132 readings.[14] These variants constitute the distinctive variants of this text tradition. It may be regarded as a recension that is the source of the second independent major text tradition. It is the source from which Gentry's Groups *C*, *d*, and *OL* ultimately derive their texts. In addition, it is the source from which one sub-group of Gentry's Group *B* derives its text.

Third Recension. Exemplar Ex-315 is the head exemplar of the third main branch of the stemma. It differs from the text of the autograph by 36 variants.[15] These variants constitute the distinctive variants of this text tradition. It may be regarded as a recension that is the source of the second independent text major tradition. It is the source from which sub-groups of Gentry's Groups *B*, *cII* and *O* ultimately derive their texts.

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[14] 2:1,14.3[Ex-325$]; 2:3,4.2; 2:3,17.3[Ex-325$]; 2:9,4.4[Ex-325$]; 2:10,16.3[Ex-325$]; 2:10,20.2; 2:10,21.2; 2:12,5.1[Ex-325$]; 2:12,10.7; 2:15,1.2; 2:15,7.2[Ex-325$]; 2:15,10.2[Ex-325$]; 2:16,3.2[Ex-325$]; 2:16,8.1; 2:16,14.2; 2:17,11.2; 2:19,12.5[Ex-325$]; 2:20,3.2[Ex-325$]; 2:21,14.6[Ex-325$]; 2:23,4.2[Ex-325$]; 2:24,5.3; 2:24,7.3[Ex-325$]; 2:26,21.2[Ex-325$]; 4:1,15.2[Ex-325$]; 4:1,20.2; 4:3,7.2; 4:4,6.3; 4:4,9.4[Ex-326$]; 4:10,2.2[Ex-325$]; 4:10,3.3; 4:12,5.2[Ex-325$]; 4:13,3.2; 5:1,22.4[Ex-325$]; 5:3,11.2; 5:3,16.3; 5:4,5.2; 5:5,22.2[Ex-325$]; 5:7,13.5[Ex-325$]; 5:7,15.3[Ex-325$]; 5:9,7.1; 5:11,11.2[Ex-325$]; 5:11,18.2; 5:13,4.2; 5:14,11.1; 5:15,3.4; 5:15,14.2[Ex-325$]; 5:16,3.2; 5:18,14.2[Ex-325$]; 6:1,7.3[Ex-325$]; 6:2,23.2; 6:2,25.2; 6:3,13.2[Ex-325$]; 6:3,19.2[Ex-325$]; 6:4,6.2[Ex-325$]; 6:5,8.3; 6:5,9.4; 6:6,15.2; 6:6,16.2; 6:10,13.2; 6:11,3.2; 6:11,5.2[Ex-326$]; 6:12,9.2; 7:1,8.3[Ex-325$]; 7:1,9.2; 7:2,6.5[Ex-325$]; 7:3,1.2[Ex-325$]; 7:5,6.2[Ex-325$]; 7:7,10.6; 7:8,7.2; 7:10,7.2[Ex-325$]; 7:12,13.3; 7:14,2.3; 7:14,13.3; 7:15,1.3[Ex-325$]; 7:16,1.2; 7:16,2.2[Ex-325$]; 7:17,2.2; 7:17,4.2; 7:17,7.2; 7:21,2.2[Ex-325$]; 7:21,6.5; 7:22,10.1[Ex-325$]; 7:22,12.5; 7:24,10.4[Ex-325$]; 7:25,12.1[Ex-325$]; 7:26,30.2; 7:26,33.2; 7:28,2.2[Ex-325$]; 8:1,1.4[Ex-325$]; 8:6,1.3; 8:6,3.2; 8:6,5.3; 8:7,7.2; 8:9,9.2; 8:11,11.3[Ex-325$]; 8:14,6.2; 8:14,14.2; 8:16,4.2[Ex-325$]; 8:16,9.2; 8:17,17.4; 8:17,21.2[Ex-325$]; 9:1,5.3[Ex-325$]; 9:1,23.2; 9:1,24.4; 9:3,17.3; 9:6,9.3; 9:8,7.2[Ex-325$]; 9:9,13.2; 9:11,27.2; 9:12,24.2[Ex-325$]; 9:12,28.3[Ex-325$]; 9:14,3.2; 9:15,6.2; 9:16,6.4[Ex-325$]; 9:16,11.2; 9:17,9.2[Ex-325$]; 12:1,7.2[Ex-325$]; 12:1,11.2[Ex-325$]; 12:1,17.3[Ex-325$]; 12:4,6.2; 12:5,6.3[Ex-325$]; 12:6,4.2[Ex-325$]; 12:6,11.3[Ex-325$]; 12:7,1.3; 12:7,8.2[Ex-325$]; 12:10,3.2[Ex-325$]; 12:11,10.3; 12:12,3.2[Ex-325$]; 12:12,4.2; 12:13,5.6[Ex-325$]; 12:14,8.5[Ex-325$]; 12:14,10.3[Ex-325$].

[15] 2:3,22.1[Ex-325$]; 2:8,4.2[Ex-325$]; 2:12,12.1[Ex-325$]; 2:24,3.1[Ex-325$]; 4:4,10.5[Ex-325$]; 4:5,1.1[Ex-325$]; 4:10,4.1[Ex-325$]; 4:14,2.1[Ex-325$]; 4:16,11.2; 4:17,26.1[Ex-325$]; 5:1,11.1[Ex-325$]; 5:9,8.1[Ex-326$]; 5:10,4.1[Ex-325$]; 5:17,23.1[Ex-325$]; 5:17,24.1[Ex-325$]; 6:3,20.1[Ex-325$]; 6:5,8.2; 6:7,7.4[Ex-325$]; 6:11,5.3[Ex-325$]; 7:2,17.2; 7:14,16.1[Ex-325$]; 7:15,1.5; 7:18,17.4[Ex-325$]; 7:25,6.1[Ex-325$]; 7:26,8.1[Ex-325$]; 9:9,11.2; 9:11,2.2[Ex-325$]; 9:11,18.2[Ex-325$]; 9:11,21.2; 12:5,8.1[Ex-325$]; 12:6,9.3[Ex-325$]; 12:9,5.2; 12:11,5.1[Ex-325$]; 12:12,2.1[Ex-325$]; 12:13,7.1[Ex-325$]; 12:14,3.1[Ex-325$];

Distribution of Variants

One of the assumptions of the present genealogical theory is that at every place of variation one of the readings is that of the autograph.[16] It is of interest to know when and where the variant readings of Ecclesiastes were initiated and subsequently inherited throughout the genealogical history of its text. Ideally one would expect a variant to be initiated only once in history and to be persistently inherited in the subsequent descendants of the exemplar in which it was initiated. That is expected of singularities in extant witnesses. That may also be expected of significant intentional alterations or even of unusual accidents. But many variants are the result of common scribal errors. This kind of variant is expected to have been initiated more than once in random genealogically unrelated places in history. Likewise, in the case of mixture, when a scribe departed from the primary exemplar he was following and copied a reading from another source, the borrowed reading became initiated an additional time. So some variants are expected to have been initiated more than once in history. This section discusses the distribution of the variants of the text of Ecclesiastes in its reconstructed genealogical history. Three different types of distribution are demonstrated in this section:
(1) the variants having no distribution; (1) variants with no distribution; (2) the variants at a place where multiple readings are almost all initiated only once; (3) a place where the autographic reading is initiated several times by mixture; and (4) a place where the reconstructed autographic reading differs from that of Gentry's text.

Variants with No Distribution. Nineteen of the variants in the database occurred only once, being a singularity in an extant witness.[17] In the Lachmann-10 reconstruction method, singularities cannot possibly contribute to the structure of the stemma, but will always be found at the end of a branch.

Variants Initiated Mostly Only Once. Of the 6,093 variants in the database, all were initiated only once in the history of the text, the other instances of initiation are explained as mixture. Of interest are those places of variation where a number of alternate variants occur but the autographic reading is initiated only once. Place of variation 8:3,1 is such an example,

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[16] Of course it is possible that on rare occasions an autographic reading was totally lost in history. But that must have occurred very early in all the surviving text traditions, otherwise it has survived at least with a trace.

[17] 2:2,6.2; 2:3,2.3; 2:12,10.9; 2:12,12.9; 2:16,2.2; 2:18,2.4; 2:24,4.9; 6:10,5.2; 7:12,2.2; 7:19,2.7; 7:26,18.2; 7:29,10.3; 8:2,3.9; 8:8,6.3; 8:15,14.9; 9:4,3.3; 12:3,1.2; 12:11,5.9; 12:12,6.3.

having eight alternate readings. Figures 8.3.1 through 8.3.3 display the historical distribution of the variants at place of variation 8:3,1.

Figure 8.3.1
Distribution of Variants at Place of Variation 8:3,1

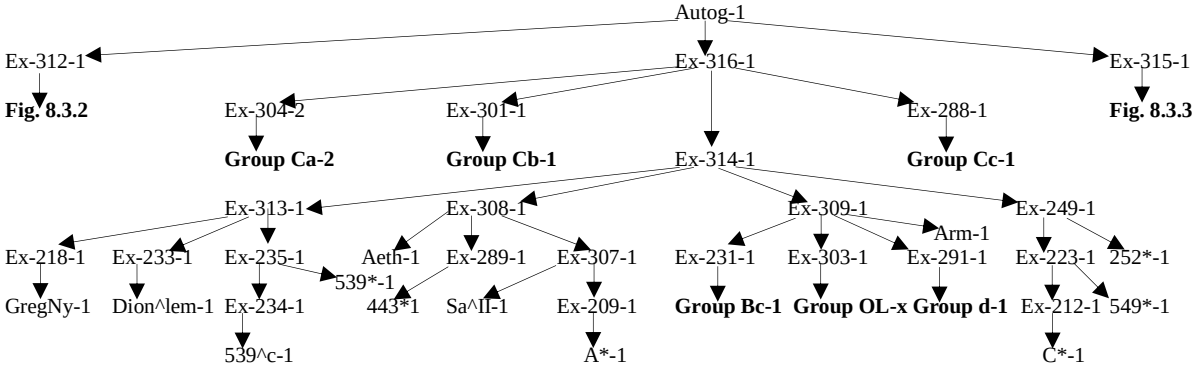


Fig. 8.3.2

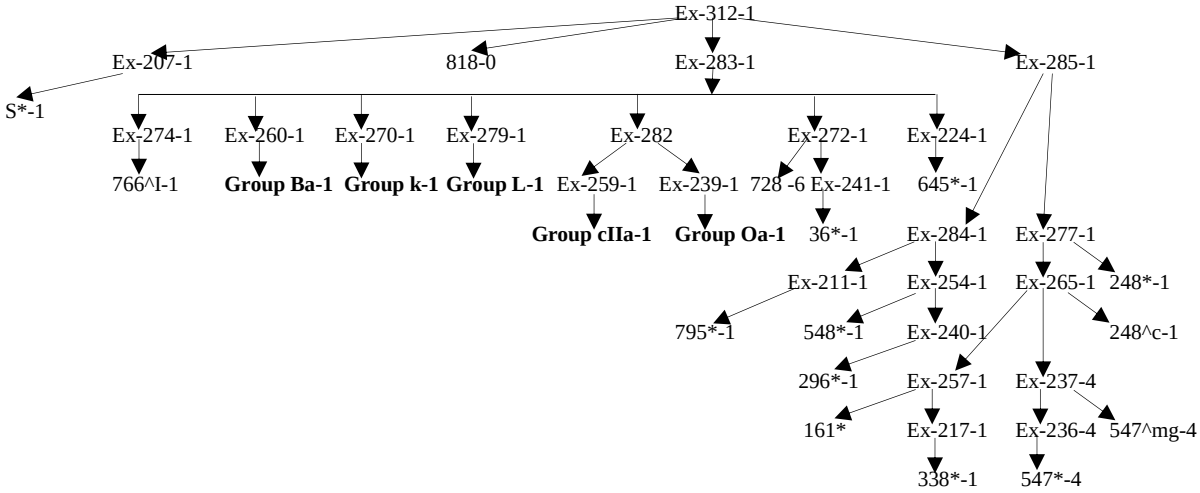
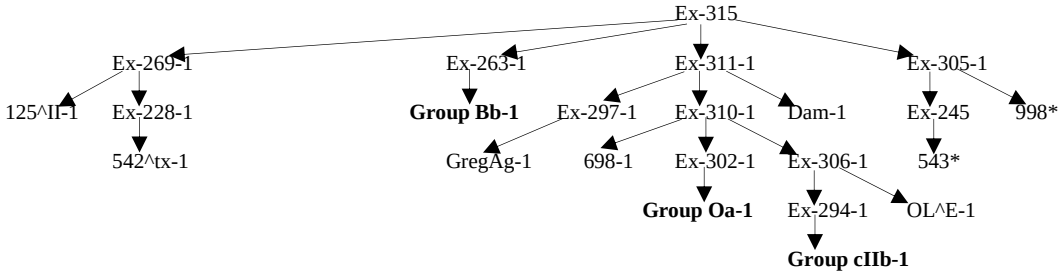


Fig. 8.3.3



Some of the witnesses in Group *OL* supported option1 and others supported option 2.

At this place of variation these eight alternate readings occur:

8:3,1.1	*απο προσωπου αυτου πορευση*
8:3,1.2	omit
8:3,1.3	*προ προσωπου αυτου πορευση*
8:3,1.4	*απο προσωπου δε αυτου πορευση*
8:3,1.5	*απο προσωπου αυτου μη πορευση*
8:3,1.6	*απο προσωπου αυτου πορευσει*
8:3,1.7	*απο προσωπου αυτου πορευθηναι*
8:3,1.8	*απο προσωπου αυτου*

These variants were initiated in the genealogical stemma in the following witnesses:[18]

8:3,1.1	**Autograph** only
8:3,1.2	Ex-219: head of a small sub-branch in Group *cIIa*
	Ex-304: head of Group *Ca*
	Ms 357: a lone witness in Group *d*
8:3,1.3	Mss 161^c, 248^c: lone witnesses in ranch headed by Ex-277
8:3,1.4	Ex-237: head of a small sub-branch of branch headed by Ex-277
	Ex-298: head of a main branch of Group *OL*
8:3,1.5	**Ex-245**: head of a small 3rd generation sub-branch under Ex-315
	Ex-275: head of a sub-branch in Group *OL*
	Ms OL^M: a lone independent witness
8:3,1.6	Ms 728: lone independent witness
8:3,1.7	**Ex-276**: head of a small sub-branch in Group *OL*
	Mss 298, 788, Hi, OL^Bcom, OL^Ecom, OL^Hcom, OL^Mcom: lone independent witnesses
8:3,1.8	Ms 475: lone witness in Group *Oa*

This instance of an autographic reading initiated only once is more diverse than nearly all the others of this type, having eight alternatives; most others have less. The variants at this place of variation experienced nearly perfect hereditary persistence.

Multiple Initiation of Autographic reading. Also of interest is an example of where an autographic reading is reinitiated several times in history by means of mixture. Place of Variation 2:12,10 is an example of this condition, having eight alternatives. Figures 8.4.1 through 8.4.3 display the historical distribution of the six variants at place of variation 2:12,10 where such distribution occurs.

[18] The witness listed with **bold faced** letters was the one where the associated variant first originated in history; the others were subsequently initiated by mixture. It is reasonable to assume that mixture occurred for the purpose of correction.

Figure 8.4.1
Historical Distribution of Variants at 2:12,10

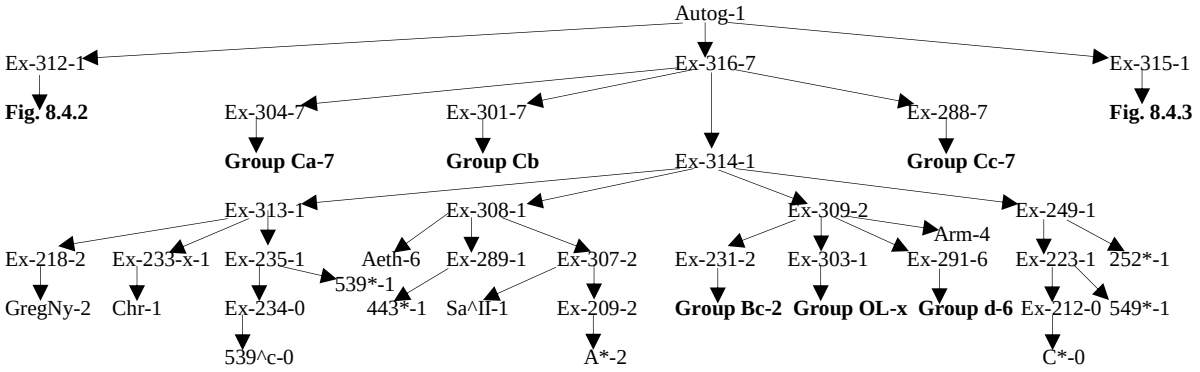


Fig. 8.4.2

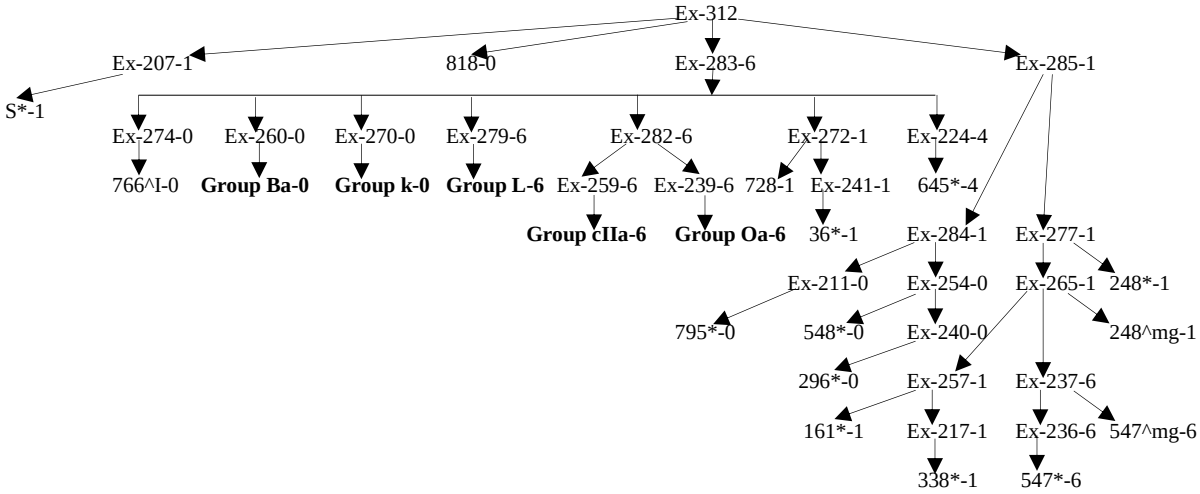
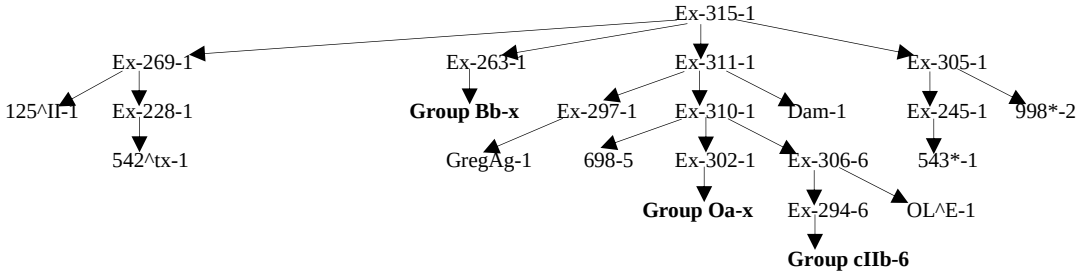


Fig. 8.4.3



In Group *OL* some witnesses support option 1, 4, or 6. In Group *Oa* some witnesses support option 1, 3, 4, 5, or 8. In Group *Bb* some witnesses support option 1 or 2.

At this place of variation there are eight alternate readings:

2:12,10.1	*συν τα οσα*
2:12,10.2	*τα οσα*
2:12,10.3	*συν οσα*
2:12,10.4	*οσα*
2:12,10.5	*συν παντα οσα*
2:12,10.6	*συμπαντα οσα*
2:12,10.7	*παντα οσα*
2:12,10.8	*συν τα παντα*

These variants were initiated in the genealogical stemma in the following exemplars:

2:12,10.1	**Autograph**
	Ex-272: head of small 3rd generation sub-branch under Ex-283
	Ex-303: head of Group *OL*
	Ex-314: head of 2nd generation sub-branch under Ex-316
	Mss OL^E, OL^Ecom Sa^II, Arm
2:12,10.2	**Ex-218**: head of a 4th generation sub-branch under Ex-314
	Ex-219: head of a small sub-branch in Group *cIIa*
	Ex-221: head of a sub-branch in Group *Bb*
	Ex-307: head of a 4th generation sub-branch under Ex-314
	Mss S*, 357, 998*, 998^c: lone independent witnesses
2:12,10.3	**Ex-229**: head of a sub-branch in Group *Oa*
	Ex-232: head of a sub-branch in Group *Oa*
2:12,10.4	**Ex-224**: head of a 3rd generation sub-branch Ex-283
	Ex-252: head of a sub-branch in Group *OL*
	Ex-296: head of a sub-branch in Group *OL*
2:12,10.5	Mss 339, 698: lone independent witnesses
2:12,10.6	Ex-237: head of a 5th generation sub-branch under Ex-277
	Ex-283: head of a 2nd generation branch under Ex-312
	Ex-287: head of a small sub-branch in Group *OL*
	Ex-291: head of Group *d*
	Ex-306: head of a 4th generation independent *OL* sub-branch
	Mss 299, Aeth, Dion^lem, Dion^com: lone independent witnesses
2:12,10.7	**Ex-316**: head of a 1st generation branch of stemma
2:12,10.8	Mss Did^lem, Did^com: lone independent witnesses

This instance of an autographic reading initiated more than once is more diverse than nearly all of the others, having eight alternatives; most others have less. The multiple initiation of the autographic reading is best explained as corrections by mixture from nearby witnesses in the same branch. In spite of the diversity, this distribution also exhibits considerable hereditary persistence.

Autographic Reading Differing from That of Gentry. Also of interest are the 100 autographic readings recovered by Lachmann-10 that are different from those recovered by Gentry's method. Place of variation 2:16,8 provides an instance having eight alternate readings where Gentry's method recovered the first variant and Lachmann-10 recovered the second. Figures 8.5.1 through 8.5.3 display the historical distribution of the variants at that place.

Figure 8.5.1
Historical Distribution of Variants at 2:16,8

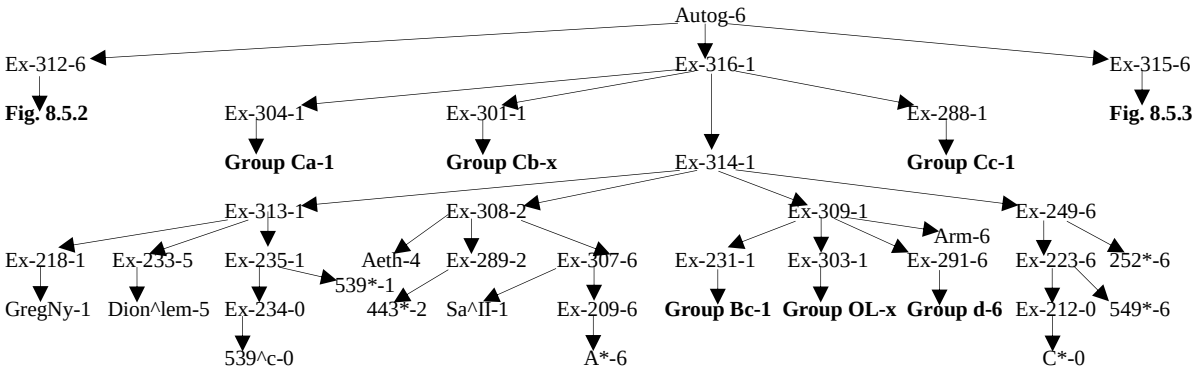


Fig. 8.5.2

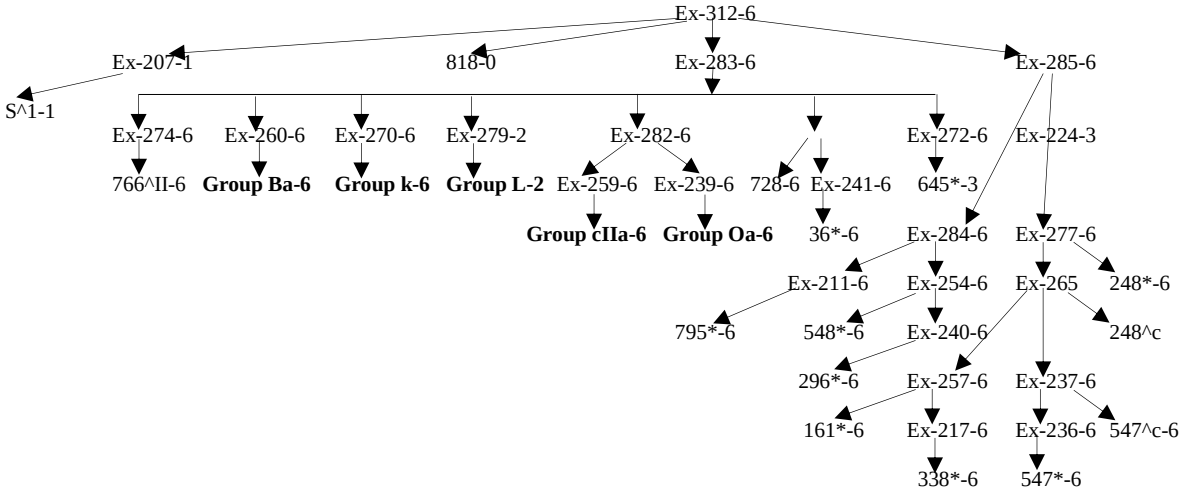
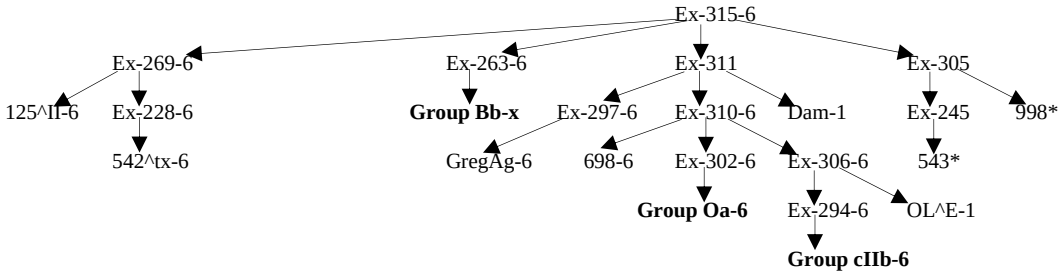


Fig. 8.5.3



In Group *Bb* some witness support option 3 or 6. In Groups *Cb* and *OL*, some witnesses support options 1, 3, or 6.

At this place of variation the following eight alternate readings occur:

2:16,8.1	*αι ημεραι αι ερχομεναι*
2:16,8.2	*αι ημεραι διερχομεναι*
2:16,8.3	*αι ημεραι ερχομεναι*
2:16,8.4	*ημεραι ερχονται*
2:16,8.5	omit
2:16,8.6	*ταις ημεραις ταις ερχομεναις*
2:16,8.7	*ταις ερχομεναις*
2:16,8.8	*εν ταις ημεραις ταις ερχομεναις*

These variants were initiated in the genealogical stemma in the following exemplars:

2:16,8.1	Ex-207: head of a small 2nd generation branch under Ex-312
	Ex-210: head of a small sub-branch in Group *L*
	Ex-219: head of a small sub-branch in Group *cIIa*
	Ex-316: head of one of the first generation branches of the stemma
	Mss OL^E, OL^Ecom, 788, Sa^I, Sa^II, Chr, Dam
2:16,8.2	Ex-279: head of Group *L*
	Ex-308: head of a 3rd generation sub-branch under Ex-314
2:16,8.3	Ex-221: head of sub-branch in Group *Bb*
	Ex-224: head of a small 3rd generation sub-branch under Ex-283
	Ex-244: head of a 3rd generation sub-branch in Group *C*
	Ex-280: head of a small 8th generation sub-branch in Group *OL*
2:16,8.4	**Ex-305**: head of a 2nd generation sub-branch under Ex-315
	Ms Aeth: lone independent witness
2:16,8.5	Ex-233: head of a 4th generation sub-branch under Ex-314
2:16,8.6	**Autograph**
	Ex-208: head of a 5th generation sub-branch in Group *C*
	Ex-245: head of a 3rd generation sub-branch under Ex-315
	Ex-249: head of a 3rd generation sub-branch under Ex-314
	Ex-291: head of Group *d*
	Ex-296: head of a sub-branch in Group *OL*
	Ex-307: head of a 4th generation sub-branch under Ex-314
	Mss S^c, Arm, Syh^tx, Syh^mg, Hi, GregNY^com
2:16,8.7	**Ex-261**: head of a sub-branch in Group *cIa*
2:16,8.8	Ms 475: lone independent witness

This is an instant where Gentry's reading is found almost exclusively in only one of the three main text traditions, whereas the reading of alternative six is strongly supported by the other two main traditions.

Evaluation of Results

The results of this study are very encouraging. Gentry's database appears suitable for reconstruction on the basis of number of witnesses, the distribution of their dates in history, good percentage of complete witnesses, a suitable amount of commonness among the witnesses, limited variableness, and a relatively strong average mutual affinity. The reconstructed stemma satisfied very well the expectations of single initiation of variants, hereditary persistence of variants, successful deferred ambiguity. The reconstructed stemma matched Gentry's groups relatively well, recovering four perfectly and four nearly perfectly; and it reconstructed an autographic text agreeing with that of Gentry by 95.37%.

No claim is made of perfection because a number of sources of ambiguity exist, and still much needs to be known of how to correctly the branches originating in the earliest generations of history. But hopefully the present theory and its implementation are good steps in the right direction.

CHAPTER 9
SUMMARY AND CONCLUSIONS

The genealogical software and the theory it emulates were successful in reconstructing a genealogical history of the Greek text of the Gospel of Matthew. The software made use of a modified version of the textual apparatus in the 27th edition of the Nestle-Aland Greek New Testament. Using index numbers to represent the variant readings in the witnesses to the text, the computer constructed a kind of genetic code for each witness based on its unique combination of variant readings. Then employing the basic principles of heredity, a relatively simple tree diagram was constructed representing the genealogical history of the text.

Heredity is the underlying principle of genealogical relationships. Because manuscripts of a text were copied from exemplars of earlier generations of the text, of necessity they have genealogical relationships. For manuscripts, quantitative affinity (consensus of variant readings) and a sibling gene, coupled with historical directionality constitute the variables for computing genealogical heredity. For variant readings, on the other hand, the domain of heredity is limited to their place of variation. There, heredity is determined by consensus among sibling sister witnesses and by what I call evidence of variant inheritance.[1] The software uses the heredity of manuscripts and the heredity of variant readings to guide the reconstruction of a historical genealogical tree diagram.

Mixture occurred when a scribe copied from more than one exemplar—a primary parent exemplar and one or more secondary exemplars. The readings of a manuscript were inherited from its primary parent exemplar or borrowed by mixture from its secondary parent exemplars; otherwise a variant was newly introduced by scribal error (either accidentally or intentionally) thus initiating a new line of heredity. A good number of witnesses had no mixture, but considerable mixture occurred in others. As it turned out, the presence of mixture does not affect the reconstruction of the genealogical tree, but it is very useful in identifying

[1] At any place in the genealogical history of a text, the evidence of a variant's inheritance is its presence in other witnesses of the same or earlier generations.

the places in genealogical history where variants were initiated, in tracing the genealogical history of variants, and in identifying recensions.

The Effect of Recensions

The genealogical theory and associated software were designed to reconstruct the genealogical history of texts where the copying process was simple, without any radical discontinuities. It was anticipated that the initiation and transmission of textual variants would be gradual and that the tree would develop three or four main branches corresponding to the commonly accepted text types. However, the theory and software also made provision for radical dislocations if they perchance had occurred. As it turned out radical dislocations did occur in the form of some major and minor recensions.[2] Furthermore, the most radical recensions took place in the earliest generation that genealogical relationships could be reasonably determined. This information indicates that in the earliest days of New Testament history its text was in flux and its genealogical history for that time period cannot be confidently reconstructed. These details could have resulted in disappointment except that the earliest recensions, though diverse from one another, nevertheless had sufficient consensus to identify the autographic readings.

Binary Branches

The genealogical tree diagram reconstructed by the software is rarely binary, that is, there are rarely only two branches where the tree divides. Table 6.3 in Chapter 6 indicates that only 31 out of 382 branches were binary—that is, 8.1%. Critics of the genealogical theory claim that the methodology fails whenever there are only two branches, because no consensus can exist where there are only two alternatives. That would be true except for the principle of deferred ambiguity. In such cases, where ambiguity exists in one witness, its sister has the inherited reading.

A reading has evidence of variant inheritance when it is also found in witnesses of earlier generations. A reading will not be found in any witness dating in a generation prior to the one in which the reading first originated. Autographic readings have continual evidence of variant inheritance; all others acquire that evidence in the generation of their origin subsequent

[2] A recension is recognized by the introduction of a larger number of variants than normal in a witness, usually also accompanied by a larger number of secondary parent exemplars—mixture.

to the autograph. The evidence of variant inheritance usually decides between two equally probable readings; but where even that fails, a final appeal can be made indirectly to internal evidence. So a binary construction does not turn out to be a crucial weakness. Still, some may be concerned that the earliest history of the text is determined by such diverse witnesses. However, Table 7.4 of Chapter 7 indicates that 97.61% of the textual decisions made in the reconstruction of the historical tree diagram were made on the basis consensus and deferred ambiguity; so diversity was not a significant deterrent. Furthermore, Table 7.5 of Chapter 7 indicates that 100% of the autographic readings were decided on the basis of consensus.

So What!

Someone may ask: "After all those painstaking computations, what is now known that was not already known by means of traditional textual critical methodology?" The answer should be self-evident, but for the sake of review, here is a list of the more prominent bits of knowledge the computations provide:

(1) A rigorous construction of the genealogical history of the witnesses to the text, something that did not previously exist.

(2) A precise account of the genealogical history of each variant reading, including its place of origin and subsequent distribution, something that did not previously exist.

(3) The identity of the autographic readings based on an unbiased implementation of the laws of heredity, together with the mathematical probability of each one, instead of educated estimates.

(4) An accurate description of the content and structure of the traditional text types, and their internal and external genealogical relationships, instead of educated estimates.

(5) Hopefully a better understanding of the laws of heredity as they apply to manuscripts.

The laws of heredity have been applied to the factual evidence derived from the existing witnesses to the text of Matthew. They have been applied with mathematical precision apart for human intervention and bias. Hopefully the results provide a better understanding of the history of the text. In either case, no claim is made that the derived history and the text identified as autographic are free from uncertainty. The results are dependent on the validity

of the underlying theory and its software implementation. Undoubtedly the future will bring forth improved theory and implementation.

James D. Price
October, 2012

APPENDIX A

Critical Analysis of the Theory

Critical Analysis

One is intuitively inclined to be skeptical of the possibility of computer software or any other methodology being able to reconstruct the actual genealogical history of an ancient text and to recover its actual autographic readings based on the evidence derived from its surviving witnesses. This study is a critical analysis of such a task based on the surviving witnesses to the Greek New Testament,[1] the Septuagint,[2] and test problems.[3] The study is both theoretical and pragmatic in that it deals with theoretical principles[4] as tested or evaluated by factual evidence from actual witnesses[5] to a text.

Factual Evidence

The global complexity of textual criticism may cause one to lose sight of the vast amount of factual evidence available. The various lines of factual evidence available for study are as follows:

(1) It is taken as fact that all witnesses are genealogical descendants of one original document called the autograph.[6]

(2) The readings in any extant witness consist of the collection of all the uncorrected variants of all its actual ancestral exemplars, plus any variants initiated by its own copyist.

(3) Each witness has a reliable date of the time when it was copied.

(4) Each witness has some degree of genetic affinity with all the other witnesses except the fragmentary witnesses having no common segments of text. But then fragmentary witnesses are not used in the reconstruction process except for establishing dates.

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[1] Primarily the text of the Gospel of Matthew as recorded in the textual apparatus in the 27th edition of the Nestle-Aland Greek New testament, but the other books are discussed to a lesser degree.

[2] The textual apparatus of the book of Ecclesiastes as supplied by Peter Gentry.

[3] Test problems were created by computer software having a predetermined text and genealogical history simulating that of actual texts.

[4] The theoretical principles are those of the theory of genealogical textual criticism introduced in this book.

[5] The witnesses include Greek manuscripts, the Greek text behind various translations, and quotations from church fathers.

[6] If this were not the case, as some scholars propose, the ancestral exemplar from which each alleged edition originated would appear in the stemma as the head of a branch containing the witnesses to that edition.

Theoretical Considerations

The basic step of the present theoretical methodology begins with a group of witnesses consisting of the most remote active witness[7] in the data-base along with one or more sister[8] witnesses, and using the readings of that group of sister witnesses to reconstruct the parent exemplar of the group. The readings of the parent exemplar are determined on the basis of consensus among the sibling witnesses in the group, and where consensus fails[9] the principle of deferred ambiguity decides which reading is inherited and which is newly initiated. While this procedure is intuitively reasonable, it is somewhat simplistic and is vulnerable to a number of subtle complications that may diminish the feasibility of successfully reconstructing the genealogical history of the text and recovering its autographic readings. The following discussion addresses these complications, hopefully all of them.

Fragmentary Witnesses

Many of the extant witnesses to ancient literary texts are fragmentary, some seriously so. Including them in the active database is problematic because they seriously affect the structure of a reconstructed stemma. This happens because at every place of variation where a witness has a lacuna it has the potential of matching any of the alternate readings there. This results in a fragmentary witness being prematurely and incorrectly included in a sibling group in the reconstruction process. Consequently, they must be excluded from the active database while the stemma is being reconstructed, and subsequently inserted into the reconstructed stemma where they best fit by quantitative affinity. However, if the stemma is reconstructed strictly on the basis of fully complete witnesses, it has minimal exemplars with many sibling daughters some of which obviously do not belong in the sibling group. This happens because some significant branches in genealogical history have only fragmentary witnesses, as for example, the various versions,[10] and they should be allowed to develop independently in spite of potential error.

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[7] The concept of remoteness involves an element of uncertainty depending on how it is determined; this is discussed in a subsequent section. A witness is active if it has not yet been connected into a developing branch of the stemma or is the unconnected head exemplar of an already developed branch.

[8] The concept of sisterhood also involves an element of uncertainty depending on how it is determined; the method for determining sisterhood is discussed in a subsequent section.

[9] Consensus fails at a given place of variation when the number of alternate readings is the same as the number of sibling sisters in the group. This always happens when the group has only two sisters, but only occasionally when there is more than two.

[10] The editors of the NA-27 database correctly left a lacuna at the places where the translation could not be clearly be identified with a Greek equivalent.

It was first thought that fragmentary witnesses with greater than 60 percent completeness should be included in the database, but that turned out to be too lenient, permitting faulty grouping. Experimentation revealed that at least the most complete witnesses of the versions, papyri, and majuscules should be included in the active database in order to enable their associated branches to develop. For Matthew the best cutoff value was 80 percent; this compromise produced good grouping with minimal misplacements. This value may need adjustment for each book so as to include representatives of known text traditions.

Sisterhood

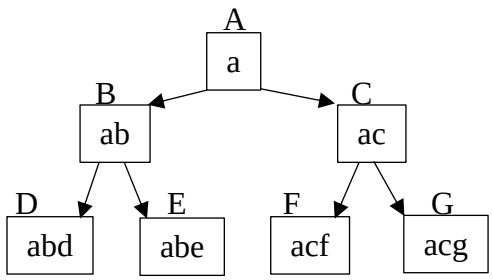
Sisterhood is one of the crucial sources of uncertainty. Unfortunately, the criteria used to determine sisterhood actually identifies only nearest genealogical relatives among the active witnesses in the database. Because of the relative paucity of witnesses in a given study, the actual sisters of a given witness may not have survived and its only surviving nearest relatives may be an aunt or cousin of an unknown number of generations removed. In such cases, while the consensus readings of a group of "sister" witnesses will accurately recover the readings of their actual common ancestor exemplar, the readings where a "sister" witness disagrees with its "siblings" may or may not be initial or that of the common ancestor; instead, its reading may be that of one of its unrecoverable intermediate ancestral exemplars. This condition is not serious when the witnesses in a sibling group are indeed actual sisters.

Actual Sisters

If the witnesses in a sibling group are actual sisters then all the readings they share are actual readings of their true but non-extant parent exemplar. These readings can be assigned with certainty to the parent exemplar being reconstructed. Uncertainty exists only in the places of variation where the sisters have different readings, and the uncertainty persists mainly only when there are only two sisters. Let the following stemma represent the actual genealogical history of a branch of seven witnesses, where witness A is the ancestral exemplar of the others, having inherited all its readings from its ancestors except the set of mutant variants *a* which its copyist initiated and were passed on as an inheritance to the entire branch of which it is the head.[11] Witnesses B and C are actual sibling daughters of A, having inherited all its readings (including variants *a*) except variants *b* and *c* respectively which their copyists initiated and were passed on as an inheritance to their descendants; witnesses D and E are actual sibling daughters of B, having inherited all its readings (including variants *a* and *b*) except variants *d*

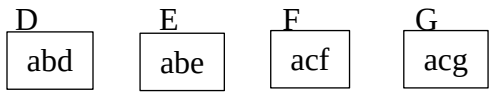
[11] In each case, the lower case letters represent a set of one or more mutant variants initiated by the copyist in the given witness.

and *e* respectively which their copyists initiated; and witnesses F and G are actual sibling daughters of C, having inherited all its readings (including variants *a* and *c*) except variants *f* and *g* respectively which their copyists initiated. It goes without saying that all the descendants of A inherited all its inherited readings except those that were altered by the mutant variants initiated by their respective copyists.



This stemma illustrates that each witness contains the inherited variants of its ancestor exemplars: D and E contain variants *a* and *b* of exemplar B; F and G contain variants *a* and *c* of exemplar C; and B and C contain variants *a* of exemplar A, assuming that the variants were not corrected or altered and that they occur in different places of variation.[12]

Now suppose that witnesses A, B, and C have perished and only witnesses D, E, F, and G have survived. The following diagram represents the initial textual data available to the reconstruction process.[13]



Considering the number of times each set of variants occurs, variants *d*, *e*, *f*, and *g* occur only once in the database, being the variants initiated in D, E, F, and G by their respective copyists; they are singularities, contributing nothing to the reconstruction process. Variants *b* occur twice[14] in the database, being common only to D and E, and are the variants initiated in

[12] Actually such corrections or alterations make little difference to the reconstruction process because they become part of the variants initiated in the witness where such alterations took place.

[13] In this simple example all the terminal witness of the branch under discussion are extant. This is not the case in actual textual studies, making the reconstruction procedure more complicated. But the discussion starts here in order to lay the foundation for subsequent treatment of more complex situations.

their actual but non-extant parent exemplar B. The set of variants *b* constitute the *sibling gene* of witnesses D and E; it uniquely identifies them as sisters. Likewise, variants *c* occur twice in the database, being common only to F and G, and the variants initiated in their actual but non-extant parent exemplar C. The set of variants *c* constitute the *sibling gene* of witnesses F and G; it uniquely identifies then as sisters. Variants *a* occur four times in the database, being common to witnesses D, E, F, and G, and are the variants initiated in A, their actual but non-extant ancestral exemplar two generations removed. The combined set of variants *ab* constitutes the *family gene* of witnesses D and E, and the combined set of variants *ac* constitutes the *family gene* of witnesses F and G. Witnesses have mutual genetic affinity to the degree that they share family genes; they have optimal genetic affinity if they have a common sibling gene, that is, they are sisters.[15] On the other hand, mutual *quantitative affinity* is based on the number of places where two witnesses have different readings as compared with the number of places where their readings are the same.

With the above evidence in the database, the reconstruction procedure can count the frequency of each variant, identifying witnesses D and E as sisters by their mutual sibling gene *b*,[16] and determine the readings of their parent exemplar by the consensus of their readings at every place of variation except for variants *d* and *e* where their readings differ.[17] Likewise witnesses F and G are identified as sisters by their mutual sibling gene *c*, and the readings of their parent exemplar determined by the consensus of their readings except for variants *f* and *g* where their readings differ. When the parent exemplars have been reconstructed, their daughters are linked to them in the stemma, the sisters and their associated data are marked inactive[18] in the database, and the data of their parent exemplars are entered into the database in their place. The following diagram depicts the reconstruction of the intermediate branches B and C.

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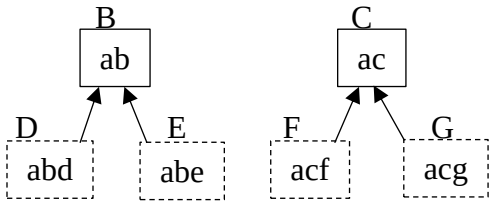
[14] That is the minimal frequency count of the variants in D and E. If there had been three sisters in the group, the count would have been three. The minimal frequency count of the variants in a witness identifies the readings in its sibling gene, and the quantitative value of the minimal count is the number of sisters in its sibling group.

[15] Likewise, the frequency count of the variants indicates that the branch has three detectable generations.

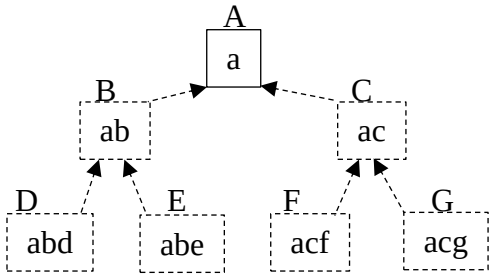
[16] Of course the witnesses can also be identified as sisters by their mutual quantitative affinity; it will be greater for sisters than for any other witness in the active database.

[17] In the case of binary branches where the readings of the sisters differ, the inherited reading is determined by the principle of deferred ambiguity, discussed later.

[18] In the stemma diagram, the inactive witnesses are displayed with dashed lines and the active ones with solid lines.



The procedure is repeated with the remaining active witnesses in the database (in the present case, the reconstructed witnesses B and C). In the new frequency count of the active variants, variants *b* and *c* now occur only once as singularities; but in this case the singularities are the variants initiated by the copyists: variants *b* were initiated in B, and variants *c* were initiated in C. In addition, variants *a* occur twice, being the sibling gene of B and C and the readings initiated in their parent exemplar A which can now be reconstructed by consensus of the readings in its daughter witnesses B and C. The following diagram displays the final result of the reconstruction procedure.



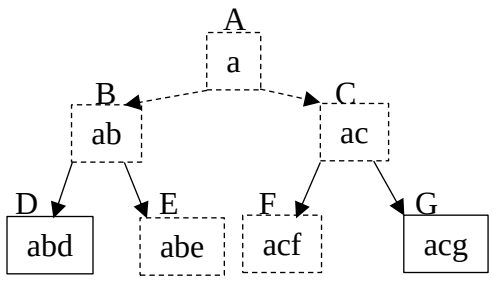
The procedure successfully and accurately reconstructed the hypothetical branch, and its head exemplar A is now ready to enter into the reconstruction of the larger stemma of which this branch is a part. Of course, this good success is due to the fact that the sisterhood of the witness is actual, that the principle of deferred ambiguity always succeeded, and that the variants in every case occurred at different places in the text. However, in working with real texts, these assumptions are subject to uncertainty, and the effects of such uncertainty remain to be investigated.

Sister-like Sisters

Up to this point the picture looks promising for reconstructing the actual history of a text. But this is based on the assumption that so-called sister witnesses are actual sisters in every case. But there is no direct way for knowing whether two or more sister-like witnesses are actual sisters unless they are identical. Thus it must be agreed that potential sisters may not be actual sisters, so an evaluation of the theory must consider the effect this real uncertainty

has on the success of the reconstruction procedure. First the procedure isolates from the working pool of witnesses a group having the greatest mutual affinity with the most remote active witness. So it is safe to say this group is the most remote group of closest relatives in the working pool.[19] They may be assumed to be cousins or to have an aunt-niece relationship of some degree of remoteness. That is, there may be some actual but non-extant ancestors between the witnesses and their recoverable actual common ancestor exemplar.

The situation is illustrated in the following example[20] where two hypothetical extant "sisters" D and G are actually cousins; the actual parent exemplar of D is non-extant B; and the actual parent exemplar of G is non-extant C; and the actual nearest common ancestral exemplar of D and G is non-extant exemplar A.



"Sister" D inherited variants *a* from non-extant ancestral exemplar A, and variants *b* from its intermediate non-extant ancestral exemplar B, and the copyist of D initiated variants *d* into its text either by intent, accident, or mixture. Likewise, "sister" G inherited variants *a* from non-extant ancestral exemplar A, and variants *c* from its intermediate non-extant ancestral exemplar C, and the copyist of G initiated variants *g* into its text either by intent, accident, or mixture. Variants e and f drop out of the picture entirely because they do not appear in the database; they are insignificant for reconstructing the readings of A.

Now the problem at hand for the reconstruction procedure is to correctly recover all the readings of the non-extant but actual common ancestral exemplar A from the readings of its two extant granddaughter witnesses D and G without erroneously identifying some of the readings from *b*, *c*, *d*, or *g* as belonging to A. What happens is that the reconstruction procedure

[19] The concept of "remoteness" still has an element of uncertainty that is discussed in a subsequent section.

[20] Dashed boxes represent actual but non-extant exemplars of history. Solid boxes represent extant witnesses. It is assumed that the reconstruction procedure has correctly recovered history up to the present point in the process.

recognizes variants *b* and *d* as having been initiated in D instead of only *d*, and variants *c* and *g* as having been initiated in G instead of only *g*. This means that the readings of exemplar A will be ambiguous at the places where variants *b*, *c*, *d*, and *g* occur, and the inherited readings there must be determined by the principle of deferred ambiguity (discussed later). This will not be a problem where these variants occur at different places of variation.

The situation is simpler in case the "sisters" actually have an aunt-niece relationship. In the above example, suppose that the "sisters" are witnesses D and its aunt C. Then variants *g* drop out of the picture as far as ambiguity is concerned, leaving the places of ambiguity to only those of variants *b*, *c*, and *d*. Thus far the discussion has been limited to binary branches. The situation is simpler in case more than two "sister" witnesses are in a group. So the error involved with reconstructing the parent exemplar of binary branches depends on how hereditary persistence and the success of the deferred ambiguity. Deferred ambiguity is mostly successful with persistent variants.

Multiple "Sisters"

When there are more than two sisters in a sibling group, at the places of variation where one of the sisters differs from the others, the rest of the sisters will have the inherited reading so consensus dominates and the inherited reading will correctly be assigned to the reconstructed parent exemplar. However, this is true only when all the "sisters" are actual sisters. If the procedure for isolating a sister group erroneously accepts an aunt or cousin into the group, the results will be erroneous. If in the above example sister witnesses D, E, and aunt C were erroneously identified as "sisters," the situation would be as follows:

D	E	C
abd	abe	ac

Variants *a* would be identified as inherited by consensus and correctly assigned to the reconstructed exemplar. But unfortunately variants *b* would have the greater consensus, be incorrectly identified as inherited, and assigned to the reconstructed exemplar. Therefore, the procedure for isolating sister groups must be able to filter out aunts and cousins where more than two "sisters" are in the sibling group, otherwise errors will creep into the reconstruction process. However, except in cases where the mutual affinity among sibling "sisters" is relatively low, the sister algorithm will recognize D and E as sisters because have variants b in common, thus excluding C from the group.

When there are more than two sisters in a sibling group and only two alternative readings at the places where they differ, then the inherited reading has the majority vote; these majority readings may be assigned to the parent exemplar as its actual readings with reasonable certainty. When more than two alternatives exist among multiple sisters, then possible ambiguity continues to exist. The following table, taken from the NA-27 database for Matthew, helps to illustrate the likelihood of ambiguity under these conditions:

Distribution of the Number of Variants at Place of Variation:

Number of Alternatives	Number of Places of Variation
1	0
2	1,013
3	294
4	94
5	19
6	5
7	3
Total	1,428

According to this information, 1,013 places of variation out of a total of 1,428 have only two alternatives to begin with—that is, 71% of the time. But that is not the complete picture. In a given instance of recovering the readings of a parent exemplar, not all the possible alternatives are present in the sister witnesses under examination. The following table lists the frequency of the alternatives present where a choice between readings was made in the reconstruction of the stemma for Matthew.

Distribution of the Number of Variant Alternatives

Number of Alternatives	Number of Instances
1	58,034
2	6,479
3	174
4	5
5	0
Total	64,692

According to this information, of the 64,692 decisions made regarding the readings in reconstructed parent exemplars, 58,034 instances had only one alternative (89.7%) to begin with. Of the remaining 6,496 instances where a decision was necessary 6,479 had only two alternatives (99.7%), and only 179 had more than 2 alternatives (0.3%). Of the, 64,692

decisions made, 61,059 were made on the basis of consensus (96.0%);[21] 2,043 where made by confirmed deferred ambiguity (3.2%), 509 by default to internal evidence (0.8%).[22] And 43 were made by arbitrary choice (> 0.01%). Consequently, all other things being equal, the probability of recovering the readings of a parent exemplar exceeds 99%, at least for Matthew. The other things that affect success are discussed in what follows.

Non-persistent Variants

At this point a new consideration enters into the problem. If the variants in *a*, *b*, *c*, *d* and *g* of the above example occur at different places of variation, the readings of one will not have replaced any *a* reading, and all the *a* readings will be available to the reconstruction procedure. Otherwise, an erroneous *b* or *c* reading may replace the *a* reading at that place of variation. In this case the *a* reading is lost and is not available to be identified by the deferred ambiguity principle (discussed later).

The potential for this type of ambiguity increases with the total number of variants in *b*, *c*, *d*, and *g*, (in the above example) and with the number of intervening generations between the "sister" witnesses and their common ancestor. It is important that the inherited variants occur in different places of variation. This is a problem only when the witnesses are not actual sisters.[23] Fortunately, as it turns out, inherited variants seldom occur at the same place of variation. The following table presents the global statistics for inheritance persistence for the reconstructed stemma of Matthew. The information is the accumulated sum of every witness' hereditary persistence.[24] For each witness, the total number of variants it could inherit from all its ancestors was counted, also the number of those inheritable variants it actually inherited.

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[21] Among these were 1,037 instances where consensus was decided on the basis of language deference. Where one alternative is supported by witnesses in the original language and the other alternative is supported only by witnesses in non-original languages, deference is given to the reading in the original language.

[22] It is an assumption that the readings of NA-27 have the support of internal evidence.

[23] An exception is the rare possibility that the copyists of the sister witnesses both initiated new variants at the same place of variation.

[24] The hereditary persistence of a witness is the ratio of the number inheritable variants to the number of actually inherited ones. The number of inheritable variants of a witness is the sum of the number of new variants initiated in all of its ancestor exemplars.

Table of Global Inheritance Persistence

Global Total Number of Inheritable Variants:[25]	83,388
Global Number of Actually Inherited Variants:[26]	71,932
Global Number of Changed Variants:[27]	2,409
Global Number of Corrected Variants:[28]	9,047

This information indicates that for the 83,388 variants (the inheritable ones) initiated in all the ancestor exemplars in the stemma, 71,932 were persistent, being actually inherited by all their respective descendants (86.3%), and 11,456 were changed (13.7%) somewhere in intervening ancestors. Interestingly, 9,047 of them (79.0%) were corrected back to the reading of the exemplar in which the variant originated, leaving only 2,409 to contribute to the uncertainty of the reconstructed stemma (2.9%). This information indicates that a real possibility exists for a small percentage of readings of a common ancestor to be lost. But hopefully the principle of deferred ambiguity will be able to accurately recover such lost readings, as discussed later.

Measuring Sisterhood

As discussed above, sisterhood may be determined by maximum genetic affinity or maximum quantitative affinity. The search for a group of sister witnesses begins with the most remote witness in the active database having greatest mutual affinity; this witness is referred to as the *primary sister* of a group. The siblings of the primary sister are the witnesses in the active database having maximum mutual affinity with it. The primary sister and its siblings compose a sister group for which a parent exemplar is reconstructed. Genetic affinity is determined by the presence or absence of a mutual sibling gene.[29] The degree of sisterhood may also be measured by mutual quantitative affinity. Witnesses in the active database having the greatest mutual quantitative affinity will be closest genealogical relatives and may be

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[25] An inheritable variant of a witness is one of its readings that was initiated in one of its ancestral exemplars.

[26] An inherited variant of a witness is one of its inheritable readings that persisted unaltered from its point of initiation through its intervening ancestors to the given witness itself.

[27] An inheritable variant of a witness is counted as changed if it was altered in an intervening ancestral exemplar, disrupting its hereditary persistence.

[28] An inheritable variant of a witness is counted as corrected if after being altered it is restored again to its initial reading.

[29] The measure of sisterhood by means of mutual family genes turns out to be ineffective. It tends to identify large groups of witnesses as “sisters” unless the sibling gene is clearly present, in which case the sibling gene is the determining factor of sisterhood and the agreement of the rest of the family gene is superfluous.

regarded as sisters. The detection of a sibling gene depends on places of variation where witnesses have the same readings with minimal frequency count. The measure of sisterhood by means of mutual quantitative affinity depends on the minimal number of places of variation where the readings of the witnesses differ. The intuitive expectation is that sister witnesses should share a sibling gene and have maximum quantitative affinity, but that is not always the case. Subtle differences exist the significance of which are evaluated in subsequent discussion. Likewise, there are sources of error involved in determining sibling genes and computing quantitative affinity.

Sibling Genes. The sibling gene is a measure of genetic affinity; the sibling gene of a witness consists of the variants initiated in its actual parent exemplar. These particular variants will be common to all the witness' sibling sisters. Unfortunately, these variants cannot be detected independently but must be isolated from the commonness of variants in the active database. As it turns out, the variants that compose a witnesses' sibling gene are its variants that occur least frequently in the active database.[30] Unfortunately, because of mixture and multiple initiation of variants in history, some of the variants having the least frequency count may not be from the sister witnesses but from random extraneous sources. But the variants from outside sources may be excluded because only sisters witnesses will consistently have the minimal variants, leaving only the set of variants unique to the sister group. A witness' sibling sisters are those witnesses sharing all the readings of its sibling gene. One problem with requiring sisters to share a full complement of readings in the sibling gene of the primary sister is that a true third sister may be excluded from the group for a lack of one or more of the readings in the sibling gene because of mixture or alteration. This unfortunate exclusion is an occasion where genetic affinity and quantitative affinity may fail to agree. Relaxing the restraint, however, does not resolve the problem but opens the door for troublesome non-sister witnesses to also be erroneously included in the group, increasing the probability of error.

Quantitative Affinity. Quantitative affinity is the mathematical ratio of the number of places of variation the readings of two witnesses are the same as compared with the total number of places they each have a reading of some sort. It is a quantitative measure of relative mutual genetic relationship. All the witnesses have some degree of quantitative affinity with all the others. Witnesses in the active database having maximum mutual quantitative affinity are the closest relatives in the active database, and may be regarded as sisters for purposes of

[30] That is, the variants having the minimal distribution in the frequency distribution of the variants in the active database. They are the variants unique to the witness and its sisters.

reconstruction. But quantitative affinity cannot precisely determine whether witnesses are actual sisters or merely close relatives. This lack of precision leaves some room for error in the recovery of the readings of a parent exemplar. One problem with requiring a sister to have maximum quantitative with the primary sister is that a true third sister may be excluded from the group for a lack of maximum affinity with the primary sister, but having maximum affinity with one or more of the other sisters. This unfortunate exclusion is an occasion where genetic affinity and quantitative affinity may fail to agree. Relaxing the restraint, however, does not resolve the problem but opens the door for troublesome non-sister witnesses to also be erroneously included in the group, increasing the probability of error. For both measures of affinity, for a compromise at the present it is better to retain the tighter restraints, accept the potential misplacement of some witnesses in less than perfect groups. Hopefully further study will produce methods that will eliminate the need for compromise.

Reconstructing Exemplar Readings

Once a group of sibling sister witnesses is assembled, recovery of the readings of the group's parent exemplar begins. The recovery of exemplar readings is based on the principles of genetic inheritance. The copyist of a manuscript either (1) copied the wording of the exemplar he was following; (2) copied the wording of an alternate exemplar by mixture; or (3) initiated new wording either by intent or by accident. In the first case the wording had direct inheritance; in the second case the wording had indirect inheritance;[31] and in the third case the wording had no inheritance, having no prior history. Inheritance is evidenced by the *consensus among independent witnesses*. Sibling sister witnesses are mutually dependent on their parent exemplar, but mutually independent of one another, very likely having different copyists. At each place of variation the reading of the parent exemplar is determined by the consensus of the sibling daughters. Where consensus fails, the principle of deferred ambiguity takes over; where this fails, internal evidence decides; where this fails, an arbitrary choice is made by default.

Consensus

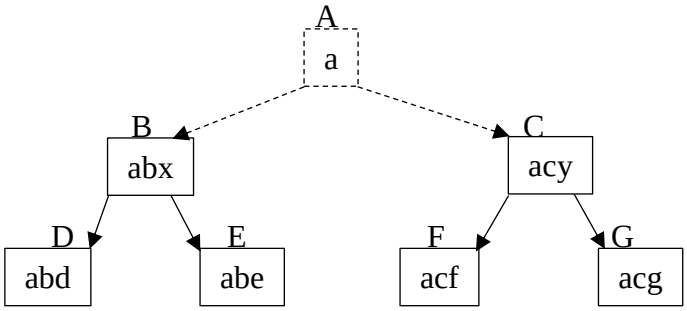
Among sibling sister witnesses, most of their readings are the same and thus have maximum consensus, recovering the reading of the parent exemplar with certainty. Where sister witnesses differ, the reading supported by the greatest number of sisters has majority consensus. Of course, it is possible that the minority reading is the inherited one, but it is very unlikely that different copyists would make the same alteration at the same place of variation.

[31] A reading acquired by mixture appears as a newly initiated reading as far as inheritance and recovery are concerned. The source of a new reading has no effect on the recovery procedure.

But this problem could happen where the number of sisters is great and the alternate probabilities are not significantly different. In the case where one alternative is supported by witnesses in the language of the autograph, and the other alternative has support only by witnesses not in the language of the autograph, the variant supported by witnesses in the autographic language is granted consensus, because in cases like this the translators have undoubtedly departed from the text of the exemplar and paraphrased. Thus, while it is possible that consensus may erroneously identify inheritance, the likelihood is small. Further research may increase the precision of the consensus procedures.

Deferred Ambiguity

The principle of deferred ambiguity is based on the fact that inheritable variants have genealogical history and newly initiated variants do not. It states that when consensus fails to recover a reading of the common ancestor of a group of sibling sister witnesses, the place of variation where the consensus fails should be marked as ambiguous, and resolution of the ambiguity should be deferred to the next prior generation. It is very likely that the sibling sisters of the marked exemplar will have the actual inherited reading. This principle is necessary in the case of all exemplars of binary branches and of some having more than two branches. The following example illustrates the principle and highlights its limitations. The lines of inheritance are the same as those in the previous illustration.



In this illustration, the procedure has already reconstructed the text of exemplar B from its daughters D and E, marking the places *x* where ambiguity occurred. Likewise, the procedure has reconstructed exemplar C from its daughters F and G, marking the places *y* where ambiguity occurred.[32] Furthermore, the procedure has identified exemplars B and C as "sisters."

[32] It is assumed that the reconstruction procedure has correctly recovered the actual readings of exemplars B and C except for their ambiguities marked at *x* and *y* respectfully.

At this point, prior to reconstructing exemplar A from the texts of its daughters B and C, the delayed ambiguity procedure takes over and attempts to recover the unknown variants at places *x* and *y* found marked as ambiguous in B and C respectively. The assumption of the *deferred ambiguity principle* is that exemplar C very likely has the readings of *a* at places *x* and exemplar B very likely has the readings of *a* at places *y* respectively. If so, then one may confidently replace the ambiguous reading at places *x* in B with the unambiguous reading at places *x* in C, having the likely expectation that the reading at place *x* in C is the unaltered reading *a* of the common ancestor A under reconstruction.[33] This expectation may be validated because normally one of B's daughters, D or E, will have the inherited reading *a* at place *x*, and the other will have a newly initiated reading there. Consequently, the delayed ambiguity procedure can check B's daughters, D and E, to see if one or the other has reading *a* at place *x*. If so, the replacement may be done with confidence, otherwise[34] the reading of B at place *x* is left marked as ambiguous, being further delayed for subsequent recovery procedures. The same may be said of the ambiguous reading marked at place *y* in sister C. The following table displays the success of the deferred ambiguity procedure in the study of Matthew.

Global Table of Verification Success

Total Number of Reading Decisions	64,691
Total Number of Non-ambiguous readings	61,059
Total Number by Language Deference	1,037
Total Number of Deferred Ambiguities	2,043
Total Number of Default to NA-27	509
Total Number by arbitrary Choice	43

This information indicates that of the 64,691 times the reconstruction procedure made textual decisions, only 2,595 involved ambiguities (4.0%).[35] Of these 2,595 places of ambiguity, the principle of deferred ambiguity verified 2,043 readings (78.7%) as the inherited ones, rendering 96.0% of the total decisions as quite certain.[36] In 552 instances (21.3%) the

[33] An error occurs in the unlikely case that the reading of C at place *x* is not the reading of *a* but had been altered in the unrecoverable history between C and A.

[34] The verification test fails in the case where the reading of C at place *x* is not the reading of *a* but had been altered in the unrecoverable history between C and A, or that neither D nor E have reading of C at place *x*. When the branch being reconstructed is binary, the first case allows a non-inherited reading to be erroneously assigned to A, however, the statistical evidence above indicates that the reading in C is the inherited one rather than not.

[35] Language deference was granted consensus and are not regarded as ambiguous.

[36] (61,059 + 1,037) / 64,691 = 0.960.

validation test failed, retaining the problem of uncertainty. In this case, the inherited reading (the *a* reading in the above example) had been altered in history in either the sister witness (C in the above illustration) or in one or the other daughters (D or E in the above illustration) of the exemplar having the ambiguity (B in the above illustration). Thus in the 552 instances where validation failed, there is a fifty-fifty chance that the reading of one of the sisters is the inherited one. Hence it is likely that the probability of recovering the inherited reading at any ambiguous place of variation is 89.4%[37]—assuming that Matthew is a typical representative example. In 509 of these unresolved instances the methodology accepted the reading of NA-27 since it was an option, under the assumption that internal evidence supports that reading rather than the other. In the 43 instances where the NA-27 reading was not an option, the methodology arbitrarily accepted the reading with the lowest ranked order.

What may be said of the binary branches above may also be said of exemplars with more than two daughter witnesses. Actually of the 2,043 places where resolved deferred ambiguity 1,852 involved binary branches. The remaining 191 involved three or more daughter witnesses. Consequently, this study has demonstrated that the deferred ambiguity principle can be counted on to resolve ambiguities about 78.7% of the time, with an overall recovery of exemplar readings of 96%.

Internal Evidence

When consensus and the principle of deferred ambiguity fail to clearly identify the inherited reading, an appeal must be made to internal evidence. The software has no way to evaluate internal evidence, so it is dependent on the judgment of the scholars who prepared the evidence in the database. In order to accommodate this weakness of the software, at every place of variation, the reading having best support of internal evidence should be placed first in the list of options. As for the New Testament texts, the database was prepared by the editors of the 27th edition of the Nestle-Aland Greek New Testament, and it was assumed that wording of their text always had best internal evidence support. So, in those relatively few instances where an appeal to internal evidence was necessary, consensus was granted to the NA-27 reading where it was one of the options. Of course this assumption may not have always been true, hence that potential failure is also a source of error. That potential may be diminished by further research.

[37] (2,595 – 552/2) / 2,595 = 0.894.

Arbitrary Choice

When all else fails, the software must make a decision of some sort. The software is designed to arbitrarily select the reading with the better internal evidence between the available alternatives. This decision was based on the assumption that at each place of variation the scholars who prepared the database arranged the alternative readings in descending order of internal support; that is, the first alternative had best internal support, the second alternative had second best, and so forth.

Remoteness

It is well known that the structure of a reconstructed stemma varies considerably depending on where the reconstruction process begins and the order in which the process progresses. It is unreasonable to consider beginning the reconstruction at the trunk of the stemma (a presumed autographic text) and progressing outward to the remote branches because the early history is where the greatest paucity of evidence resides and the most uncertainty abounds. A more reasonable approach is to start with the remote branches, where witnesses are more plentiful and uncertainty is least, and work back in history from branches to trunk. Experience indicates that the best procedure is to (1) begin with the most remote witness, (2) collect its sisters into a sibling group, (3) reconstruct the parent exemplar of the group, (4) remove the data of the sibling group from the database, (5) insert the data of the reconstructed exemplar into the database, and (6) keep repeating these steps until the trunk emerges. However, several possible methods exist for determining the remoteness of a witness. The same is true for determining sisterhood.

It is self-evident that an unattached extant witness is at the end of the branch of which it is a part, and thus is the remotest member of that branch, but the branch of which it is a part is as yet not reconstructed. The same may be said of an unattached reconstructed exemplar. But while these are the remotest member of their associated branch, they may not be the remotest witness in the database, which is assumed to be the best place to start. But several different criteria may be used to determine the remotest witness in the active database: (1) the witness with the most recent date, (2) the witness with the greatest number of detectable generations, (3) the witness with the greatest mutual quantitative affinity with one or more witnesses in the data-base, (4) the witness with the greatest mutual genetic affinity with one or more witnesses in the data-base.

The Witness with Most Recent Date

While the witness with the most recent date will be temporally the most remote witness, the possibility exists that it may be a late copy of an early exemplar perhaps as yet not reconstructed. To assign it sisters strictly on the basis of the current evidence in the database may be premature and may introduce some degree of error into the structure of the stemma. Fortunately, late copies of early exemplars do not seem to have happened very often, and when it does, the witness usually has a low affinity with those in the database until its siblings emerge in the reconstruction process. Still, an element of uncertainty is associated with this criterion for determining remoteness.

The Witness with the Greatest Number of Detectable Generations

While it is true that the variants in a witness consist of the accumulated unaltered variants of all its actual ancestors, its textual genes and generations cannot be determined in isolation. But in a collection of witnesses having significant mutual affinity these attributes can be detected and determined. A frequency distribution count of the variants in the active database provides the means for accomplishing the task. Actual sister witnesses have the same ancestors and the same set of variants except for those uniquely initiated in the witnesses themselves. Sister witnesses have the same sibling gene—that is, the variants having the same minimal frequency count in the active database; these variants are the ones that were initiated in the parent exemplar of the sisters. Likewise, the variants of the sisters having the frequency count next greater than the minimal count are those initiated in their grandparent exemplar; and the variants having the frequency count next greater than that of the grandparent are those initiated in their great grandparent, and so forth back to the autograph.

Theoretically the sibling gene and the exact number of generations a group of sibling sister witnesses is removed from the autograph can be deciphered and determined if the witnesses are actual sisters. But since actual sisterhood cannot be precisely determined, one must be satisfied that two witnesses in the database having the greatest mutual affinity are closest relatives having a common ancestor. Consequently some intermediate exemplars may go undetected resulting in error in the number of generations a group of sister witnesses is removed from the autograph. Nevertheless, in the database for the text of Gospel of Matthew, some witnesses had up to eight detectable generations. Thus generation depth is measurable and a criterion for determining genetic remoteness.

The Witness with the Greatest Quantitative Affinity

Mutual quantitative affinity between witnesses is a measure of their genealogical closeness,[38] and a measure of relative sisterhood. Unattached witnesses in the active database having all the same readings have a mutual quantitative affinity of 1.00 (i.e., 100%) and are actual identical sisters. Witnesses having the greatest mutual quantitative affinity in the database are the closest relatives there, and may be regarded as "sisters." They also are at the terminal end of the branch to which they belong, and thus the remotest members of that branch. Thus quantitative affinity may be regarded also as measure of remoteness.

The Witness with the Greatest Genetic Affinity

As in the case of witnesses with the greatest quantitative affinity, genetic affinity is a measure of sisterhood and thus remoteness. A witness has greatest genetic affinity when its sibling gene is based on a minimal frequency count closest to but greater than 1. The numerical value of the minimal frequency count indicates the number of sisters in a sibling group. Thus a count of 2 means the sister group has two sisters in it, and a count of 3 means it has three. While it is not necessarily true that a two-sister group always has a greater genetic affinity than a multi-sister group, it is more likely to be so, and a group with a greater minimal count is less likely to be so.

Optimal Methodology

As previously stated, it is known that the structure of a reconstructed stemma depends on where the reconstruction procedure begins and the order in which the reconstruction takes place. Likewise, the reconstruction methodology should implement the foundational assumptions of the present genealogical theory: genealogical structure is based on *consensus among independent witnesses*, and the autographic text is based on the *consensus among the ancient independent witnesses*. Further, the basic algorithm calls for the procedure to (1) begin with the remotest witness, (2) find its sibling sisters, (3) reconstruct the parent exemplar of the sibling group based on the principle of *consensus among independent witnesses*, (4) connect the sisters to their parent exemplar and mark the data for the sisters as inactive, (5) enter the

[38] Quantitative affinity is the number of readings two witnesses have in common divided by the number of places of variation where both witness have a reading of any sort.

data of the reconstructed parent exemplar into the active database, (6) repeat steps 1 through 5 until the autograph emerges as the trunk of the stemma.

However, the previous discussion indicates that more than one way of defining remoteness exists for selecting the starting witness, and more than one way exists for identifying its sisters. Sadly, various combinations of these methods result in significantly different stemmas. So the purpose of this section is to decide by experimentation which combination produces optimal results, where optimal results are understood as follows: (1) the method connects the witnesses into the stemma according to what is already known about their genealogical relationships,[39] (2) the method reconstructs a stemma according to what is already known about their genealogical history,[40] and (3) the method recovers the autographic readings according to what is already known of their values.[41] The experimentation consisted of reconstructing the stemma of test problems having a predetermined autograph and genealogical history, using each combination of measuring criteria. The same was done for the books of the New Testament and the Greek witnesses to the text of the book of Ecclesiastes, using the textual data supplied by Peter Gentry.

Test Problems

Besides the NA-27 texts of Matthew, Mark, and 2 Corinthians, and Peter Gentry's text of Greek Ecclesiastes, five test problems, having an autograph with predetermined readings and a predetermined stemma structure, were created by computer software that simulates the actual conditions found in the witnesses to existing texts. The first test problem was designed to be of greater size than that of any of the New Testament books. Each has 2,000 places of variation with a stemma constructed of 532 genetically interconnected witnesses. The

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[39] That is, most Latin witnesses are expected to occur in the same branch. The same may be said about the Egyptian and the Antiochan witnesses, and so forth. Peter Gentry has identified eight manuscript groups in the book of Ecclesiastes; the optimal method should be expected to reconstruct his groups.

[40] That is, early witnesses occur early in the stemma according to the expectation of *consensus among ancient independent witnesses*.

[41] For the test problems the autographic text was predetermined. For the book of Ecclesiastes Peter Gentry determined the autographic readings by manually applying a genealogical method similar to the present method. For the books of the New Testament the reconstructed autographic readings may be compared with those reconstructed by different theoretical methods: the reasoned eclectic method used for NA-27, the Byzantine Textform method used by Robinson and Pierpont, the Majority Text method used by Hodges and Farstad, and the *Textus Receptus* represented by Scrivener's 1902 text. The reconstruction methodology is not expected to recover the autographic text of these latter methods because their methodology is based on entirely different theories, but it is expected to place the origin of those texts in a place in the stemma that is consistent with the known presuppositions of the respective theories.

autograph has three daughter descendants which are the head exemplars of three main branches representing three hypothetical text traditions. The main branches each have a different number of generations: the first branch has only three generations, representing a text tradition that died out early in history. The second main branch has four generations, representing a text tradition that endured a little longer. The third branch has nine generations, representing a text tradition that survived until the invention of the printing press. The exemplars in each generation have either two or three daughter descendants, representing the binary and multi-descendant conditions of actual texts.

One descendant of each exemplar ceases to propagate, leaving a terminal (extant) witness in its generation. The sibling descendants of each exemplar have a different date and initiate a different number of variants (ranging from 4 to 10) plus a mixture reading borrowed from an exemplar of an earlier generation. In addition, three intermediate branches each have a radical recension (a witness initiating 300 variants). Each witness was given a code name that identifies is location in the structure of the stemma;[42] this enables an evaluation of the success or failure of the various reconstruction methods to recover the structure of the test stemma. Finally, all 201 exemplars of the stemma were eliminated from the database, leaving only the 331 terminal witnesses for use by the reconstruction procedures.

One thing remains of the test problem that differs from the conditions of real texts: in the first test problem every generation of every branch has an extant witness. This condition cannot be assumed for the witnesses to actual texts. But the effect of increasing paucity of extant witness is represented in the subsequent test problems. Each test problem is the same as the first except for the degree of paucity of terminal witnesses. Test 1 has 100% of the 331 terminal witnesses. Test 2 has 80% (265); test 3 has 75% (248); test 4 has 67% (222); and test 5 has 50% (165).

Experimental Results

Throughout the time of experimentation, twenty-seven different combinations of algorithms for measuring remoteness and sisterhood were investigated. But it soon became clear that only eight combinations were worthy of pursuit. The following table lists the eight combinations:

[42] The coded names of the witnesses are not used by the reconstruction procedures.

	Remoteness Method	**Sisterhood Method**
1	Greatest Quantitative Affinity	Greatest Quantitative Affinity
2	Greatest Quantitative Affinity	Greatest Genetic Affinity
3	Greatest Genetic Affinity	Greatest Quantitative Affinity
4	Greatest Genetic Affinity	Greatest Genetic Affinity
5	Greatest Generation Depth	Greatest Quantitative Affinity
6	Greatest Generation Depth	Greatest Genetic Affinity
7	Most Recent Date	Greatest Quantitative Affinity
8	Most Recent Date	Greatest Genetic Affinity

I will not belabor the reader with all the nitty-gritty details of the application of each combination to each of the five test problems, except to provide the conclusion. It was found that no single combination produced results wholly consistent with expectations. The first four combinations best met the expectation of genealogical grouping, but failed to meet the expectation of history; the first combination did best in the most remote branches, and the fourth did best in the branches nearest to the trunk. The last four combinations best met the expectation of history, but failed to meet the expectation of genealogical grouping; the seventh combination did best in the intermediate branches.

Consequently, a hybrid methodology was found for an optimal order of reconstruction. The first method was found best for the earliest one-third of the reconstruction, where the extant witnesses with the greatest quantitative affinity are processed without regard to date, because date is rather insignificant at such levels of affinity. Then the seventh combination processed until the date of the witnesses in the database diminished below AD 400, where both date and affinity are most significant. Finally the fourth combination processed the remaining witnesses, where again date is rather insignificant but genetic affinity does best. In each of these three stages of reconstruction witnesses in non-original languages were processed before those in the original language because non-original witnesses are expected to have an original language source.

This hybrid method reconstructed the stemma of each of the test problems fairly well, recovering over 99% of the autographic readings. As far as the structure of the stemma of the test problems, most of the branches were properly reconstructed. The greatest discrepancy was in the how the branches were pieced together in the earliest generations. The two smaller first generation branches were reconstructed perfectly, but were erroneously placed in one of the sub-branches of the largest first generation branch. While a different hybrid method produced

better results for the test problems, it failed to meet expectations for actual real-life problems, so a compromise was necessary. Although the test problems emulate the textual conditions of extant witnesses to actual texts, they are not a perfect model of conditions in real life. It would overly optimistic to expect such good results with actual texts.

As far as the other texts are concerned, the hybrid method perfectly reconstructed four of Gentry's groups, but split the others into sub-groups for reasons explained in Chapter 8. It recovered 95.37% of the 2,158 readings of his autographic text. The same can be said of the reconstructed stemma of Matthew, of Mark, and of 2 Corinthians, but not with quite as much confidence for the autographic text because the texts with which it may be compared were reconstructed by significantly different theoretical methods. The following table lists the percentage of difference the Lachmann-10 text has with the texts of NA-27, Scrivener's *Textus Receptus* (TR), Hodges and Farstad's Majority Text (HF), and Robinson and Pierpont's Byzantine Textform (RP).

Matthew			Mark			2 Corinthians		
Text	Difference	Percent	Text	Difference	Percent	Text	Difference	Percent
TR	416	71%	TR	355	66%	TR	105	61%
HF	396	72%	HF	364	65%	HF	106	61%
RP	398	72%	RP	365	65%	RP	106	61%
NA-27	198	86%	NA-27	246	77%	NA-27	18	93%

Conclusion

Sufficient factual information exists, including the fact that each extant witness has its genealogical history recorded in its unaltered variants. Unfortunately the reading of these genealogical records cannot be done directly for a given witness, but must depend on the fact that genealogically related witnesses share the history of their common ancestor exemplars. However, this is only true for the entire history of a witness where its genealogically related witnesses are actual sisters; otherwise, some degree of error may be present in reconstructing the readings their parent exemplar. But there is yet no way for determining with certainty that two witnesses are actual sisters except where they are identical, so some error is expected. The magnitude of such accumulated error contributes to the success or failure of the reconstruction method. While it appears that the readings of an exemplar may be recovered on an average of about 98%, there is room for more finely tuned recovery algorithms.

In addition, there is yet no precise way of determining which witness in the database is the most genealogically remote or whether the most remote witness is the best place to execute reconstruction. Further, no algorithm yet exists for properly guiding the order of reconstruction to back-track the original order of construction. The present search method is bound to the arbitrary order of the witness in the database. And while historical date provides an approximate guide, the test problems indicate that it lacks perfection, particularly in reconstructing the earliest branches. This study has demonstrated that numerous sources of potential error exist throughout the various stages of reconstruction, but that they do not constitute a serious impediment to constructing a stemma that approximates the genealogical history of an ancient text, given an appropriate database. The reconstructed stemma is considerably more detailed than any other method of which I am aware. The recovered autographic text corresponds to the texts recovered by other comparable genealogical methods better than 95%. The results of this project seem to justify its underlying theory and the associated software implementation, but further improvements can be expected.

APPENDIX B

List of Extant Witnesses to the Greek Text of the Gospel of Matthew

This appendix contains a list of the extant witnesses to the Greek text of the Gospel of Matthew. For each witness it lists its name, date, language, content (references where readings exist), number of readings, and percentage of completeness. In the content column, a verse is counted as long as it has at least one extant reading.

Witness	Date	Language	Content	No. of Readings	Percent Complete
P^1%!	250	Greek	1:1-7, 16-18	12	0.84%
P^19%!	400	Greek	10:32-11:5	17	1.19%
P^21%!	400	Greek	12:24-25, 32	4	0.28%
P^25%!	350	Greek	18:32-34; 19:1-3, 6, 9-10	17	1.19%
P^35%!	350	Greek	25:13, 21-23	7	0.49%
P^37*%!	300	Greek	26:20-34, 36-52	41	2.87%
P^37^c%!	400	Greek	26:20-34, 36-52	41	2.87%
P^44%!	600	Greek	17:1-3; 18:16-17	11	0.77%
P^45*%!	250	Greek	20:24-32; 21:14-16, 19; 25:41-26:34; 26:36-39	62	4.34%
P^53*%!	250	Greek	26:29-34, 36-40	19	1.33%
P^53^c%!	350	Greek	26:29-34, 36-40	19	1.33%
P^62%!	350	Greek	11:25-29	5	0.35%
P^64%!	200	Greek	3:9, 15; 5:20-28; 26:8, 14-18, 21-27, 29, 33-34, 36-42, 44-49, 53, 56-57, 63, 66-73	62	4.34%
P^70%!	250	Greek	2:13-16, 23; 11:27; 12:4-5; 24:14-15	12	0.84%
P^71%!	350	Greek	19:10, 17-18	7	0.49%
P^77%!	200	Greek	23:30-35, 37-38	7	0.49%
P^83%!	550	Greek	20:23-24; 24:1	6	0.42%
P^86*%!	350	Greek	5:13-16, 22-25	6	0.42%
P^86c%!	850	Greek	5:13-16, 22-25	6	0.42%
P^96%!	550	Greek	3:14-15	3	0.21%
P^101%!	250	Greek	3:10-11, 16-4:3	9	0.63%
P^105%!	500	Greek	28:3-4	2	0.14%
P^110%!	350	Greek	10:13-15, 25-27	11	0.77%
01*	350	Greek	1:1-28:20	1425	99.79%
01^1	550	Greek	1:1-7, 10-8:15; 8:21-9:4; 9:6-13:7; 13:11-17, 19-33, 35-14:3; 14:6-9, 11-15:24; 15:26-38; 16:1-17:23; 17:25-21:16; 21:19-24:39; 24:41-28:20	1365	95.59%
01^2	650	Greek	1:1-7, 10-3:6; 3:9-12, 15-4:13; 4:17-21, 24-5:27; 5:29-6:26; 6:32-9:4; 9:6-11:8; 11:10-13:19; 13:23-24, 26-44, 46-14:26; 14:28-28:20	1391	97.41%
01^c	1150	Greek	1:1-7, 10-18, 20-3:6; 3:9-12, 15-4:13; 4:17-21, 24-5:27; 5:29-6:26; 6:32-8:15; 8:21-22, 25-9:4; 9:6-13, 15-11:8; 11:10-12:24; 12:27-13:7; 13:11-17, 19, 23-24, 26-33, 36-44, 46-14:3; 14:6-9, 11-26, 28-15:24; 15:26-38; 16:1-17:23; 17:25-21:16; 21:19-24:39; 24:41-28:20	1313	91.95%
A*%!	450	Greek	25:7-28:20	257	18.00%
A^c%!	550	Greek	25:7-28:20	257	18.00%
B*	350	Greek	1:1-28:20	1428	100.00%
B^1	350	Greek	1:1-6:33; 7:2-9:29; 9:31-11:18; 11:20-17:7; 17:9-21:42; 21:44-27:9; 27:11-28:20	1408	98.60%

Witness	Date	Language	Content	No. of Readings	Percent Complete
B^2	600	Greek	1:1-14:29; 14:32-28:20	1422	99.58%
C*	450	Greek	1:1-5:13; 7:6-10:2; 10:4-18:2; 18:9-14, 16-18, 20, 24, 27-22:20; 23:19-24:9; 24:46-25:29; 26:23-27:10; 27:47-28:14	1119	78.36%
C^1	450	Greek	1:1-2:6; 2:9-21, 23-3:3; 3:7-4:9; 4:13-21, 24-5:13; 7:6-15, 17-8:2; 8:5-9:25; 9:27-10:2; 10:4-7, 10-18:2; 18:9-14, 16-18, 20, 24, 27-28, 30-20:6; 20:8-18, 20-22:20; 23:19-24:9; 24:46-25:15; 25:18-29; 26:23-27:10; 27:47-49, 52-28:14	1064	74.51%
C^2	550	Greek	1:1-2:6; 2:9-21, 23-3:3; 3:7-4:21; 4:24-5:13; 7:6-15, 17-9:25; 9:27-10:7; 10:10-18:2; 18:9-14, 16-18, 20, 24, 27-20:6; 20:8-22:20; 23:19-24:9; 24:46-25:15; 25:18-29; 26:23-27:10; 27:47-49, 52-28:14	1089	76.26%
C^3	850	Greek	1:1-4:9; 4:13-5:13; 7:6-15, 17-8:2; 8:5-9:25; 9:27-10:2; 10:4-18:2; 18:9-14, 16-18, 20, 24, 27-28, 30-20:18; 20:20-22:20; 23:19-24:9; 24:46-25:29; 26:23-27:10; 27:47-28:14	1094	76.61%
D05*	450	Greek	1:1-5, 7-11, 18, 20-6:24; 6:26, 32; 7:2-4, 8-9, 11-14, 17, 19-8:2; 8:5-6, 8-9, 12-15, 22, 27-30, 32-27:1; 27:4-9, 11-28:20	1367	95.73%
D05^1	600	Greek	1:1-5, 7-11, 18, 20-6:24; 6:26, 32; 7:2-4, 8-9, 11-14, 17, 19-8:2; 8:5-6, 8-9, 12-15, 22, 27-30, 32-27:1; 27:4-9, 11-28:20	1358	95.10%
D05^2	850	Greek	1:1-5, 7-11, 18, 20-6:24; 6:26, 32; 7:2-4, 8-9, 11-14, 17, 19-8:2; 8:5-6, 8-9, 12-15, 22, 27-30, 32-27:1; 27:4-9, 11-28:20	1359	95.17%
D05^c	1150	Greek	1:1-5, 7-11, 18, 20-6:24; 6:26, 32; 7:2-4, 8-9, 11-14, 17, 19-8:2; 8:5-6, 8-9, 12-15, 22, 27-30, 32-27:1; 27:4-9, 11-28:20	1364	95.52%
E07*	750	Greek	1:1-28:20	1428	100.00%
F*	850	Greek	1:1-28:20	1428	100.00%
G011	850	Greek	1:1-28:20	1428	100.00%
H013*	850	Greek	1:1-28:20	1428	100.00%
K*	850	Greek	1:1-28:20	1428	100.00%
K^c	950	Greek	1:1-28:20	1428	100.00%
L019*	750	Greek	1:1-4:21; 5:16-28:15	1400	98.04%
L019^c	850	Greek	1:1-4:21; 5:16-28:15	1399	97.97%
M*	850	Greek	1:1-28:20	1428	100.00%
N*%	550	Greek	1:25-2:6; 2:21-3:3; 6:25-7:14; 8:1-23, 31-10:27; 11:2-12:38; 13:6-32, 42-14:4; 14:24-15:12; 15:32-16:5; 18:6-25; 19:6-11; 20:7-21:18; 26:58-63; 27:28-33	522	36.55%
N^c%	650	Greek	1:25-2:6; 2:21-3:3; 6:25-7:14; 8:1-23, 31-10:27; 11:2-12:38; 13:6-32, 42-14:4; 14:24-15:12; 15:32-16:5; 18:6-25; 19:6-11; 20:7-21:18; 26:58-63; 27:28-33	522	36.55%
O	550	Greek	1:1-28:20	1428	100.00%
P024*%!	550	Greek	1:11-21; 3:14-4:19; 10:7-19, 42-11:10; 13:40-50; 14:15-15:2; 15:30-39	154	10.78%

Witness	Date	Language	Content	No. of Readings	Percent Complete
S	949	Greek	1:1-28:20	1428	100.00%
U	850	Greek	1:1-28:20	1428	100.00%
V	850	Greek	1:1-28:20	1428	100.00%
W*	400	Greek	1:1-28:20	1428	100.00%
W^c	900	Greek	1:1-28:20	1427	99.93%
X	950	Greek	1:1-28:20	1428	100.00%
Y	850	Greek	1:1-28:20	1428	100.00%
Z*%	550	Greek	1:18-2:6; 2:13-19; 4:4-13; 5:45-6:15; 7:17-8:2; 8:5-6; 10:41-11:18; 12:44-13:11; 13:57-14:19; 15:14, 16-22; 17:9-17, 26-18:6; 19:4-11, 21-28; 20:7-21:8; 21:23-29, 38-45; 22:17-24, 37-23:3; 23:13-21; 24:15-24; 25:1-9; 26:21-29, 63-71	408	28.57%
Z^c%	650	Greek	1:18-2:6; 2:13-19; 4:4-13; 5:45-6:15; 7:17-8:2; 8:5-6; 10:41-11:18; 12:44-13:11; 13:57-14:19; 15:14, 16-22; 17:9-17, 26-18:6; 19:4-11, 21-28; 20:7-21:8; 21:23-29, 38-45; 22:17-24, 37-23:3; 23:13-21; 24:15-24; 25:1-9; 26:21-29, 63-71	408	28.57%
036*	950	Greek	1:1-5:30; 6:18-28; 7:27-8:25; 9:8-21:18; 22:27-28:20	1256	87.96%
037*	850	Greek	1:1-28:20	1428	100.00%
037^c	950	Greek	1:1-28:20	1428	100.00%
038*	850	Greek	1:10-20; 4:5-9, 12-16; 5:9-28:20	1346	94.26%
038^c	950	Greek	1:10-20; 4:5-9, 12-16; 5:9-28:20	1346	94.26%
42	550	Greek	1:1-28:20	1428	100.00%
43	550	Greek	1:1-28:20	1428	100.00%
47	750	Greek	1:1-28:20	1428	100.00%
058%!	350	Greek	18:18-19, 26, 28-29	10	0.70%
064%!	550	Greek	27:9-29	23	1.61%
067%!	550	Greek	14:13-16, 19-22; 24:37-25:1; 25:32-43; 26:31-45	74	5.18%
071%!	500	Greek	1:21-25	9	0.63%
073%!	550	Greek	14:19-32, 34-35; 15:2-8	34	2.38%
074%!	550	Greek	25:1-26:75; 28:1-20	182	12.75%
078*%!	550	Greek	17:23, 25-18:2; 18:12-19; 19:6-14	41	2.87%
078^c%!	550	Greek	17:23, 25-18:2; 18:12-19; 19:6-14	41	2.87%
085%!	550	Greek	20:3-32; 22:4-16	64	4.48%
087%!	550	Greek	1:23-25; 19:3, 6-8; 21:19-24	16	1.12%
090%!	550	Greek	26:59-70; 27:44-56	36	2.52%
094%!	550	Greek	24:9-21	12	0.84%
0102%!	650	Greek	21:24-24:15	127	8.89%
0106*%!	650	Greek	12:18, 25; 13:32, 36-50, 52-15:1; 15:4-26	123	8.61%
0106^c%!	650	Greek	12:18, 25; 13:32, 36-50, 52-15:1; 15:4-26	124	8.68%
0107%!	650	Greek	22:17, 21-24, 28, 32-23:13	37	2.59%

Witness	Date	Language	Content	No. of Readings	Percent Complete
0128*%!	850	Greek	25:32-33, 40-42	6	0.42%
0128^c%!	950	Greek	25:32-33, 40-42	6	0.42%
133	850	Greek	1:1-28:20	1428	100.00%
0136%!	850	Greek	13:46-52; 14:6-13; 25:9-15, 41-26:1	39	2.73%
0148%!	750	Greek	28:6-19	20	1.40%
0160%!	400	Greek	26:25-26, 34-36	12	0.84%
0161%!	750	Greek	22:7-12, 14, 17, 21-25, 28-37, 40-46	32	2.24%
0170%!	500	Greek	6:5, 8-10, 13-15	12	0.84%
0171%!	300	Greek	10:17-23, 25-27, 30-31	16	1.12%
0196%!	850	Greek	5:1-11	11	0.77%
0204%!	650	Greek	24:41-42, 45-48	6	0.42%
0231%!	350	Greek	41338.126	4	0.28%
0233*	750	Greek	1:1-28:20	1428	100.00%
0233^c	850	Greek	1:1-28:20	1428	100.00%
0234%!	750	Greek	28:11-15	5	0.35%
0237%!	550	Greek	15:14, 18	5	0.35%
0242%!	350	Greek	8:25-9:1; 13:32-33, 35-37, 40-46	31	2.17%
0249*%!	950	Greek	25:1-9	10	0.70%
0249^c%!	950	Greek	25:1-9	10	0.70%
250	750	Greek	1:1-28:20	1428	100.00%
0271%!	850	Greek	12:29-35, 38	11	0.77%
0275%!	650	Greek	5:25-26, 29-30	7	0.49%
0277%!	700	Greek	14:22, 28	6	0.42%
281%	700	Greek	6:24, 26-28; 7:4-24; 8:12-13; 9:1-4, 6-15; 10:7-14; 11:3-9, 27-12:2; 12:13-29; 13:19, 23, 25-31, 52-54, 57-58; 15:15-22, 24, 26-32; 16:12-19, 27; 17:2, 4, 17-18:8; 18:14-27; 19:21-28; 20:3, 26-33; 21:8-9, 12-13, 27-32; 22:14-21, 40-23:3; 23:24-27; 24:21-36, 41-48; 25:39-43; 26:15-27, 29-36, 52-56, 65-71, 73-27:4; 27:22-35	402	28.15%
0293%!	550	Greek	21:27-28, 32; 26:3-9	16	1.12%
0298%!	800	Greek	26:25-29	10	0.70%
4	1250	Greek	1:1-28:20	1428	100.00%
17	1450	Greek	1:1-28:20	1428	100.00%
21	1150	Greek	1:1-28:20	1428	100.00%
22	1150	Greek	1:1-28:20	1428	100.00%
28*	1050	Greek	1:1-28:20	1428	100.00%
33*	850	Greek	1:1-3:1; 3:3-7:15; 7:17-9:29; 9:31-10:31; 10:33-18:2; 18:7-21:16; 21:19-25:6; 25:9-27:58; 27:60-28:20	1389	97.27%
118*	1250	Greek	1:1-28:20	1428	100.00%
118^c	1350	Greek	1:1-28:20	1428	100.00%

Witness	Date	Language	Content	No. of Readings	Percent Complete
157	1122	Greek	1:1-28:20	1428	100.00%
225	1192	Greek	1:1-28:20	1428	100.00%
237	1050	Greek	1:1-28:20	1428	100.00%
238	1100	Greek	1:1-28:20	1428	100.00%
251	1150	Greek	1:1-28:20	1428	100.00%
348	1022	Greek	1:1-28:20	1428	100.00%
474	1050	Greek	1:1-28:20	1428	100.00%
482	1285	Greek	1:1-28:20	1428	100.00%
544	1250	Greek	1:1-28:20	1428	100.00%
565*	850	Greek	1:1-28:20	1428	100.00%
565^c	950	Greek	1:1-28:20	1428	100.00%
579*	1250	Greek	1:1-28:20	1428	100.00%
579^c	1350	Greek	1:1-28:20	1428	100.00%
700*	1050	Greek	1:1-28:20	1428	100.00%
700^c	1150	Greek	1:1-28:20	1428	100.00%
713	1150	Greek	1:1-28:20	1428	100.00%
892*	850	Greek	1:1-28:20	1428	100.00%
892^c	950	Greek	1:1-28:20	1428	100.00%
998	1150	Greek	1:1-28:20	1428	100.00%
1010	1150	Greek	1:1-28:20	1428	100.00%
1012	1050	Greek	1:1-28:20	1428	100.00%
1071	1150	Greek	1:1-28:20	1428	100.00%
1093	1302	Greek	1:1-28:20	1428	100.00%
1230	1124	Greek	1:1-28:20	1428	100.00%
1241*	1150	Greek	1:1-8:13; 13:4-28:20	1194	83.61%
1241^c	1150	Greek	1:1-8:13; 13:4-28:20	1194	83.61%
1242	1250	Greek	1:1-28:20	1428	100.00%
1253	1450	Greek	1:1-28:20	1428	100.00%
1293	1050	Greek	1:1-28:20	1428	100.00%
1424*	900	Greek	1:1-22; 2:17-28:20	1411	98.81%
1424^c	1000	Greek	1:1-22; 2:17-28:20	1411	98.81%
1506	1320	Greek	1:1-28:20	1428	100.00%
1573	1200	Greek	1:1-28:20	1428	100.00%
2148	1337	Greek	1:1-28:20	1428	100.00%
2542	1250	Greek	1:1-28:20	1428	100.00%
pm^a	850	Greek	1:1-28:20	1428	100.00%
pm^b	850	Greek	1:1-28:20	1428	100.00%
pm^c	850	Greek	1:1-28:20	1428	100.00%

Witness	Date	Language	Content	No. of Readings	Percent Complete
TR	1892	Greek	1:1-28:20	1428	100.00%
HF	1982	Greek	1:1-28:20	1428	100.00%
RP	1995	Greek	1:1-28:20	1428	100.00%
l^844*	861	Greek	1:1-28:20	1428	100.00%
l^844^c	861	Greek	1:1-28:20	1428	100.00%
l^2211*	995	Greek	1:1-28:20	1428	100.00%
l^2211^c	995	Greek	1:1-28:20	1428	100.00%
1	750	Greek	2:16-28:20	1387	97.13%
131*	1350	Greek	1:1-28:20	1428	100.00%
209	1350	Greek	1:1-28:20	1428	100.00%
1582	949	Greek	1:1-28:20	1428	100.00%
13	1250	Greek	1:1-28:20	1428	100.00%
69	1450	Greek	1:1-28:20	1428	100.00%
346	1150	Greek	1:1-28:20	1428	100.00%
543	1150	Greek	1:1-28:20	1428	100.00%
788	1050	Greek	1:1-28:20	1428	100.00%
826	1150	Greek	1:1-28:20	1428	100.00%
828	1150	Greek	1:1-28:20	1428	100.00%
983	1150	Greek	1:1-28:20	1428	100.00%
vg^a	500	Latin	1:1-18, 21-23, 25-2:6; 2:9-18, 22-4:1; 4:3-4, 6-7, 10, 13, 17-5:4; 5:11-27, 29-38, 40-6:26; 6:32-33; 7:2-5, 8-8:22; 8:25-9:5; 9:8-13, 15-29, 31-10:27; 10:30-31, 33-11:24; 11:27-12:15; 12:18-35, 38-13:2; 13:4-6, 9-17, 19-23, 26-28, 30-55, 58-14:9; 14:11-16, 19-26, 28-30, 33-15:22; 15:24-17:5; 17:10-23, 25-18:2; 18:8-29, 31-20:17; 20:21-21:5; 21:7-12, 14-16, 19-25, 27-42, 44-45; 22:2-14, 17-24, 27-28, 32-46; 23:2-9, 13-15, 19, 23-27, 31-35, 37-24:1; 24:6-15, 17-42, 45-25:6; 25:13-33, 40-26:29; 26:33-49, 53-57, 59-27:2; 27:4-17, 22-49, 54-56, 58, 60, 64-28:2; 28:6-7, 9-20	1150	80.53%
vg^b	500	Latin	1:1-18, 21-23, 25-2:6; 2:9-18, 22-4:1; 4:3-4, 6-7, 10, 13, 17-5:4; 5:11-27, 29-38, 40-6:26; 6:32-33; 7:2-5, 8-8:22; 8:25-9:5; 9:8-13, 15-29, 31-10:27; 10:30-31, 33-11:24; 11:27-12:15; 12:18-35, 38-13:2; 13:4-6, 9-17, 19-23, 26-28, 30-55, 58-14:9; 14:11-16, 19-26, 28-30, 33-15:22; 15:24-17:5; 17:10-23, 25-18:2; 18:8-29, 31-20:17; 20:21-21:5; 21:7-12, 14-16, 19-25, 27-42, 44-45; 22:2-14, 17-24, 27-28, 32-46; 23:2-9, 13-15, 19, 23-27, 31-35, 37-24:1; 24:6-15, 17-42, 45-25:6; 25:13-33, 40-26:29; 26:33-49, 53-57, 59-27:2; 27:4-17, 22-49, 54-56, 58, 60, 64-28:2; 28:6-7, 9-20	1154	80.81%

Witness	Date	Language	Content	No. of Readings	Percent Complete
vg^cl	1592	Latin	1:1-18, 21-23, 25-2:6; 2:9-18, 22-4:1; 4:3-4, 6-7, 10-13, 17-5:27; 5:29-38, 40-6:26; 6:32-33; 7:2-5, 8-8:22; 8:25-9:5; 9:8-13, 15-29, 31-10:27; 10:30-31, 33-11:24; 11:27-12:15; 12:18-35, 38-13:2; 13:4-6, 9-17, 19-23, 26-28, 30-55, 58-14:9; 14:11-16, 19-26, 28-30, 33-15:22; 15:24-17:5; 17:10-23, 25-18:2; 18:7-29, 31-20:17; 20:21-21:5; 21:7-12, 14-16, 19-42, 44-45; 22:2-14, 17-24, 27-28, 32-46; 23:2-9, 13-15, 19, 23-27, 31-35, 37-24:1; 24:6-15, 17-42, 45-25:6; 25:13-33, 40-26:29; 26:33-49, 53-57, 59-27:2; 27:4-17, 22-49, 54-56, 58-60, 64-28:2; 28:6-7, 9-20	1166	81.65%
vg^s	1590	Latin	1:1-18, 21-23, 25-2:6; 2:9-18, 22-4:1; 4:3-4, 6-7, 10, 13, 17-5:4; 5:11-27, 29-38, 40-6:26; 6:32-33; 7:2-5, 8-8:22; 8:25-9:5; 9:8-13, 15-29, 31-10:27; 10:30-31, 33-11:24; 11:27-12:15; 12:18-35, 38-13:6; 13:9-17, 19-23, 26-28, 30-55, 58-14:9; 14:11-16, 19-26, 28-15:22; 15:24-17:5; 17:10-23, 25-18:2; 18:8-29, 31-20:17; 20:21-21:5; 21:7-12, 14-16, 19-25, 27-42, 44-45; 22:2-14, 17-24, 27-28, 32-46; 23:2-9, 13-15, 19, 23-27, 31-35, 37-24:1; 24:6-15, 17-42, 45-25:6; 25:13-33, 40-26:29; 26:33-49, 53-57, 59-27:2; 27:4-17, 22-49, 54-56, 58, 60, 64-28:2; 28:6-7, 9-20	1152	80.67%
vg^st	1994	Latin	1:1-18, 21-23, 25-2:6; 2:9-18, 22-4:1; 4:3-4, 6-7, 10-13, 17-5:27; 5:29-38, 40-6:26; 6:32-33; 7:2-5, 8-8:22; 8:25-9:5; 9:8-13, 15-29, 31-10:27; 10:30-31, 33-11:24; 11:27-12:15; 12:18-35, 38-13:2; 13:4-6, 9-17, 19-23, 26-28, 30-55, 58-14:9; 14:11-16, 19-26, 28-30, 33-15:22; 15:24-17:5; 17:10-23, 25-18:2; 18:7-29, 31-20:17; 20:21-21:5; 21:7-12, 14-16, 19-42, 44-45; 22:2-14, 17-24, 27-28, 32-46; 23:2-9, 13-15, 19, 23-27, 31-35, 37-24:1; 24:6-15, 17-42, 45-25:6; 25:13-33, 40-26:29; 26:33-49, 53-57, 59-27:2; 27:4-17, 22-49, 54-56, 58-60, 64-28:2; 28:6-7, 9-20	1166	81.65%
vg^ww	1889	Latin	1:1-18, 21-23, 25-2:6; 2:9-18, 22-4:1; 4:3-4, 6-7, 10, 13, 17-5:27; 5:29-38, 40-6:26; 6:32-33; 7:2-5, 8-8:22; 8:25-9:5; 9:8-13, 15-29, 31-10:27; 10:30-31, 33-11:24; 11:27-12:15; 12:18-35, 38-13:2; 13:4-6, 9-17, 19-23, 26-28, 30-55, 58-14:9; 14:11-16, 19-26, 28-30, 33-15:22; 15:24-17:5; 17:10-23, 25-18:2; 18:7-29, 31-20:17; 20:21-21:5; 21:7-12, 14-16, 19-42, 44-45; 22:2-14, 17-24, 27-28, 32-46; 23:2-9, 13-15, 19, 23-27, 31-35, 37-24:1; 24:6-15, 17-42, 45-25:6; 25:13-33, 40-26:29; 26:33-49, 53-57, 59-27:2; 27:4-17, 22-49, 54-56, 58-60, 64-28:2; 28:6-7, 9-20	1160	81.23%

Witness	Date	Language	Content	No. of Readings	Percent Complete
it-a	350	Latin	1:1-18, 21-23, 25-2:6; 2:9-18, 22-4:1; 4:3-4, 6-7, 10-13, 17-5:27; 5:29-6:26; 6:32-33; 7:2-5, 8-8:22; 8:25-9:5; 9:8-13, 15-29, 31-10:27; 10:30-31, 33-11:24; 11:27-12:13; 12:15, 18-35, 38-13:2; 13:4-6, 9-17, 19-23, 26-28, 30-14:9; 14:11-26, 28-15:22; 15:24-17:5; 17:10-23, 25-18:2; 18:7-29, 31-20:17; 20:21-21:5; 21:7-12, 14-42, 44-45; 22:2-14, 17-24, 27-28, 32-46; 23:2-15, 19, 23-27, 31-35, 37-24:1; 24:6-15, 17-42, 45-25:1; 25:13-33, 40-26:29; 26:33-49, 53-57, 59-27:2; 27:4-17, 22-49, 54-56, 58-60, 64-28:2; 28:6-7, 9-20	1167	81.72%
it-aur*	650	Latin	1:1-18, 21-23, 25-2:6; 2:9-18, 22-4:1; 4:3-4, 6-7, 10-13, 17-5:27; 5:29-38, 40-6:26; 6:32-33; 7:2-5, 8-8:22; 8:25-9:5; 9:8-13, 15-29, 31-10:27; 10:30-31, 33-11:24; 11:27-12:15; 12:18-35, 38-13:2; 13:4-6, 9-17, 19-23, 26-28, 30-55, 58-14:9; 14:11-26, 28-15:22; 15:24-17:5; 17:10-23, 25-18:2; 18:7-29, 31-20:17; 20:21-21:5; 21:7-12, 14-42, 44-45; 22:2-14, 17-24, 27-28, 32-46; 23:2-9, 13-15, 19, 23-27, 31-35, 37-24:1; 24:6-15, 17-42, 45-25:6; 25:13-33, 40-26:29; 26:33-49, 53-57, 59-27:2; 27:4-17, 22-49, 54-56, 58-60, 64-28:2; 28:6-7, 9-20	1171	82.00%
it-b*	450	Latin	1:16-18, 21-23, 25-2:6; 2:9-18, 22-4:1; 4:3-4, 6-7, 10-13, 17-5:27; 5:29-38, 40-6:26; 6:32-33; 7:2-5, 8-8:22; 8:25-9:5; 9:8-13, 15-29, 31-10:27; 10:30-31, 33-11:24; 11:27-12:13; 12:15, 18-35, 38-13:6; 13:9-17, 19-23, 26-28, 30-55, 58-14:9; 14:11-26, 28-15:11; 15:24-17:5; 17:10-23, 25-18:2; 18:7-29, 31-20:17; 20:21-21:5; 21:7-12, 14-42, 44-45; 22:2-14, 17-24, 27-28, 32-46; 23:2-9, 13-15, 31-35, 37-24:1; 24:6-15, 17-42, 45-25:6; 25:13-33, 40-26:29; 26:33-49, 53-57, 59-27:2; 27:4-17, 22-49, 54-56, 58-60, 64-28:2; 28:6-7, 9-20	1135	79.48%
it-b^c	450	Latin	1:16-18, 21-23, 25-2:6; 2:9-18, 22-4:1; 4:3-4, 6-7, 10-13, 17-5:27; 5:29-38, 40-6:26; 6:32-33; 7:2-5, 8-8:22; 8:25-9:5; 9:8-13, 15-29, 31-10:27; 10:30-31, 33-11:24; 11:27-12:13; 12:15, 18-35, 38-13:6; 13:9-17, 19-23, 26-28, 30-55, 58-14:9; 14:11-26, 28-15:11; 15:24-17:5; 17:10-23, 25-18:2; 18:7-29, 31-20:17; 20:21-21:5; 21:7-12, 14-42, 44-45; 22:2-14, 17-24, 27-28, 32-46; 23:2-9, 13-15, 31-35, 37-24:1; 24:6-15, 17-42, 45-25:6; 25:13-33, 40-26:29; 26:33-49, 53-57, 59-27:2; 27:4-17, 22-49, 54-56, 58-60, 64-28:2; 28:6-7, 9-20	1135	79.48%

Witness	Date	Language	Content	No. of Readings	Percent Complete
it-c	1200	Latin	1:1-18, 21-23, 25-2:6; 2:9-18, 22-4:1; 4:3-4, 6-7, 10-13, 17-5:27; 5:29-38, 40-6:26; 6:32-33; 7:2-5, 8-8:22; 8:25-9:5; 9:8-13, 15-29, 31-10:27; 10:30-31, 33-11:24; 11:27-12:15; 12:18-35, 38-13:2; 13:4-6, 9-17, 19-23, 26-28, 30-55, 58-14:9; 14:11-26, 28-15:22; 15:24-17:5; 17:10-23, 25-18:2; 18:7-29, 31-20:17; 20:21-21:5; 21:7-12, 14-42, 44-45; 22:2-14, 17-24, 27-28, 32-46; 23:2-9, 13-15, 19, 23-27, 31-35, 37-24:1; 24:6-15, 17-42, 45-25:6; 25:13-33, 40-26:29; 26:33-49, 53-57, 59-27:2; 27:4-17, 22-49, 54-56, 58-60, 64-28:2; 28:6-7, 9-20	1172	82.07%
it-d	450	Latin	1:16-18, 20-2:19; 3:9-6:7; 8:28-26:63; 27:4-28:20	1269	88.87%
it-e%	450	Latin	12:50-13:2; 13:4-6, 9-17, 19-23, 25-28, 30-55, 58-14:9; 14:11-26, 28-15:22; 15:24-17:5; 17:10-23, 25-18:2; 18:7-29, 31-20:17; 20:21-21:5; 21:7-12, 14-42, 44-45; 22:2-14, 17-24, 27-28, 32-46; 23:2-15, 19, 23-27, 31-35, 37-24:1; 24:6-15, 17-42, 45-48; 28:6-7, 9-20	564	39.50%
it-f*	550	Latin	1:1-8:15; 8:27-28:20	1421	99.51%
it-ff1	750	Latin	1:1-18, 21-23, 25-2:6; 2:9-18, 22-4:1; 4:3-4, 6-7, 10-13, 17-5:27; 5:29-38, 40-6:26; 6:32-33; 7:2-5, 8-8:22; 8:25-9:5; 9:8-13, 15-29, 31-10:27; 10:30-31, 33-11:24; 11:27-12:13; 12:15, 18-35, 38-13:6; 13:9-17, 19-23, 26-28, 30-55, 58-14:9; 14:11-15:22; 15:24-17:5; 17:10-23, 25-18:2; 18:7-29, 31-20:17; 20:21-21:5; 21:7-12, 14-42, 44-45; 22:2-14, 17-24, 27-28, 32-46; 23:2-9, 13-15, 19, 23-27, 31-35, 37-24:1; 24:6-15, 17-42, 45-25:6; 25:13-33, 40-26:29; 26:33-49, 53-57, 59-27:2; 27:4-17, 22-49, 54-56, 58-60, 64-28:2; 28:6-7, 9-20	1176	82.35%
it-ff2*%	450	Latin	11:17-24, 27-12:13; 12:15, 18-35, 38-13:2; 13:4-6, 9-17, 19-23, 26-28, 30-55, 58-14:9; 14:11-26, 28-15:22; 15:24-17:5; 17:10-23, 25-18:2; 18:7-29, 31-20:17; 20:21-21:5; 21:7-12, 14-42, 44-45; 22:2-14, 17-24, 27-28, 32-46; 23:2-9, 13-15, 19, 23-27, 31-35, 37-24:1; 24:6-15, 17-42, 45-25:6; 25:13-33, 40-26:29; 26:33-49, 53-57, 59-27:2; 27:4-17, 22-49, 54-56, 58-60, 64-28:2; 28:6-7, 9-20	813	56.93%
it-g*	800	Latin	1:1-28:20	1428	100.00%
it-g1*	800	Latin	1:1-18, 21-23, 25-2:6; 2:9-18, 22-4:1; 4:3-4, 6-7, 10-13, 17-5:27; 5:29-38, 40-6:26; 6:32-33; 7:2-5, 8-8:22; 8:25-9:5; 9:8-13, 15-29, 31-10:27; 10:30-31, 33-11:24; 11:27-12:13; 12:15, 18-35, 38-13:2; 13:4-6, 9-17, 19-23, 26-28, 30-55, 58-14:9; 14:11-26, 28-15:22; 15:24-17:5; 17:10-23, 25-18:2; 18:7-29, 31-20:17; 20:21-21:5; 21:7-12, 14-42, 44-45; 22:2-14, 17-24, 27-28, 32-46; 23:2-9, 13-15, 19, 23-35, 37-24:1; 24:6-15, 17-42, 45-25:6; 25:13-33, 40-26:29; 26:33-49, 53-57, 59-27:2; 27:4-17, 22-49, 54-56, 58-60, 64-28:2; 28:6-7, 9-20	1169	81.86%

Witness	Date	Language	Content	No. of Readings	Percent Complete
it-g1^c%	800	Latin	1:1-3, 7, 10-11, 18, 21-23, 25-2:6; 2:9-17; 3:3, 9-11, 15-4:1; 4:4, 6-7, 17-21, 24-5:4; 5:11-27, 29-33, 37-38, 40-42, 45-48; 6:2, 5, 7-12, 14-24, 26, 32; 7:2-4, 8-9, 11-14, 17, 19-8:2; 8:5-6, 8-9, 12-15, 22, 27-30, 32-9:1; 9:4, 9-11, 15-18, 20-22, 25, 28-29, 31, 34-10:2; 10:4-7, 10-27, 30-31, 33-11:8; 11:13, 16, 18, 20-21, 24, 27-12:2; 12:5-13, 15, 18-22, 29-35, 38-50; 13:2, 4-6, 13-17, 19, 23, 26-28, 30-32, 37-39, 42-43, 46-50, 52-54, 58-14:3; 14:6-9, 11-16, 19-25, 28, 35-36; 15:4-11, 14, 18-22, 24, 26-33; 16:1-7, 11-24, 27; 17:1-2, 4, 11-12, 15-17, 23, 25-18:2; 18:9-14, 16-18, 20, 24, 27-28, 31-34; 19:1-3, 6, 8-10, 13-14, 17-18, 21-26; 20:3, 5, 13-14, 21, 23-29, 32-21:5; 21:7-9, 14-16, 19-25, 27-29, 36, 39-42; 22:2-12, 14, 17, 21-24, 28, 32-37, 40-43, 45-46; 23:2, 6, 8-9, 13-15, 24-25, 27, 31-35, 37; 24:8-15, 17, 19-27, 29-31, 34-36, 41-42, 48; 25:3, 6, 13, 21, 23-24, 28-29, 32-33, 40, 42-26:4; 26:9-18, 21-22, 25-27, 29, 33-34, 36-42, 44-49, 53, 56-57, 63, 66-73; 27:1, 4-9, 11-17, 22, 24-28, 31-33, 35-40, 43-48, 54-56, 60, 65-28:1; 28:7, 10-15, 18-20	733	51.33%
it-h*	450	Latin	3:15-4:1; 4:3-4, 6-7, 10-13, 17-5:27; 5:29-6:26; 6:32-33; 7:2-5, 8-8:22; 8:25-9:5; 9:8-13, 15-29, 31-10:27; 10:30-31, 33-11:24; 11:27-12:13; 12:15, 18-35, 38-13:6; 13:9-17, 19-23, 26-28, 30-55, 58-14:9; 14:11-26, 28-33; 18:12-29, 31-20:17; 20:21-21:5; 21:7-12, 14-42, 44-45; 22:2-14, 17-24, 27-28, 32-46; 23:2-9, 13-15, 19, 23-27, 31-35, 37-24:1; 24:6-15, 17-42, 45-25:6; 25:13-33, 40-26:29; 26:33-49, 53-57, 59-27:2; 27:4-17, 22-49, 54-56, 58-60, 64-28:2; 28:6-7, 9-20	969	67.86%
it-h^c	450	Latin	3:15-4:1; 4:3-4, 6-7, 10-13, 17-5:27; 5:29-6:26; 6:32-33; 7:2-5, 8-8:22; 8:25-9:5; 9:8-13, 15-29, 31-10:27; 10:30-31, 33-11:24; 11:27-12:13; 12:15, 18-35, 38-13:6; 13:9-17, 19-23, 26-28, 30-55, 58-14:9; 14:11-26, 28-33; 18:12-29, 31-20:17; 20:21-21:5; 21:7-12, 14-42, 44-45; 22:2-14, 17-24, 27-28, 32-46; 23:2-9, 13-15, 19, 23-27, 31-35, 37-24:1; 24:6-15, 17-42, 45-25:6; 25:13-33, 40-26:29; 26:33-49, 53-57, 59-27:2; 27:4-17, 22-49, 54-56, 58-60, 64-28:2; 28:6-7, 9-20	969	67.86%
it-k*%	400	Latin	1:1-18, 21-23, 25-2:6; 2:9-18, 22-3:10; 4:1, 3-4, 6-7, 10-13, 17-5:27; 5:29-6:26; 6:32-33; 7:2-5, 8-8:22; 8:25-9:5; 9:8-29, 31-10:27; 10:30-31, 33-11:24; 11:27-12:13; 12:15, 18-35, 38-13:2; 13:4-6, 9-17, 19-23, 25-28, 30-14:9; 14:11-16; 15:22, 24-35	531	37.18%

Witness	Date	Language	Content	No. of Readings	Percent Complete
it-k^c%	400	Latin	1:1-3, 7, 10-18, 21-23, 25-2:6; 2:9-17; 3:1, 3, 9-10; 4:1, 3-4, 6-7, 10-12, 17-21, 24-5:27; 5:29-33, 37-38, 40-42, 45-48; 6:2-12, 14-26, 32; 7:2-4, 8-9, 11-14, 17, 19-8:2; 8:5-9, 12-15, 21-22, 27-30, 32-9:5; 9:9-11, 15-18, 20-22, 25, 28-29, 31, 34-10:7; 10:10-27, 30-31, 33-11:8; 11:13, 16-18, 20-21, 24, 27-12:2; 12:5-13, 15, 18-24, 27-35, 38-13:2; 13:4-6, 13-17, 19-23, 26-28, 30-32, 36-39, 42-43, 46-54, 58-14:3; 14:6-9, 11-16; 15:22, 24-33	402	28.15%
it-mu%!	450	Latin	9:17, 31-10:5; 10:7-10	23	1.61%
it-n%!	450	Latin	17:1-5, 14-23, 25-18:2; 18:7-20; 19:20-20:17; 20:21-21:3; 26:56-57, 59-60, 69-73; 27:64-28:2; 28:9-20	164	11.48%
it-q*	600	Latin	1:1-18, 21-23, 25-2:6; 2:9-18, 22-3:14; 4:24-5:26; 6:5-26; 7:9-8:22; 8:25-9:13; 9:15-29, 31-10:27; 10:30-31, 33-11:24; 11:27-12:15; 12:18-35, 38-13:2; 13:4-6, 9-17, 19-23, 25-28, 30-55, 58-14:9; 14:11-15:22; 15:24-17:7; 17:10-23, 25-18:2; 18:7-29, 31-20:17; 20:21-21:5; 21:7-12, 14-42, 44-45; 22:2-14, 17-24, 27-28, 32-46; 23:2-10, 31-35, 37-24:1; 24:6-15, 17-42, 45-25:6; 25:13-33, 40-26:29; 26:33-49, 53-57, 59-27:2; 27:4-17, 22-49, 54-56, 58-60, 64-28:2; 28:6-7, 9-20	1106	77.45%
it-q^c	600	Latin	1:1-18, 21-23, 25-2:6; 2:9-18, 22-3:14; 4:24-5:26; 6:5-26; 7:9-8:22; 8:25-9:13; 9:15-29, 31-10:27; 10:30-31, 33-11:24; 11:27-12:15; 12:18-35, 38-13:2; 13:4-6, 9-17, 19-23, 25-28, 30-55, 58-14:9; 14:11-15:22; 15:24-17:7; 17:10-23, 25-18:2; 18:7-29, 31-20:17; 20:21-21:5; 21:7-12, 14-42, 44-45; 22:2-14, 17-24, 27-28, 32-46; 23:2-10, 31-35, 37-24:1; 24:6-15, 17-42, 45-25:6; 25:13-33, 40-26:29; 26:33-49, 53-57, 59-27:2; 27:4-17, 22-49, 54-56, 58-60, 64-28:2; 28:6-7, 9-20	1106	77.45%
it-r1%	650	Latin	15:17-22, 24-30; 16:14-17:5; 17:10-23, 25-18:2; 18:7-29, 31-20:17; 20:21-21:3; 21:22-42, 44-45; 22:2-14, 17-24, 27-46; 23:2-15, 19, 23-27, 31-35, 37-24:1; 24:6-15, 17-42, 45-25:6; 25:13-33, 40-26:29; 26:33-49, 53-57, 59-27:2; 27:4-17, 22-49, 54-56, 58-60, 64-28:2; 28:6-7, 9-15	548	38.38%

Witness	Date	Language	Content	No. of Readings	Percent Complete
arm%	450	Armenian	1:1-3, 7, 10-11, 18, 21-23, 25-2:6; 2:9-17; 3:3, 9-11, 15-4:1; 4:4, 6-7, 17-21, 24-5:4; 5:11-27, 29-33, 37-38, 40-42, 45-48; 6:2, 5, 7-12, 14-24, 26, 32; 7:2-4, 8-9, 11-14, 17, 19-8:2; 8:5-6, 8-9, 12-15, 22, 27-30, 32-9:1; 9:4, 9-11, 15-18, 20-22, 25, 28-29, 31, 34-10:2; 10:4-7, 10-27, 30-31, 33-11:8; 11:13, 16, 18, 20-21, 24, 27-12:2; 12:5-13, 15, 18-22, 29-35, 38-50; 13:2, 4-6, 13-17, 19, 23, 26-28, 30-32, 37-39, 42-43, 45-50, 52-54, 58-14:3; 14:6-9, 11-16, 19-25, 28, 35-36; 15:4-11, 14, 18-22, 24, 26-33; 16:1-7, 11-24, 27; 17:1-2, 4, 11-12, 15-17, 23, 25-18:2; 18:9-14, 16-18, 20, 24, 27-28, 31-34; 19:1-3, 6, 8-10, 13-14, 17-18, 21-26; 20:3, 5, 13-14, 21, 23-29, 32-21:5; 21:7-9, 14-16, 19-25, 27-29, 36, 39-42; 22:2-12, 14, 17, 21-24, 28, 32-37, 40-43, 45-46; 23:2, 6, 8-9, 13-15, 24-25, 27, 31-35, 37; 24:8-15, 17, 19-27, 29-31, 34-36, 41-42, 48; 25:3, 6, 13, 21, 23-24, 28-29, 32-33, 40, 42-26:4; 26:9-18, 21-22, 25-27, 29, 33-34, 36-42, 44-49, 53, 56-57, 63, 66-73; 27:1, 4-9, 11-17, 22, 24-28, 31-33, 35-40, 43-48, 54-56, 60, 64-28:1; 28:7, 10-15, 18-20	736	51.54%
geo^b%	625	Gerogian	1:1-3, 7, 10-11, 18, 21-23, 25-2:6; 2:9-17; 3:3, 9-11, 15-4:1; 4:4, 6-7, 17-21, 24-5:4; 5:11-27, 29-33, 37-38, 40-42, 45-48; 6:2, 5, 7-12, 14-24, 26, 32; 7:2-4, 8-9, 11-14, 17, 19-8:2; 8:5-6, 8-9, 12-15, 22, 27-30, 32-9:1; 9:4, 9-11, 15-18, 20-22, 25, 28-29, 31, 34-10:2; 10:4-7, 10-27, 30-31, 33-11:8; 11:13, 16, 18, 20-21, 24, 27-12:2; 12:5-13, 15, 18-22, 29-35, 38-50; 13:2, 4-6, 13-17, 19, 23, 26-28, 30-32, 37-39, 42-43, 45-50, 52-54, 58-14:3; 14:6-9, 11-16, 19-25, 28, 35-36; 15:4-11, 14, 18-22, 24, 26-33; 16:1-7, 11-24, 27; 17:1-2, 4, 11-12, 15-17, 23, 25-18:2; 18:9-14, 16-18, 20, 24, 27-28, 31-34; 19:1-3, 6, 8-10, 13-14, 17-18, 21-26; 20:3, 5, 13-14, 21, 23-29, 32-21:5; 21:7-9, 14-16, 19-25, 27-29, 36, 39-42; 22:2-12, 14, 17, 21-24, 28, 32-37, 40-43, 45-46; 23:2, 6, 8-9, 13-15, 24-25, 27, 31-35, 37; 24:8-15, 17, 19-27, 29-31, 34-36, 41-42, 48; 25:3, 6, 13, 21, 23-24, 28-29, 32-33, 40, 42-26:4; 26:9-18, 21-22, 25-27, 29, 33-34, 36-42, 44-49, 53, 56-57, 63, 66-73; 27:1, 4-9, 11-17, 22, 24-28, 31-33, 35-40, 43-48, 54-56, 60, 64-28:1; 28:7, 10-15, 18-20	736	51.54%

Witness	Date	Language	Content	No. of Readings	Percent Complete
ac*	250	Akhmimic	1:1-7, 10-18, 20-23, 25-2:6; 2:9-18, 23; 3:2-3, 9-11, 15-4:1; 4:4, 6-7, 13, 17-21, 24-5:27; 5:29-33, 37-38, 40-42, 45-48; 6:2-12, 14-24, 26, 32; 7:2-4, 8-14, 16-17, 19-8:2; 8:5-6, 8-15, 22, 27-9:1; 9:4, 8-11, 15-18, 20-25, 28-29, 31-10:7; 10:10-27, 30-31, 33-11:8; 11:10-18, 20-24, 27-12:13; 12:15, 18-24, 29-35, 38-50; 13:2, 4-6, 9, 13-19, 23-24, 26-28, 30-32, 35-39, 42-54, 57-14:3; 14:6-9, 11-16, 19-25, 28, 35-15:1; 15:4-11, 14, 16, 18-22, 24, 26-33; 16:1-7, 11-27; 17:1-2, 4, 11-12, 15-20, 23, 25-18:2; 18:8-14, 16-18, 20, 24-28, 31-19:6; 19:8-14, 17-26; 20:3, 5-6, 13-15, 21, 23-29, 32-21:5; 21:7-9, 12, 14-16, 19-25, 27-29, 36, 39-42, 44, 46-22:14; 22:17, 21-24, 28, 32-37, 40-43, 45-46; 23:2-4, 6-21, 24-27, 31-35, 37; 24:6, 8-15, 17-27, 29-31, 34-37, 39, 41-42, 48; 25:3, 6, 13-17, 20-24, 28-29, 32-33, 40, 42-26:4; 26:8-18, 21-22, 25-27, 29, 33-34, 36-42, 44-49, 53, 56-57, 59-60, 63, 66-73; 27:1-17, 22, 24-28, 31-33, 35-40, 43-48, 54-56, 60, 64-28:1; 28:6-7, 9-15, 18-20	871	60.99%
ac^2	250	Akhmimic	1:1-7, 10-18, 20-23, 25-2:6; 2:9-18, 23; 3:2-3, 9-11, 15-4:1; 4:4, 6-7, 13, 17-21, 24-5:27; 5:29-33, 37-38, 40-42, 45-48; 6:2-12, 14-24, 26, 32; 7:2-4, 8-14, 16-17, 19-8:2; 8:5-6, 8-15, 22, 27-9:1; 9:4, 8-11, 15-18, 20-25, 28-29, 31-10:7; 10:10-27, 30-31, 33-11:8; 11:10-18, 20-24, 27-12:13; 12:15, 18-24, 29-35, 38-50; 13:2, 4-6, 9, 13-19, 23-24, 26-28, 30-32, 35-39, 42-54, 57-14:3; 14:6-9, 11-16, 19-25, 28, 35-15:1; 15:4-11, 14, 16, 18-22, 24, 26-33; 16:1-7, 11-27; 17:1-2, 4, 11-12, 15-20, 23, 25-18:2; 18:8-14, 16-18, 20, 24-28, 31-19:6; 19:8-14, 17-26; 20:3, 5-6, 13-15, 21, 23-29, 32-21:5; 21:7-9, 12, 14-16, 19-25, 27-29, 36, 39-42, 44, 46-22:14; 22:17, 21-24, 28, 32-37, 40-43, 45-46; 23:2-4, 6-21, 24-27, 31-35, 37; 24:6, 8-15, 17-27, 29-31, 34-37, 39, 41-42, 48; 25:3, 6, 13-17, 20-24, 28-29, 32-33, 40, 42-26:4; 26:8-18, 21-22, 25-27, 29, 33-34, 36-42, 44-49, 53, 56-57, 59-60, 63, 66-73; 27:1-17, 22, 24-28, 31-33, 35-40, 43-48, 54-56, 60, 64-28:1; 28:6-7, 9-15, 18-20	871	60.99%
bo^a	250	Boharic	1:1-7, 10-18, 20-23, 25-2:6; 2:9-18, 21, 23-4:1; 4:3-4, 6-7, 10-13, 17-5:27; 5:29-33, 37-6:26; 6:32-33; 7:2-4, 8-17, 19-8:22; 8:25-9:1; 9:4, 8-18, 20-26, 28-29, 31-10:27; 10:30-31, 33-11:8; 11:10-24, 27-12:13; 12:15, 18-35, 38-13:2; 13:4-6, 9-24, 26-28, 30-14:3; 14:6-9, 11-16, 19-32, 34-15:1; 15:4-11, 14-22, 24-35, 38-16:27; 17:1-2, 4, 10-12, 15-18:2; 18:7-20, 24-29, 31-19:6; 19:8-26, 29-20:7; 20:9-10, 13-17, 21-21:5; 21:7-16, 19-25, 27-29, 36, 39-42, 44-22:14; 22:17-24, 27-46; 23:2-27, 31-35, 37-38; 24:6, 8-15, 17-31, 34-39, 41-42, 48; 25:3, 6, 13-17, 20-33, 40-26:4; 26:8-22, 25-29, 33-42, 44-57, 59-60, 63-27:17; 27:22-28, 31-51, 54-56, 58-28:2; 28:6-7, 9-15, 18-20	1093	76.54%

Witness	Date	Language	Content	No. of Readings	Percent Complete
bo^b	250	Boharic	1:1-18, 20-23, 25-2:6; 2:9-18, 21, 23-4:1; 4:3-4, 6-7, 10-13, 17-5:27; 5:29-33, 37-42, 45-6:26; 6:32-33; 7:2-4, 8-17, 19-8:22; 8:25-9:1; 9:4, 8-18, 20-26, 28-29, 31-10:27; 10:30-31, 33-11:8; 11:10-24, 27-12:13; 12:15, 18-35, 38-13:2; 13:4-6, 9-24, 26-28, 30-14:3; 14:6-9, 11-16, 19-32, 34-15:1; 15:4-11, 14-22, 24-35, 38-16:27; 17:1-2, 4, 10-18:2; 18:7-20, 24-29, 31-19:26; 19:29-20:7; 20:9-10, 13-17, 21-21:5; 21:7-16, 19-25, 27-29, 36, 39-42, 44-22:14; 22:17-24, 27-46; 23:2-27, 31-35, 37-38; 24:6, 8-15, 17-31, 34-39, 41-42, 48; 25:3, 6, 13-17, 20-33, 40-26:4; 26:8-22, 25-29, 33-57, 59-60, 63-27:17; 27:22-28, 31-51, 54-56, 58-28:2; 28:6-7, 9-15, 18-20	1103	77.24%
bo^c	250	Boharic	1:1-7, 10-18, 20-23, 25-2:6; 2:9-18, 21, 23; 3:2-4:1; 4:3-4, 6-7, 13, 17-5:27; 5:29-33, 37-42, 45-6:12; 6:14-26, 32-33; 7:2-4, 8-17, 19-8:22; 8:25-9:1; 9:4, 8-12, 14-18, 20-25, 28-29, 31-10:27; 10:30-31, 33-11:8; 11:10-24, 27-12:13; 12:15, 18-24, 29-35, 38-50; 13:2, 4-6, 9-24, 26-28, 30-14:3; 14:6-9, 11-16, 19-25, 27-32, 34-15:1; 15:4-11, 14-22, 24-35, 38-16:27; 17:1-2, 4, 11-12, 15-18:2; 18:7-14, 16-18, 20, 24-29, 31-19:6; 19:8-26, 29-20:7; 20:10, 13-15, 17, 21, 23-21:5; 21:7-9, 12-16, 19-25, 27-29, 36, 39-42, 44-22:14; 22:17-24, 28-46; 23:2-27, 31-35, 37; 24:6, 8-15, 17-31, 34-39, 41-42, 48; 25:3, 6, 13-17, 20-29, 32-33, 40-26:4; 26:8-22, 25-27, 29, 33-42, 44-57, 59-60, 63-27:17; 27:22-28, 31-33, 35-40, 42-51, 54-56, 58-60, 64-28:2; 28:6-7, 9-15, 18-20	1032	72.27%
mae	250	Middle-Egyptian	1:1-18, 20-23, 25-2:6; 2:9-18, 23-4:1; 4:3-4, 6-7, 10-13, 17-5:27; 5:29-33, 37-6:26; 6:32-33; 7:2-4, 8-17, 19-8:22; 8:25-9:1; 9:4, 8-18, 20-26, 28-29, 31-10:27; 10:30-31, 33-11:8; 11:10-24, 27-12:13; 12:15, 18-35, 38-13:2; 13:4-6, 9-24, 26-28, 30-33, 35-14:3; 14:6-9, 11-16, 19-26, 28-32, 34-15:1; 15:4-11, 14-22, 24-35, 38-16:27; 17:1-2, 4-5, 10-12, 15-18:2; 18:7-20, 24-29, 31-19:26; 19:29-20:7; 20:9-10, 13-17, 21-21:5; 21:7-12, 14-16, 19-25, 27-29, 36, 39-42, 44-22:14; 22:17-24, 27-46; 23:2-27, 31-35, 37-38; 24:6-15, 17-31, 34-39, 41-42, 48-25:3; 25:6, 13-17, 20-33, 40-26:4; 26:8-22, 25-29, 33-49, 53-57, 59-60, 63-27:17; 27:22-28, 31-51, 54-56, 58-28:2; 28:6-7, 9-15, 18-20	1083	75.84%

Witness	Date	Language	Content	No. of Readings	Percent Complete
mf	250	Fayyumic	1:1-7, 10-18, 20-23, 25-2:6; 2:9-18, 23; 3:2-3, 9-11, 15-4:1; 4:4, 6-7, 13, 17-21, 24-5:27; 5:29-33, 37-38, 40-42, 45-48; 6:2-12, 14-24, 26, 32; 7:2-4, 8-14, 16-17, 19-8:2; 8:5-6, 8-15, 22, 27-9:1; 9:4, 8-11, 15-18, 20-25, 28-29, 31-10:7; 10:10-27, 30-31, 33-11:8; 11:10-18, 20-24, 27-12:13; 12:15, 18-24, 29-35, 38-50; 13:2, 4-6, 9, 13-19, 23-24, 26-28, 30-32, 35-39, 42-54, 57-14:3; 14:6-9, 11-16, 19-25, 28, 35-15:1; 15:4-11, 14, 16, 18-22, 24, 26-33; 16:1-7, 11-27; 17:1-2, 4, 11-12, 15-20, 23, 25-18:2; 18:8-14, 16-18, 20, 24-28, 31-19:6; 19:8-14, 17-26; 20:3, 5-6, 13-15, 21, 23-29, 32-21:5; 21:7-9, 12, 14-16, 19-25, 27-29, 36, 39-42, 44, 46-22:14; 22:17, 21-24, 28, 32-37, 40-43, 45-46; 23:2-4, 6-21, 24-27, 31-35, 37; 24:6, 8-15, 17-27, 29-31, 34-37, 39, 41-42, 48; 25:3, 6, 13-17, 20-24, 28-29, 32-33, 40, 42-26:4; 26:8-18, 21-22, 25-27, 29, 33-34, 36-42, 44-49, 53, 56-57, 59-60, 63, 66-73; 27:1-17, 22, 24-28, 31-33, 35-40, 43-48, 54-56, 60, 64-28:1; 28:6-7, 9-15, 18-20	871	60.99%
pbo	250	Proto-Boharic	1:1-7, 10-18, 20-23, 25-2:6; 2:9-18, 23; 3:2-3, 9-11, 15-4:1; 4:4, 6-7, 13, 17-21, 24-5:27; 5:29-33, 37-38, 40-42, 45-48; 6:2-12, 14-24, 26, 32; 7:2-4, 8-14, 16-17, 19-8:2; 8:5-6, 8-15, 22, 27-9:1; 9:4, 8-11, 15-18, 20-25, 28-29, 31-10:7; 10:10-27, 30-31, 33-11:8; 11:10-18, 20-24, 27-12:13; 12:15, 18-24, 29-35, 38-50; 13:2, 4-6, 9, 13-19, 23-24, 26-28, 30-32, 35-39, 42-54, 57-14:3; 14:6-9, 11-16, 19-25, 28, 35-15:1; 15:4-11, 14, 16, 18-22, 24, 26-33; 16:1-7, 11-27; 17:1-2, 4, 11-12, 15-20, 23, 25-18:2; 18:8-14, 16-18, 20, 24-28, 31-19:6; 19:8-14, 17-26; 20:3, 5-6, 13-15, 21, 23-29, 32-21:5; 21:7-9, 12, 14-16, 19-25, 27-29, 36, 39-42, 44, 46-22:14; 22:17, 21-24, 28, 32-37, 40-43, 45-46; 23:2-4, 6-21, 24-27, 31-35, 37; 24:6, 8-15, 17-27, 29-31, 34-37, 39, 41-42, 48; 25:3, 6, 13-17, 20-24, 28-29, 32-33, 40, 42-26:4; 26:8-18, 21-22, 25-27, 29, 33-34, 36-42, 44-49, 53, 56-57, 59-60, 63, 66-73; 27:1-17, 22, 24-28, 31-33, 35-40, 43-48, 54-56, 60, 64-28:1; 28:6-7, 9-15, 18-20	871	60.99%
sa^a	250	Sahidic	1:1-7, 10-18, 20-23, 25-2:6; 2:9-18, 21, 23-4:1; 4:4, 6-7, 10-13, 17-5:27; 5:29-33, 37-38, 40-48; 6:2-26, 32-33; 7:2-4, 8-17, 19-8:15; 8:21-22, 25-9:1; 9:4, 8-13, 15-18, 20-26, 28-29, 31-10:27; 10:30-31, 33-11:24; 11:27-12:13; 12:15, 18-35, 38-13:2; 13:4-6, 9-24, 26-28, 30-14:3; 14:6-9, 11-16, 19-30, 33-15:1; 15:4-11, 14-22, 24, 26-35, 38-16:27; 17:1-2, 4, 10-12, 15-18:2; 18:7-20, 24-29, 31-19:6; 19:8-26, 29-20:7; 20:9, 13-17, 21-21:5; 21:7-12, 14-16, 19-25, 27-29, 36, 39-42, 44-22:14; 22:17-24, 27-46; 23:2-27, 31-35, 37-38; 24:6-15, 17-31, 34-39, 41-42, 48; 25:3, 6, 13-17, 20-33, 40-26:4; 26:8-22, 25-29, 33-42, 44-57, 59-60, 63-27:17; 27:22-28, 31-51, 54-56, 58-28:2; 28:6-7, 9-15, 18-20	1073	75.14%

Witness	Date	Language	Content	No. of Readings	Percent Complete
sa^b	250	Sahidic	1:1-7, 10-18, 20-23, 25-2:6; 2:9-18, 21, 23-4:1; 4:4, 6-7, 10-13, 17-5:27; 5:29-33, 37-38, 40-48; 6:2-26, 32-33; 7:2-4, 8-17, 19-8:22; 8:25-9:1; 9:4, 8-18, 20-26, 28-29, 31-10:27; 10:30-31, 33-11:24; 11:27-12:13; 12:15, 18-35, 38-13:2; 13:4-6, 9-24, 26-28, 30-14:3; 14:6-9, 11-16, 19-15:1; 15:4-11, 14-22, 24, 26-35, 38-16:27; 17:1-2, 4, 10-12, 15-18:2; 18:7-20, 24-29, 31-19:6; 19:8-26, 29-20:7; 20:9, 13-17, 21-21:5; 21:7-12, 14-16, 19-25, 27-29, 36, 39-42, 44-22:14; 22:17-24, 27-46; 23:2-27, 31-35, 37-38; 24:6-15, 17-31, 34-39, 41-42, 48; 25:3, 6, 13-17, 20-33, 40-26:4; 26:8-22, 25-29, 33-57, 59-60, 63-27:17; 27:22-28, 31-51, 54-56, 58-28:2; 28:6-7, 9-15, 18-20	1090	76.33%
got%	350	Gothic	1:1-3, 7, 10-11, 18, 21-23, 25-2:6; 2:9-17; 3:3, 9-11, 15-4:1; 4:4, 6-7, 17-21, 24-5:4; 5:11-27, 29-33, 37-38, 40-42, 45-48; 6:2, 5, 7-12, 14-24, 26, 32; 7:2-4, 8-9, 11-14, 17, 19-8:2; 8:5-6, 8-9, 12-15, 22, 27-30, 32-9:1; 9:4, 9-11, 15-18, 20-22, 25, 28-29, 31, 34-10:2; 10:4-7, 10-27, 30-31, 33-11:8; 11:13, 16, 18, 20-21, 24, 27-12:2; 12:5-13, 15, 18-22, 29-35, 38-50; 13:2, 4-6, 13-17, 19, 23, 26-28, 30-32, 37-39, 42-43, 45-50, 52-54, 58-14:3; 14:6-9, 11-16, 19-25, 28, 35-36; 15:4-11, 14, 18-22, 24, 26-33; 16:1-7, 11-24, 27; 17:1-2, 4, 11-12, 15-17, 23, 25-18:2; 18:9-14, 16-18, 20, 24, 27-28, 31-34; 19:1-3, 6, 8-10, 13-14, 17-18, 21-26; 20:3, 5, 13-14, 21, 23-29, 32-21:5; 21:7-9, 14-16, 19-25, 27-29, 36, 39-42; 22:2-12, 14, 17, 21-24, 28, 32-37, 40-43, 45-46; 23:2, 6, 8-9, 13-15, 24-25, 27, 31-35, 37; 24:8-15, 17, 19-27, 29-31, 34-36, 41-42, 48; 25:3, 6, 13, 21, 23-24, 28-29, 32-33, 40, 42-26:4; 26:9-18, 21-22, 25-27, 29, 33-34, 36-42, 44-49, 53, 56-57, 63, 66-73; 27:1, 4-9, 11-17, 22, 24-28, 31-33, 35-40, 43-48, 54-56, 60, 65-28:1; 28:7, 10-15, 18-20	735	51.47%

Witness	Date	Language	Content	No. of Readings	Percent Complete
aeth%	500	Ethiopic	1:1-3, 7, 10-11, 18, 21-23, 25-2:6; 2:9-17; 3:3, 9-11, 15-4:1; 4:4, 6-7, 17-21, 24-5:4; 5:11-27, 29-33, 37-38, 40-42, 45-48; 6:2, 5, 7-12, 14-24, 26, 32; 7:2-4, 8-9, 11-14, 17, 19-8:2; 8:5-6, 8-9, 12-15, 22, 27-30, 32-9:1; 9:4, 9-11, 15-18, 20-22, 25, 28-29, 31, 34-10:2; 10:4-7, 10-27, 30-31, 33-11:8; 11:13, 16, 18, 20-21, 24, 27-12:2; 12:5-13, 15, 18-22, 29-35, 38-50; 13:2, 4-6, 13-17, 19, 23, 26-28, 30-32, 37-39, 42-43, 45-50, 52-54, 58-14:3; 14:6-9, 11-16, 19-25, 28, 35-36; 15:4-11, 14, 18-22, 24, 26-33; 16:1-7, 11-24, 27; 17:1-2, 4, 11-12, 15-17, 23, 25-18:2; 18:9-14, 16-18, 20, 24, 27-28, 31-34; 19:1-3, 6, 8-10, 13-14, 17-18, 21-26; 20:3, 5, 13-14, 21, 23-29, 32-21:5; 21:7-9, 14-16, 19-25, 27-29, 36, 39-42; 22:2-12, 14, 17, 21-24, 28, 32-37, 40-43, 45-46; 23:2, 6, 8-9, 13-15, 24-25, 27, 31-35, 37; 24:8-15, 17, 19-27, 29-31, 34-36, 41-42, 48; 25:3, 6, 13, 21, 23-24, 28-29, 32-33, 40, 42-26:4; 26:9-18, 21-22, 25-27, 29, 33-34, 36-42, 44-49, 53, 56-57, 63, 66-73; 27:1, 4-9, 11-17, 22, 24-28, 31-33, 35-40, 43-48, 54-56, 60, 65-28:1; 28:7, 10-15, 18-20	735	51.47%
slav%	850	Slavic	1:1-3, 7, 10-11, 18, 21-23, 25-2:6; 2:9-17; 3:3, 9-11, 15-4:1; 4:4, 6-7, 17-21, 24-5:4; 5:11-27, 29-33, 37-38, 40-42, 45-48; 6:2, 5, 7-12, 14-24, 26, 32; 7:2-4, 8-9, 11-14, 17, 19-8:2; 8:5-6, 8-9, 12-15, 22, 27-30, 32-9:1; 9:4, 9-11, 15-18, 20-22, 25, 28-29, 31, 34-10:2; 10:4-7, 10-27, 30-31, 33-11:8; 11:13, 16, 18, 20-21, 24, 27-12:2; 12:5-13, 15, 18-22, 29-35, 38-50; 13:2, 4-6, 13-17, 19, 23, 26-28, 30-32, 37-39, 42-43, 45-50, 52-54, 58-14:3; 14:6-9, 11-16, 19-25, 28, 35-36; 15:4-11, 14, 18-22, 24, 26-33; 16:1-7, 11-24, 27; 17:1-2, 4, 11-12, 15-17, 23, 25-18:2; 18:9-14, 16-18, 20, 24, 27-28, 31-34; 19:1-3, 6, 8-10, 13-14, 17-18, 21-26; 20:3, 5, 13-14, 21, 23-29, 32-21:5; 21:7-9, 14-16, 19-25, 27-29, 36, 39-42; 22:2-12, 14, 17, 21-24, 28, 32-37, 40-43, 45-46; 23:2, 6, 8-9, 13-15, 24-25, 27, 31-35, 37; 24:8-15, 17, 19-27, 29-31, 34-36, 41-42, 48; 25:3, 6, 13, 21, 23-24, 28-29, 32-33, 40, 42-26:4; 26:9-18, 21-22, 25-27, 29, 33-34, 36-42, 44-49, 53, 56-57, 63, 66-73; 27:1, 4-9, 11-17, 22, 24-28, 31-33, 35-40, 43-48, 54-56, 60, 65-28:1; 28:7, 10-15, 18-20	735	51.47%
sy^c%	300	Syriac-Curetoni	1:1-3, 6-7, 10-18, 21-23, 25-2:6; 2:9-18; 3:2-4:4; 4:6-7, 10-12, 17-5:27; 5:29-33, 37-6:33; 7:2-4, 8-8:9; 8:12-15, 21-22; 10:33-11:18; 11:20-24, 27-12:13; 12:15, 18-35, 38-50; 13:2, 4-6, 9-17, 19-23, 26-28, 30-33, 35-54, 58-14:3; 14:6-9, 11-25, 27-15:22; 15:24, 26-35, 38; 16:1-24, 27; 17:1-5, 10-20, 23, 25-18:2; 18:7-20, 24-29, 31-19:6; 19:8-26, 29-20:9; 20:13-17, 21-21:5; 21:7-12, 14-16, 19-42, 44-22:14; 22:17-24, 28-37, 40-43, 45-46; 23:2-15, 19, 23-25, 27, 31-34	742	51.96%

Witness	Date	Language	Content	No. of Readings	Percent Complete
sy^p	425	Syriac-Peshitta	1:1-7, 10-18, 21-23, 25-2:6; 2:9-18; 3:1-6, 9-4:1; 4:3-4, 6-7, 10-12, 17-5:27; 5:29-33, 37-38, 40-6:26; 6:32-33; 7:2-4, 8-8:15; 8:21-22, 25-9:4; 9:8-18, 20-29, 31-10:27; 10:30-31, 33-11:24; 11:27-12:13; 12:15, 18-35, 38-13:2; 13:4-6, 9-17, 19-23, 26-28, 30-33, 35-54, 58-14:3; 14:6-9, 11-25, 28-30, 33-15:22; 15:24, 26-35, 38; 16:1-24, 27; 17:1-5, 10-12, 15-20, 23, 25-18:2; 18:7-29, 31-19:26; 19:29-20:8; 20:13-17, 21-21:5; 21:7-12, 14-16, 19-42, 44-22:14; 22:17-24, 27-28, 32-37, 40-43, 45-46; 23:2-15, 19, 23-27, 31-35, 37-38; 24:6-15, 17-37, 39, 41-42, 45, 48-25:6; 25:13-17, 20-24, 28-33, 40-26:4; 26:8-22, 25-29, 33-42, 44-57, 59-60, 63-27:2; 27:4-17, 22-28, 31-51, 54-56, 58, 60, 64-28:2; 28:6-7, 9-15, 18-20	1081	75.70%
sy^ph%	507	Syriac-Philoxen	1:1-3, 7, 10-11, 18, 21-23, 25-2:6; 2:9-17; 3:2-6, 9-4:1; 4:4, 6-7, 17-21, 24-5:4; 5:11-27, 29-33, 37-38, 40-42, 45-48; 6:2, 5, 7-24, 26, 32-33; 7:2-4, 8-9, 11-14, 16-8:6; 8:8-9, 12-15, 21-22, 25-30, 32-9:4; 9:9-11, 15-18, 20-29, 31, 34-10:2; 10:4-7, 10-27, 30-31, 33-11:9; 11:13, 16-18, 20-21, 24, 27-12:13; 12:15, 18-22, 29-35, 38-50; 13:2, 4-6, 11-17, 19-23, 26-28, 30-32, 35, 37-39, 42-43, 45-50, 52-54, 58-14:3; 14:6-9, 11-16, 19-25, 28, 30, 35-36; 15:2-15, 18-22, 24, 26-35; 16:1-24, 27; 17:1-2, 4-5, 10-12, 15-17, 23, 25-18:2; 18:7, 9-18, 20, 24-28, 31-34; 19:1-6, 8-26, 29-20:5; 20:8, 13-14, 16-17, 21, 23-29, 32-21:5; 21:7-12, 14-16, 19-25, 27-29, 36, 39-42, 46-22:12; 22:14, 17, 21-24, 28, 32-37, 40-43, 45-46; 23:2, 5-6, 8-9, 13-15, 23-25, 27, 31-35, 37; 24:8-15, 17, 19-27, 29-31, 34-36, 41-42, 45, 48; 25:3, 6, 13, 17, 21, 23-24, 28-29, 32-33, 40-26:4; 26:8-18, 21-22, 25-29, 33-42, 44-49, 53, 56-57, 63, 66-27:1; 27:4-17, 22, 24-28, 31-33, 35-40, 42-49, 54-56, 60, 64-28:1; 28:7, 10-15, 18-20	839	58.75%
sy^h	616	Syriac-Harklien	1:1-3, 6-7, 10-18, 21-23, 25-2:6; 2:9-18; 3:1-4:4; 4:6-7, 12, 17-5:27; 5:29-38, 40-6:26; 6:32-7:4; 7:8-8:22; 8:25-9:4; 9:8-18, 20-29, 31-10:27; 10:30-31, 33-11:24; 11:27-12:15; 12:18-35, 38-13:2; 13:4-6, 9-17, 19-23, 26-28, 30-32, 34-55, 58-14:3; 14:6-9, 11-30, 33-15:22; 15:24, 26-35, 38-16:27; 17:1-7, 10-12, 15-20, 23-18:2; 18:7-29, 31-19:26; 19:29-20:10; 20:13-17, 21-21:5; 21:7-12, 14-16, 19-42, 44-22:14; 22:17-24, 27-28, 32-43, 45-46; 23:2-15, 19, 23-27, 31-35, 37-38; 24:6-15, 17-39, 41-42, 45, 48; 25:3-6, 13-17, 20-33, 40-26:22; 26:25-29, 33-57, 59-60, 63-27:2; 27:4-17, 22-28, 31-51, 54-56, 58, 60, 64-28:2; 28:6-7, 9-15, 18-20	1124	78.71%

Witness	Date	Language	Content	No. of Readings	Percent Complete
sy^s	500	Syriac-Sinaitic	1:1-3, 6-7, 10-18, 21-23, 25-2:6; 2:9-18; 3:1-4:1; 4:3-4, 6-7, 10-12, 17-5:27; 5:29-33, 37-48; 6:2-9; 8:5-15, 21-22, 25-9:4; 9:8-12, 15-18, 20-29, 31-10:27; 10:30-31, 33-11:18; 11:20-24, 27-12:13; 12:15, 18-25, 29-35, 38-13:6; 13:9-17, 19-23, 26-28, 30-33, 35-54, 58-14:3; 14:6-9, 11-25, 28-30, 33-15:22; 15:24, 26-35, 38; 16:1-14; 17:12-20, 23, 25-18:2; 18:7, 9-29, 31-19:6; 19:8-26, 29-20:8; 20:13-17, 21-24; 21:22-42, 44-22:14; 22:17-25, 28, 32-37, 40-43, 45-46; 23:2-15, 19, 23-27, 31-35, 37-38; 24:6-15, 17-31, 34-37, 39, 41-42, 45, 48-25:6; 25:13, 17, 21, 23-24, 28-29, 32-33, 40-26:4; 26:8-22, 25-29, 33-42, 44-57, 60, 63, 66-27:2; 27:4-17, 22, 24-28, 31-33, 35-49, 54-56, 60, 64-28:2; 28:6	888	62.18%
NA-27	1979	Greek	1:1-28:20	1428	100.00%
Acac%!	366	Greek	23:31	1	0.07%
Ad%!	300	Greek	7:18	1	0.07%
Ath%!	373	Greek	6:28	1	0.07%
Athen%!	180	Greek	5:44	1	0.07%
Bas%!	379	Greek	5:47; 6:21, 32	4	0.28%
Basil^cl%!	150	Greek	19:11	1	0.07%
Chr%!	407	Greek	3:9; 15:14; 17:26; 18:26; 21:29; 24:38	6	0.42%
Cl^a%!	215	Greek	5:25, 28, 36-37, 42-44; 6:33; 7:6, 13-14; 10:23, 32; 13:34-35; 15:8; 16:26; 19:11, 14, 21; 23:9, 25-27, 37-38; 25:27, 39	34	2.38%
Cl^b%!	215	Greek	5:25, 28, 36-37, 42-44; 6:33; 7:6, 13-14; 10:23, 32; 13:34-35; 15:8; 16:26; 19:11, 14, 21; 23:9, 25-27, 37-38; 25:27, 39-40	35	2.45%
Cl^hom%!	250	Greek	5:37	1	0.07%
Cyp^a%!	258	Latin	3:11; 5:13, 22, 44-45, 47; 6:10; 7:13-14, 21, 24; 10:25, 42; 13:45; 16:19; 19:20; 24:6, 30; 25:41; 27:4	25	1.75%
Cyr^a%!	444	Greek	5:22, 37, 39; 7:2; 8:3, 31, 34; 10:1; 13:40; 15:4, 6; 16:19, 26; 17:3; 19:20; 20:6-7; 21:13, 25; 24:14; 25:31; 26:23, 52	27	1.89%
Cyr^b%!	444	Greek	5:22, 37, 39; 7:2; 8:3, 31, 34; 10:1; 12:40; 13:40; 15:4, 6; 16:19, 26; 17:3; 19:20; 20:6-7; 21:13, 25; 24:14; 25:31; 26:23, 52, 63	29	2.03%
CyrJ%!	386	Greek	3:16; 25:29; 28:9	3	0.21%
Did^a%!	398	Greek	3:12; 5:4-9, 25; 6:14; 7:21, 24; 18:6-7; 23:2; 25:41; 26:53	12	0.84%
Did^b%!	398	Greek	3:12; 5:4-9, 25; 6:14; 7:21, 24; 8:12; 18:6-7; 23:2; 25:41; 26:53	13	0.91%
Didache%!	100	Greek	########	4	0.28%
Epiph^a%!	403	Greek	8:28; 10:16, 19; 13:37; 15:14; 20:23; 26:29	8	0.56%
Epiph^b%!	403	Greek	8:28; 10:16, 19; 13:37; 15:14; 20:23; 26:29	8	0.56%

Witness	Date	Language	Content	No. of Readings	Percent Complete
Eus^a%!	339	Greek	1:18-19, 22-23; 2:8, 21-23; 4:17-18, 23-24; 5:4, 27, 39, 44-45; 6:6, 33; 7:25, 28; 8:5, 8, 13, 25; 9:9; 10:8-10, 32; 11:18, 27; 12:4; 13:13-14, 28, 35; 14:22-27, 29; 15:6, 39; 16:2, 8, 19; 17:1; 18:10; 23:38; 24:14, 31; 25:31-33, 40-41; 26:16, 20, 22, 49, 55; 27:3, 10, 29, 35, 56; 28:2, 9	84	5.88%
Eus^b%!	339	Greek	1:18-19, 22-23; 2:8, 21-23; 4:17-18, 23-24; 5:4, 27, 39, 44-45; 6:6, 33; 7:25, 28-29; 8:5, 8, 13, 25; 9:9; 10:8-10, 32; 11:18, 27; 12:4; 13:13-14, 28, 35; 14:22-27, 29; 15:6, 39; 16:2, 8, 19; 17:1; 18:10; 23:38; 24:14, 31; 25:31-33, 40-41; 26:15-16, 20, 22, 49, 55; 27:3, 10, 29, 35, 56; 28:2, 9	86	6.02%
Eus^syr%!	339	Latin	21:44	1	0.07%
GrNy%!	394	Greek	25:40:00	1	0.07%
Hier^a%!	420	Latin	13:35; 21:29; 24:36	5	0.35%
Hier^b%!	420	Latin	5:22; 6:25; 11:19, 23; 13:35; 16:2; 21:29; 24:36	10	0.70%
Hil%!	367	Latin	8:6; 9:34	2	0.14%
Hipp%!	235	Greek	7:13	1	0.07%
Ir^a%!	150	Greek	1:18; 3:16-17; 11:27; 13:25; 24:21	9	0.63%
Irarm%!	400	Latin	4:10; 21:39; 26:28-29; 27:10	5	0.35%
Irlat^a%!	395	Latin	1:11, 18; 3:16; 4:10; 5:18, 22, 27-28, 33, 41, 44-45; 7:5; 8:12-13; 9:8; 10:30; 11:23-24; 12:18, 21; 13:30, 40, 52; 15:4, 6; 16:13, 21; 19:7; 21:16, 43; 22:7-13; 23:2-4, 26-27, 34, 36; 24:16-17, 28, 35-36, 45-46; 25:21, 23, 41; 26:28-29; 28:19	69	4.83%
Irlat^b%!	395	Latin	1:11, 18, 22; 3:16; 4:10; 5:18, 22, 27-28, 33, 41, 44-45; 7:5; 8:12-13; 9:8; 10:30; 11:23-24; 12:18, 21; 13:30, 40, 52; 15:4, 6; 16:13, 21; 19:7; 21:16, 43; 22:7-13; 23:2-4, 26-27, 34, 36; 24:16-17, 28, 35-36, 45-46; 25:21, 23, 41; 26:28-29; 28:19	70	4.90%
Ju%!	165	Greek	2:18; 5:37; 7:22; 11:15, 27; 16:26; 19:16-17	9	0.63%
Lcf%!	371	Latin	18:21; 21:39; 22:7, 12-13; 23:34	6	0.42%
Mar^Ir%!	150	Greek	11:25; 19:16-17; 20:22	5	0.35%
Mar^Ir-lat%!	150	Latin	11:27	1	0.07%
Or^a%!	254	Greek	1:18, 23; 3:6-7, 10; 4:10-12, 16; 5:4, 11, 22, 32, 37, 44; 6:4, 6, 8, 12-13, 25; 7:18, 22, 24, 28; 8:5; 9:1; 10:4-5, 23, 27, 32, 42-11:2; 12:17; 13:22-23, 35-36, 39, 44-45, 55-57; 15:6-8, 15, 26; 16:1-2, 12-13, 19-20, 26, 28-17:1; 17:20; 18:10, 14, 24, 26; 19:3-4, 11, 16-17, 28-29; 20:6, 8, 17, 19, 22-23, 33-21:1; 21:8, 13, 19, 32, 38, 44; 25:31; 26:26-27, 61; 27:2-3, 17, 52; 28:9, 15	105	7.35%

Witness	Date	Language	Content	No. of Readings	Percent Complete
Or^b%!	254	Greek	1:18, 23; 3:6-7, 10; 4:10-12, 16; 5:4, 11, 22, 32, 37, 44; 6:4, 6, 8, 12-13, 25; 7:13-14, 18, 22, 24, 28; 8:5; 9:1, 22; 10:4-5, 23, 27, 32, 42-11:2; 12:17; 13:22-23, 35-36, 39, 44-45, 55-57; 15:6-8, 15, 26; 16:1-2, 12-13, 19-20, 26, 28-17:1; 17:20; 18:1, 10, 14, 24, 26; 19:3-4, 11, 16-17, 28-29; 20:6, 8, 17, 19, 22-23, 33-21:1; 21:8, 13, 19, 32, 38, 44; 22:7; 25:31; 26:26-27, 61; 27:2-3, 17, 52; 28:9, 15	111	7.77%
Or^lat^a%!	254	Latin	4:4; 5:27, 39; 10:3; 13:44; 16:1, 28; 18:15; 27:16-17, 24	11	0.77%
Or^lat^b%!	254	Latin	4:4; 5:27, 39; 10:3; 13:44; 16:1, 28; 18:15; 27:16-17, 24	11	0.77%
Ptol%!	180	Greek	15:4, 6	2	0.14%
Tert^a%!	220	Latin	5:11, 28, 48; 6:10; 15:26	6	0.42%
Theoph%!	412	Greek	5:44	1	0.07%
Thret%!	466	Greek	10:23	1	0.07%

APPENDIX C

List of the References Associated with Each Place of Variation

This appendix contains a list of the references associated with each place of variation. The number to the left of the hyphen is the index number of the place of variation, and the numbers to the right constitute the reference. The reference indicates the chapter, verse, and ordered rank of the place of variation in that verse. For example, 8-1:7,4 indicates that the 8th place of variation occurs in chapter 1, verse 7, and is the 4th place of variation in that verse.

Reference at Each Place of Variation

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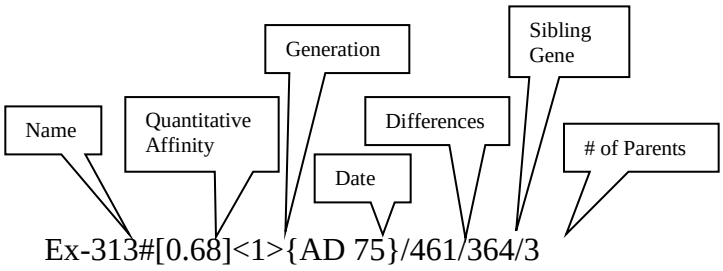
APPENDIX D

The Genealogical Stemma of

The Textual History of Matthew

This appendix contains the stemma of the genealogical history of the Book of Matthew. The stemma is displayed vertically rather than horizontally. That is, the autograph in the upper left corner with succeeding generations indented from the left progressively downward. Sibling daughter descendants are linked by vertical lines. For example, the first generation descendants of the autograph are Ex-326#,[1] Ex-324#,[2] and Ex-333#. Only the primary exemplars are displayed, so no mixture connections are shown. The diagram spills over onto succeeding pages, but the lower case letters at the page breaks show where the lines from one page connect to those of the next.

The format of the information on each line is as follows: (1) the name of the witness; (2) the genealogical affinity of the witness with its primary parent exemplar, enclosed in square brackets []; (3) generation from the autograph, enclosed in angular brackets <>; (4) date, enclosed in curly brackets {}; (5) the number of variants the witness differs from its primary parent, enclosed in slant marks //; (6) the number of readings in the sibling gene, also enclosed in slant marks //; and (7) the number of parents the witness has.



[1] The names of exemplars created by the software have the prefix “Ex-” followed by a number; extant witnesses have the names provided in NA-27 as modified for compatibility with the software (discussed in Chapter Four).

[2] The character # at the end of the name of a witness indicates that its place in the tree was determined numeric affinity without the benefit of genetic affinity. The character % indicates the witness had less that 60% of the text, and an additional ! indicates that it had less than 20%.

Appendix D: Genealogical Stemma of Matthew

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  |   |       |-D05*[0.98]<4>{AD 450}/21/3/3
  |   |       |-D05^1[1.00]<4>{AD 600}/2/2/2
  |   |       |-D05^c[1.00]<4>{AD 1150}/6/10/5
  |   |       |-P^21%[1.00]<4>{AD 400}/0/0/1
  |   |       |-Acac%[1.00]<4>{AD 366}/0/0/1
  |   |       |-Eus^syr%[1.00]<4>{AD 339}/0/0/1
  |   |       |-Hier^a%[0.50]<4>{AD 420}/1/0/1
  |   |       |-Irlat^a%[0.64]<4>{AD 395}/24/0/9
  |   |       |-Irlat^b%[0.63]<4>{AD 395}/25/0/9
  |   |       |-Lcf%[0.83]<4>{AD 371}/1/0/2
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  |       |-it-mu%[0.91]<3>{AD 450}/2/0/3
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|     |-Ex-291[0.81]<3>{AD 339}/270/16/8
|     |  |-L019^c[1.00]<4>{AD 850}/0/16/1
|     |  |-L019*[1.00]<4>{AD 750}/2/16/2
|     |  |-P^35%[1.00]<4>{AD 350}/0/0/1
|     |-Ex-277[0.81]<3>{AD 180}/274/18/5
|     |  |-01^c[1.00]<4>{AD 1150}/1/15/2
|     |  |-01*[0.95]<4>{AD 350}/68/15/5
|     |  |-01^1[0.95]<4>{AD 550}/65/8/7
|     |  |-01^2[0.95]<4>{AD 650}/68/7/10
|     |  |-P^1%[0.92]<4>{AD 256}/1/0/2
|     |  |-P^62%[1.00]<4>{AD 350}/0/0/1
|     |  |-P^77%[1.00]<4>{AD 200}/0/0/1
|     |  |-P^83%[1.00]<4>{AD 550}/0/0/1
|     |  |-P^86*%[1.00]<4>{AD 350}/0/0/1
|     |  |-P^105%[1.00]<4>{AD 500}/0/0/1
|     |  |-0231%[1.00]<4>{AD 350}/0/0/1
|     |  |-0277%[1.00]<4>{AD 700}/0/0/1
|     |  |-Bas%[1.00]<4>{AD 379}/0/0/1
|     |  |-CyrJ%[0.67]<4>{AD 386}/1/0/2
|     |  |-Hier^b%[0.60]<4>{AD 420}/4/0/4
|     |-Ex-297[0.93]<3>{AD 235}/103/8/6
|        |-it-g1^c[0.85]<4>{AD 800}/174/4/12
|        |-33*[0.85]<4>{AD 850}/214/8/13
|        |-P^45*%[0.73]<4>{AD 250}/17/0/4
|        |-0281%[0.81]<4>{AD 700}/77/0/11
|        |-bo^a%[0.81]<4>{AD 250}/208/0/7
a        b
```

```
a         b
|         |-Ex-287[0.85]<4>{AD 507}/221/8/13
|         |   |-892^c[0.97]<5>{AD 950}/39/11/9
|         |   |-892*[0.99]<5>{AD 850}/13/11/7
|         |   |-094%[0.92]<5>{AD 550}/1/0/2
|         |-Ex-271[0.79]<4>{AD 250}/297/6/8
|             |-131*[1.00]<5>{AD 1350}/0/8/1
|             |-1[1.00]<5>{AD 750}/0/8/1
|             |-209[1.00]<5>{AD 1350}/3/8/3
|             |-1582[1.00]<5>{AD 949}/0/8/1
|             |-P^19%[0.94]<5>{AD 400}/1/0/1
|             |-P^25%[0.65]<5>{AD 350}/6/0/3
|             |-058%[0.80]<5>{AD 350}/2/0/3
|             |-071%[1.00]<5>{AD 500}/0/0/1
|             |-0170%[1.00]<5>{AD 500}/0/0/1
|             |-0171%[0.81]<5>{AD 300}/3/0/3
|             |-0275%[1.00]<5>{AD 650}/0/0/1
|             |-Ath%[1.00]<5>{AD 373}/0/0/1
|             |-Or^lat^b%[0.45]<5>{AD 254}/6/0/4
|             |-Theoph%[1.00]<5>{AD 412}/0/0/1
|             |-Thret%[1.00]<5>{AD 466}/0/0/1
|-Ex-314#[0.78]<1>{AD 44}/318/364/3
    |-Ex-306[0.76]<2>{AD 235}/276/410/6
    |   |-vg^a[0.99]<3>{AD 500}/15/19/5
    |   |-vg^b[0.94]<3>{AD 500}/72/19/8
    |   |-P^101%[0.88]<3>{AD 250}/1/0/2
    |   |-0242%[0.88]<3>{AD 350}/3/0/2
    |   |-vg^cl[0.96]<3>{AD 1592}/51/0/7
    |   |-vg^s[0.98]<3>{AD 1590}/18/0/5
    |   |-vg^st[0.98]<3>{AD 1994}/18/0/6
    |   |-vg^ww[0.98]<3>{AD 1889}/21/0/6
    |   |-bo^b%[0.71]<3>{AD 250}/297/0/7
    |   |-mae%[0.76]<3>{AD 250}/250/0/8
    |   |-sy^c%[0.71]<3>{AD 300}/211/0/8
    |-Ex-311[1.00]<2>{AD 45}/0/410/1
        |-Ex-300[0.98]<3>{AD 70}/33/86/8
        |   |-Ex-298[0.97]<4>{AD 750}/37/2/12
        |   |   |-Ex-281[0.96]<5>{AD 800}/51/3/16
        |   |   |   |-K^c[1.00]<6>{AD 950}/0/2/1
        |   |   |   |-K*[1.00]<6>{AD 850}/1/2/2
        |   |   |-Ex-282[0.95]<5>{AD 800}/78/4/16
        |   |       |-565^c[1.00]<6>{AD 950}/0/4/1
        |   |       |-565*[1.00]<6>{AD 850}/1/4/2
        |   |-Ex-286[0.90]<4>{AD 75}/148/7/15
        |       |-Ex-276[0.93]<5>{AD 403}/103/1/16
        |       |   |-700^c[0.99]<6>{AD 1150}/9/8/7
        |       |   |-700*[0.99]<6>{AD 1050}/9/8/6
        |       |   |-0237%[0.80]<6>{AD 550}/1/0/2
        |       |   |-Chr%[0.50]<6>{AD 407}/3/0/3
        |       |-Ex-285[0.89]<5>{AD 80}/155/2/7
        |           |-P^53*%[0.79]<6>{AD 250}/4/0/4
        |           |-P^53^c%[0.84]<6>{AD 350}/3/0/3
        |           |-Ex-284[0.86]<6>{AD 100}/190/11/6
        |           |   |-038^c[1.00]<7>{AD 950}/2/30/3
        |           |   |-038*[1.00]<7>{AD 850}/1/30/2
      a         b  c
```

```
a         b  c
|         |  |-P^37*%[0.59]<7>{AD 300}/17/0/3
|         |  |-P^37^c%[0.61]<7>{AD 400}/16/0/6
|         |  |-0204%[0.83]<7>{AD 650}/1/0/2
|         |  |-Cl^hom%[1.00]<7>{AD 250}/0/0/1
|         |  |-Eus^a%[0.50]<7>{AD 339}/36/0/12
|         |  |-Eus^b%[0.47]<7>{AD 339}/39/0/11
|         |  |-Ir^a%[0.25]<7>{AD 150}/3/0/3
|         |  |-Irarm%[0.75]<7>{AD 400}/1/0/2
|         |-Ex-274[0.89]<6>{AD 165}/161/11/6
|            |-543[1.00]<7>{AD 1150}/0/6/1
|            |-13[1.00]<7>{AD 1250}/5/6/4
|            |-69[1.00]<7>{AD 1450}/1/6/2
|            |-346[1.00]<7>{AD 1150}/1/6/2
|            |-788[1.00]<7>{AD 1050}/0/6/1
|            |-826[1.00]<7>{AD 1150}/0/6/1
|            |-828[1.00]<7>{AD 1150}/0/6/1
|            |-983[1.00]<7>{AD 1150}/0/6/1
|            |-P^70%[0.92]<7>{AD 250}/1/0/1
|            |-P^96%[1.00]<7>{AD 550}/0/0/1
|            |-P^110%[0.91]<7>{AD 350}/1/0/1
|            |-Did^a%[0.69]<7>{AD 398}/4/0/4
|            |-Did^b%[0.62]<7>{AD 398}/5/0/4
|            |-Ptol%[1.00]<7>{AD 180}/0/0/1
|-Ex-310[0.98]<3>{AD 50}/31/86/8
   |-Ex-289[0.94]<4>{AD 850}/90/123/14
   |  |-l^844*[1.00]<5>{AD 861}/1/7/2
   |  |-l^844^c[1.00]<5>{AD 861}/2/7/2
   |  |-Ex-280[0.92]<5>{AD 950}/113/5/20
   |     |-l^2211*[1.00]<6>{AD 995}/1/1/2
   |     |-l^2211^c[1.00]<6>{AD 995}/1/1/2
   |-Ex-309[0.97]<4>{AD 55}/40/123/11
      |-sy^p%[0.82]<5>{AD 425}/199/0/15
      |-sy^h%[0.91]<5>{AD 616}/98/0/14
      |-Ex-299[0.97]<5>{AD 75}/36/57/12
      |  |-A*%[0.85]<6>{AD 450}/38/0/13
      |  |-A^c%[0.87]<6>{AD 550}/33/0/13
      |  |-0102%[0.94]<6>{AD 650}/8/0/4
      |  |-0106*%[0.95]<6>{AD 650}/6/0/6
      |  |-0106^c%[0.94]<6>{AD 650}/8/0/7
      |  |-Ex-283[0.94]<6>{AD 800}/92/4/19
      |  |  |-037^c[1.00]<7>{AD 950}/1/2/2
      |  |  |-037*[1.00]<7>{AD 850}/1/2/2
      |  |-Ex-288[0.88]<6>{AD 398}/174/6/15
      |  |  |-W^c[1.00]<7>{AD 900}/0/11/1
      |  |  |-W*[1.00]<7>{AD 400}/2/11/3
      |  |  |-0234%[1.00]<7>{AD 750}/0/0/1
      |  |-Ex-272[0.89]<6>{AD 250}/162/6/12
      |  |  |-579^c[1.00]<7>{AD 1350}/2/3/3
      |  |  |-579*[1.00]<7>{AD 1250}/0/3/1
      |  |  |-0107%[0.86]<7>{AD 650}/5/0/5
      |  |  |-0148%[0.95]<7>{AD 750}/1/0/2
      |  |  |-Or^lat^a%[0.55]<7>{AD 254}/5/0/6
      |  |-Ex-294[0.96]<6>{AD 80}/64/2/20
      |     |-pm^b[0.98]<7>{AD 850}/34/2/14
     a     b
```

```
a     b
|     |-Ex-279[0.94]<7>{AD 100}/92/2/18
|        |-0160%[0.92]<8>{AD 400}/1/0/2
|        |-Ex-278[0.88]<8>{AD 386}/172/2/20
|        |   |-1424^c[1.00]<9>{AD 1000}/3/9/3
|        |   |-1424*[1.00]<9>{AD 900}/3/9/3
|        |   |-GrNy%[1.00]<9>{AD 394}/0/0/1
|        |-Ex-275[0.94]<8>{AD 150}/71/1/5
|           |-1241*[1.00]<9>{AD 1150}/0/2/1
|           |-1241^c[1.00]<9>{AD 1150}/2/2/3
|           |-C*%[0.75]<9>{AD 450}/221/0/20
|           |-C^1%[0.75]<9>{AD 450}/221/0/24
|           |-C^2%[0.76]<9>{AD 550}/211/0/26
|           |-C^3%[0.77]<9>{AD 850}/205/0/30
|           |-N*%[0.81]<9>{AD 550}/63/0/18
|           |-N^c%[0.81]<9>{AD 650}/62/0/18
|           |-sy^s%[0.58]<9>{AD 500}/295/0/22
|           |-Epiph^a%[0.00]<9>{AD 403}/5/0/5
|           |-Epiph^b%[0.00]<9>{AD 403}/5/0/6
|           |-Hil%[0.00]<9>{AD 367}/1/0/2
|           |-Ju%[0.50]<9>{AD 165}/3/0/4
|-Ex-308[0.99]<5>{AD 60}/14/57/8
   |-P024*%[0.95]<6>{AD 550}/7/0/5
   |-Ex-290[0.99]<6>{AD 700}/15/19/10
   |   |-0233^c[1.00]<7>{AD 850}/0/1/1
   |   |-0233*[1.00]<7>{AD 750}/1/1/2
   |-Ex-305[0.99]<6>{AD 65}/9/19/5
      |-042[0.99]<7>{AD 550}/11/4/5
      |-Ex-293[1.00]<7>{AD 70}/0/4/1
         |-F*[1.00]<8>{AD 850}/4/2/3
         |-Ex-273[1.00]<8>{AD 75}/0/1/1
            |-118*[1.00]<9>{AD 1250}/2/2/2
            |-Ex-270[1.00]<9>{AD 80}/0/2/1
               |-1071[1.00]<10>{AD 1150}/0/1/1
               |-E07*[1.00]<10>{AD 750}/1/1/2
               |-G011[1.00]<10>{AD 850}/5/1/4
               |-H013*[1.00]<10>{AD 850}/2/1/3
               |-M*[1.00]<10>{AD 850}/6/1/4
               |-O[1.00]<10>{AD 550}/1/1/2
               |-S[1.00]<10>{AD 949}/4/1/4
               |-U[1.00]<10>{AD 850}/2/1/3
               |-V[1.00]<10>{AD 850}/1/1/2
               |-X[1.00]<10>{AD 950}/4/1/3
               |-Y[1.00]<10>{AD 850}/1/1/2
               |-036*[0.95]<10>{AD 950}/69/1/20
               |-043[0.99]<10>{AD 550}/20/1/6
               |-047[1.00]<10>{AD 750}/4/1/3
               |-0133[1.00]<10>{AD 850}/1/1/2
               |-0250[0.99]<10>{AD 750}/20/1/9
               |-4[1.00]<10>{AD 1250}/1/1/1
               |-17[1.00]<10>{AD 1450}/1/1/2
               |-21[1.00]<10>{AD 1150}/1/1/2
               |-22[1.00]<10>{AD 1150}/1/1/1
               |-28*[1.00]<10>{AD 1050}/4/1/1
               |-118^c[1.00]<10>{AD 1350}/1/1/2
               a
```

a
|-157[1.00]<10>{AD 1122}/2/1/3
|-225[1.00]<10>{AD 1192}/1/1/2
|-237[1.00]<10>{AD 1050}/1/1/2
|-238[1.00]<10>{AD 1100}/1/1/1
|-251[1.00]<10>{AD 1150}/1/1/2
|-348[1.00]<10>{AD 1022}/1/1/2
|-474[1.00]<10>{AD 1050}/1/1/2
|-482[1.00]<10>{AD 1285}/1/1/2
|-544[1.00]<10>{AD 1250}/3/1/3
|-713[1.00]<10>{AD 1150}/2/1/1
|-998[1.00]<10>{AD 1150}/1/1/2
|-1010[1.00]<10>{AD 1150}/3/1/3
|-1012[1.00]<10>{AD 1050}/1/1/2
|-1093[1.00]<10>{AD 1302}/1/1/2
|-1230[1.00]<10>{AD 1124}/0/1/1
|-1242[1.00]<10>{AD 1250}/0/1/1
|-1253[1.00]<10>{AD 1450}/1/1/1
|-1293[1.00]<10>{AD 1050}/1/1/2
|-1506[1.00]<10>{AD 1320}/1/1/2
|-1573[1.00]<10>{AD 1200}/1/1/2
|-2148[1.00]<10>{AD 1337}/0/1/1
|-2542[1.00]<10>{AD 1250}/1/1/2
|-pm^a[1.00]<10>{AD 850}/0/1/1
|-pm^c[1.00]<10>{AD 850}/1/1/2
|-P^86c%[1.00]<10>{AD 850}/0/0/1
|-064%[1.00]<10>{AD 550}/0/0/1
|-074%[1.00]<10>{AD 550}/0/0/1
|-078*%[0.93]<10>{AD 550}/3/0/4
|-078^c%[0.95]<10>{AD 550}/2/0/3
|-087%[1.00]<10>{AD 550}/0/0/1
|-090%[0.97]<10>{AD 550}/1/0/1
|-0136%[1.00]<10>{AD 850}/0/0/1
|-0161%[0.91]<10>{AD 750}/3/0/4
|-0196%[1.00]<10>{AD 850}/0/0/1
|-0249*%[0.90]<10>{AD 950}/1/0/2
|-0249^c%[0.80]<10>{AD 950}/2/0/3
|-0271%[1.00]<10>{AD 850}/0/0/1
|-TR[0.94]<10>{AD 1892}/85/0/23
|-HF[0.97]<10>{AD 1982}/41/0/17
|-RP[0.97]<10>{AD 1995}/44/0/18
|-sy^ph%[0.94]<10>{AD 507}/50/0/14
|-Athen%[1.00]<10>{AD 180}/0/0/1
|-Basil^cl%[1.00]<10>{AD 150}/0/0/1
|-Didache%[0.50]<10>{AD 100}/2/0/2
|-Hipp%[0.00]<10>{AD 235}/1/0/2
|-Mar^Ir%[0.60]<10>{AD 150}/2/0/2
|-Mar^Ir-lat%[0.00]<10>{AD 150}/1/0/2

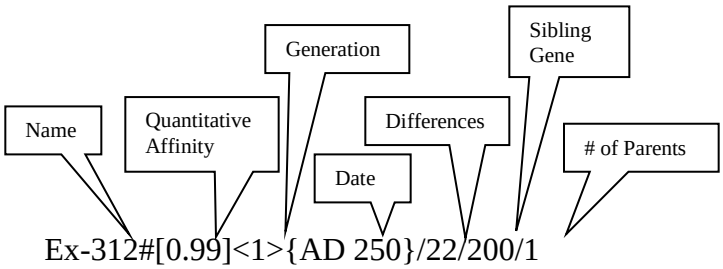
APPENDIX E

The Genealogical Stemma of

The Textual History of Ecclesiastes

This appendix contains the stemma of the genealogical history of the Greek translation of the Book of Ecclesiastes. The stemma is displayed vertically rather than horizontally. That is, the autograph in the upper left corner with succeeding generations indented from the left progressively downward. Sibling daughter descendants are linked by vertical lines. For example, the first generation descendants of the autograph are Ex-312#,[1] Ex-316#,[2] and Ex-315#. Only the primary exemplars are displayed, so no mixture connections are shown. The diagram spills over onto succeeding pages, but the lower case letters at the page breaks show where the lines from one page connect to those of the next. The head exemplar of each of Gentry's groups is identified at its right.

The format of the information on each line is as follows: (1) the name of the witness; (2) the genealogical affinity of the witness with its primary parent exemplar, enclosed in square brackets []; (3) generation from the autograph, enclosed in angular brackets <>; (4) date, enclosed in curly brackets {}; (5) the number of variants the witness differs from its primary parent, enclosed in slant marks //; (6) the number of readings in the sibling gene, also enclosed in slant marks //; and (7) the number of parents the witness has.



[1] The names of exemplars created by the software have the prefix "Ex-" followed by a number; extant witnesses have the names provided in NA-27 as modified for compatibility with the software (discussed in Chapter Four).

[2] The character # at the end of the name of a witness indicates that its place in the tree was determined numeric affinity without the benefit of genetic affinity. The character % indicates the witness had less that 60% of the text, and an additional ! indicates that it had less than 20%.

Appendix E: Genealogical Stemma of Ecclesiastes

```
Autograph[0.00]<0>{AD 0}/0/0/0
  |-Ex-312#[0.99]<1>{AD 250}/22/200/1
  |   |-818%[0.99]<2>{AD 275}/1/0/1
  |   |-Ex-207[0.95]<2>{AD 300}/108/6/1
  |   |   |-S^1[1.00]<3>{AD 550}/1/1/1
  |   |   |-S*[0.97]<3>{AD 350}/58/1/1
  |   |   |-S^c[0.98]<3>{AD 1150}/47/1/1
  |   |   |-S^2[1.00]<3>{AD 650}/1/1/1
  |   |-Ex-285[0.99]<2>{AD 850}/19/5/1
  |   |   |-Ex-284[0.99]<3>{AD 900}/31/1/1
  |   |   |   |-311[0.98]<4>{AD 1150}/50/5/1
  |   |   |   |-706[0.98]<4>{AD 914}/44/4/1
  |   |   |   |-Ex-211[0.95]<4>{AD 1186}/112/10/1
  |   |   |   |   |-795*[1.00]<5>{AD 1200}/0/6/1
  |   |   |   |   |-795^c[1.00]<5>{AD 1300}/1/6/1
  |   |   |   |-Ex-254[0.94]<4>{AD 1000}/133/11/1
  |   |   |       |-548^c[1.00]<5>{AD 1500}/0/23/1
  |   |   |       |-548*[0.99]<5>{AD 1400}/12/23/1
  |   |   |       |-Ex-240[0.96]<5>{AD 1023}/76/16/1
  |   |   |           |-296^tx[1.00]<6>{AD 1050}/3/4/1
  |   |   |           |-296^mg[1.00]<6>{AD 1050}/2/3/1
  |   |   |-Ex-277[0.98]<3>{AD 1150}/35/3/1
  |   |       |-248*[0.99]<4>{AD 1250}/27/1/1
  |   |       |-Ex-265[1.00]<4>{AD 1186}/3/1/1
  |   |           |-248^c[1.00]<5>{AD 1350}/8/1/1
  |   |           |-248^mg[0.99]<5>{AD 1250}/13/3/1
  |   |           |-Ex-237[0.93]<5>{AD 1200}/145/2/1
  |   |           |   |-547^mg[1.00]<6>{AD 1250}/2/1/1
  |   |           |   |-Ex-236[1.00]<6>{AD 1202}/3/1/1
  |   |           |       |-547*[1.00]<7>{AD 1250}/5/15/1
  |   |           |       |-547^c[1.00]<7>{AD 1350}/0/15/1
  |   |           |-Ex-257[0.99]<5>{AD 1286}/16/1/1
  |   |               |-161^c[1.00]<6>{AD 1450}/6/1/1
  |   |               |-161*[0.99]<6>{AD 1350}/11/1/1
  |   |               |-161^mg[0.99]<6>{AD 1350}/14/1/1
  |   |               |-Ex-217[0.94]<6>{AD 1300}/126/4/1
  |   |                   |-338*[1.00]<7>{AD 1350}/1/2/1
  |   |                   |-338^c[1.00]<7>{AD 1450}/1/2/1
  |   |-Ex-283[0.98]<2>{AD 1050}/40/8/1
  |       |-Ex-224[0.92]<3>{AD 1202}/173/5/1
  |       |   |-645^c[1.00]<4>{AD 1350}/2/43/1
  |       |   |-645*[0.99]<4>{AD 1250}/20/45/1
  |       |   |-645^mg[1.00]<4>{AD 1250}/1/43/1
  |       |-Ex-274[0.90]<3>{AD 1100}/214/15/1
  |       |   |-766^Ic[1.00]<4>{AD 1250}/2/47/1
  |       |   |-766^I[0.99]<4>{AD 1150}/19/47/1
  |       |   |-766^II[0.95]<4>{AD 1150}/97/54/1
  |       |-Ex-260[0.94]<3>{AD 1200}/131/2/1                    Ba
  |       |   |-602[0.99]<4>{AD 1450}/17/7/1
  |       |   |-Ex-238[0.99]<4>{AD 1202}/19/6/1
  |       |       |-613*[1.00]<5>{AD 1250}/4/21/1
  |       |       |-613^c[1.00]<5>{AD 1350}/1/21/1
   a      b      c
```

```
a     b
|     |-Ex-272[0.89]<3>{AD 1075}/229/12/1
|     |  |-728[0.97]<4>{AD 1100}/58/13/1
|     |  |-Ex-241[0.97]<4>{AD 1300}/61/11/1
|     |     |-336*[1.00]<5>{AD 1350}/4/74/1
|     |     |-336^c[1.00]<5>{AD 1350}/2/74/1
|     |-Ex-270[0.90]<3>{AD 1250}/221/12/1                    k
|     |  |-Ex-230[0.99]<4>{AD 1300}/16/17/1
|     |  |  |-631*[1.00]<5>{AD 1350}/3/3/1
|     |  |  |-631^c[1.00]<5>{AD 1450}/0/3/1
|     |  |-Ex-262[1.00]<4>{AD 1286}/8/16/1
|     |     |-46^s[1.00]<5>{AD 1400}/6/13/1
|     |     |-46*[1.00]<5>{AD 1300}/6/8/1
|     |     |-Ex-248[0.98]<5>{AD 1300}/41/5/1
|     |        |-337*[1.00]<6>{AD 1350}/5/2/1
|     |        |-337^c[1.00]<6>{AD 1450}/2/1/1
|     |-Ex-279[0.93]<3>{AD 1100}/149/11/1                    L
|     |  |-Ex-247[0.96]<4>{AD 1286}/96/26/1
|     |  |  |-261*[1.00]<5>{AD 1300}/7/7/1
|     |  |  |-261^c[1.00]<5>{AD 1400}/2/7/1
|     |  |  |-125%[0.94]<5>{AD 1350}/79/0/1
|     |  |-Ex-273[0.99]<4>{AD 1202}/17/21/1
|     |  |  |-545*[0.99]<5>{AD 1250}/11/11/1
|     |  |  |-545^c[0.99]<5>{AD 1350}/20/10/1
|     |  |  |-545^mg[1.00]<5>{AD 1250}/4/7/1
|     |  |-Ex-271[0.99]<4>{AD 1150}/20/18/1
|     |     |-Ex-210[0.99]<5>{AD 1186}/27/4/1
|     |     |  |-130*[1.00]<6>{AD 1200}/1/2/1
|     |     |  |-130^c[1.00]<6>{AD 1300}/0/2/1
|     |     |-Ex-216[0.99]<5>{AD 1300}/28/4/1
|     |        |-106^c[1.00]<6>{AD 1450}/0/7/1
|     |        |-106*[1.00]<6>{AD 1350}/5/7/1
|     |        |-106^mg[1.00]<6>{AD 1350}/2/7/1
|     |-Ex-282[0.97]<3>{AD 1186}/64/1/1
|        |-Ex-239[0.94]<4>{AD 1450}/131/6/1                  Oa
|        |  |-411^c[1.00]<5>{AD 1650}/1/3/1
|        |  |-Ex-215[1.00]<5>{AD 1500}/4/3/1
|        |     |-411*[1.00]<6>{AD 1550}/0/21/1
|        |     |-411^mg[1.00]<6>{AD 1650}/2/21/1
|        |-Ex-259[0.96]<4>{AD 1200}/84/1/1                   cIIa
|           |-Ex-227[0.99]<5>{AD 1500}/18/1/1
|           |  |-371*[1.00]<6>{AD 1550}/3/3/1
|           |  |-371^c[1.00]<6>{AD 1650}/0/3/1
|           |-Ex-258[1.00]<5>{AD 1202}/6/1/1
|              |-295[0.99]<6>{AD 1450}/10/1/1
|              |-561[0.99]<6>{AD 1250}/11/2/1
|              |-Ex-219[0.96]<6>{AD 1500}/79/2/1
|                 |-752*[1.00]<7>{AD 1550}/1/5/1
|                 |-752^c[1.00]<7>{AD 1650}/1/5/1
|-Ex-315#[0.98]<1>{AD 250}/36/200/1
|  |-Ex-263[0.95]<2>{AD 275}/101/28/1
|  |  |-Ex-225[0.98]<3>{AD 350}/40/6/1              Bb
|  |  |  |-68*[1.00]<4>{AD 1450}/3/8/1
|  |  |  |-68^c[1.00]<4>{AD 1550}/0/8/1
|  |  |  |-357^s%[0.86]<4>{AD 1400}/4/0/1
a  b  c  d
```

```
a  b  c  d
|  |  |  |-870%[0.90]<4>{AD 400}/5/0/1
|  |  |-Ex-221[0.99]<3>{AD 300}/24/9/1
|  |     |-B^1[1.00]<4>{AD 350}/1/1/1
|  |     |-B*[0.99]<4>{AD 350}/13/1/1
|  |     |-B^c[1.00]<4>{AD 600}/2/1/1
|  |     |-B^mg%[0.99]<4>{AD 350}/5/0/1
|  |-Ex-269[0.96]<2>{AD 750}/88/28/1
|  |  |-125^II[0.99]<3>{AD 1350}/22/4/1
|  |  |-Ex-228[0.99]<3>{AD 800}/17/3/1
|  |     |-542^tx[1.00]<4>{AD 850}/3/8/1
|  |     |-542^mg[1.00]<4>{AD 850}/0/8/1
|  |-Ex-305[0.96]<2>{AD 275}/80/25/1
|  |  |-998*[0.94]<3>{AD 300}/123/22/1
|  |  |-998^c[0.95]<3>{AD 400}/113/20/1
|  |  |-Sa^I[0.88]<3>{AD 950}/232/20/1
|  |  |-Ex-245[0.91]<3>{AD 1150}/186/10/1
|  |     |-543*[1.00]<4>{AD 1186}/6/3/1
|  |     |-543^c[1.00]<4>{AD 1286}/2/2/1
|  |-Ex-311[0.98]<2>{AD 275}/45/12/1
|     |-Dam[0.92]<3>{AD 700}/169/13/1
|     |-Did^lem[0.94]<3>{AD 350}/97/8/1
|     |-359%[0.95]<3>{AD 1300}/19/0/1
|     |-Ex-297[0.94]<3>{AD 914}/137/12/1
|     |  |-GregAg^lem[0.99]<4>{AD 950}/18/12/1
|     |  |-GregAg^com[0.99]<4>{AD 950}/22/16/1
|     |-Ex-310[0.97]<3>{AD 300}/54/8/1
|        |-698[0.92]<4>{AD 1000}/162/9/1
|        |-Did^com[0.90]<4>{AD 350}/151/15/1
|        |-Ex-306[0.91]<4>{AD 850}/199/24/1
|        |  |-OL^E[0.95]<5>{AD 900}/102/31/1                OLa
|        |  |-OL^Ecom[0.94]<5>{AD 900}/121/31/1
|        |  |-Ex-294[0.94]<5>{AD 914}/119/12/1              cIIb
|        |     |-260*[0.99]<6>{AD 1000}/15/4/1
|        |     |-Ex-286[1.00]<6>{AD 950}/6/6/1
|        |        |-260^c[1.00]<7>{AD 1100}/0/7/1
|        |        |-149[0.99]<7>{AD 1050}/17/17/1
|        |        |-260^mg[0.99]<7>{AD 1000}/11/8/1
|        |-Ex-302[0.93]<4>{AD 650}/157/18/1                 Oa
|           |-Ex-229[0.93]<5>{AD 700}/140/40/1
|           |  |-V*[1.00]<6>{AD 750}/3/5/1
|           |  |-V^c[1.00]<6>{AD 850}/1/5/1
|           |-Ex-293[0.96]<5>{AD 950}/91/28/1
|              |-475[0.95]<6>{AD 1300}/108/52/1
|              |-Ex-292[0.99]<6>{AD 1000}/21/44/1
|                 |-Ex-232[0.96]<7>{AD 1023}/91/41/1
|                 |  |-253*[1.00]<8>{AD 1050}/4/16/1
|                 |  |-253^c[1.00]<8>{AD 1150}/0/16/1
|                 |-Ex-204[0.95]<7>{AD 1023}/110/46/1
|                    |-637^c[1.00]<8>{AD 1150}/0/25/1
|                    |-637*[1.00]<8>{AD 1050}/2/25/1
|                    |-637^mg[1.00]<8>{AD 1050}/0/25/1
|-Ex-316#[0.94]<1>{AD 50}/132/200/1
   |-Ex-288[0.99]<2>{AD 1050}/13/131/1
   |  |-Ex-250[0.94]<3>{AD 1500}/124/6/1                    cIa
   a  b  c
```

```
a  b  c
|  |  |-609^c[1.00]<4>{AD 1650}/0/16/1
|  |  |-609*[1.00]<4>{AD 1550}/8/17/1
|  |-Ex-261[0.96]<3>{AD 1286}/80/8/1
|  |  |-797^c[1.00]<4>{AD 1400}/3/7/1
|  |  |-797*[1.00]<4>{AD 1300}/9/8/1
|  |-Ex-214[0.99]<3>{AD 1100}/22/2/1
|  |  |-157^c[1.00]<4>{AD 1250}/1/4/1
|  |  |-157*[1.00]<4>{AD 1150}/6/3/1
|  |  |-157^mg[1.00]<4>{AD 1150}/0/3/1
|  |-Ex-256[0.98]<3>{AD 1075}/42/3/1
|     |-571*[0.99]<4>{AD 1550}/28/4/1
|     |-Ex-251[0.99]<4>{AD 1500}/19/3/1
|     |  |-571^c[0.98]<5>{AD 1650}/36/5/1
|     |  |-571^mg[1.00]<5>{AD 1550}/5/2/1
|     |-Ex-246[0.99]<4>{AD 1100}/24/2/1
|        |-563*[1.00]<5>{AD 1150}/2/6/1
|        |-299[0.92]<5>{AD 1202}/114/5/1
|        |-563^c[1.00]<5>{AD 1250}/6/6/1
|-Ex-304[0.98]<2>{AD 650}/35/131/1
|  |-390[0.98]<3>{AD 1075}/47/4/1
|  |-Ex-206[0.99]<3>{AD 700}/18/1/1
|  |  |-522*[1.00]<4>{AD 750}/1/1/1
|  |  |-522^c[1.00]<4>{AD 850}/0/1/1
|  |-Ex-253[0.97]<3>{AD 1400}/60/5/1                    cIb
|  |  |-601^c[1.00]<4>{AD 1550}/0/3/1
|  |  |-601*[0.99]<4>{AD 1450}/13/3/1
|  |-Ex-205[0.99]<3>{AD 1300}/27/2/1
|  |  |-425^1[1.00]<4>{AD 1450}/1/5/1
|  |  |-425*[0.99]<4>{AD 1350}/17/1/1
|  |  |-425^c[1.00]<4>{AD 1450}/7/1/1
|  |  |-425^2[1.00]<4>{AD 1550}/1/4/1
|  |  |-425^mg[0.99]<4>{AD 1350}/12/4/1
|  |-Ex-264[0.99]<3>{AD 914}/16/10/1
|     |-540^c[1.00]<4>{AD 1350}/0/3/1
|     |-540*[0.99]<4>{AD 1250}/11/4/1
|     |-Ex-255[0.99]<4>{AD 950}/20/1/1
|        |-415[0.99]<5>{AD 1500}/12/3/1
|        |-732[1.00]<5>{AD 1000}/9/1/1
|        |-Ex-220[1.00]<5>{AD 1500}/3/2/1
|           |-504*[1.00]<6>{AD 1550}/3/2/1
|           |-504^c[1.00]<6>{AD 1650}/0/2/1
|           |-574^tx%[0.97]<6>{AD 1550}/18/0/1
|           |-574^mg%[0.97]<6>{AD 1550}/16/0/1
|-Ex-301[0.98]<2>{AD 850}/43/130/1
|  |-Ex-244[0.99]<3>{AD 1202}/27/4/1
|  |  |-560*[1.00]<4>{AD 1250}/5/4/1
|  |  |-560^c[1.00]<4>{AD 1350}/2/3/1
|  |-Ex-300[1.00]<3>{AD 900}/2/5/1
|     |-Ex-243[0.99]<4>{AD 1100}/22/8/1
|     |  |-147*[1.00]<5>{AD 1150}/4/2/1
|     |  |-147^c[1.00]<5>{AD 1250}/4/2/1
|     |-Ex-299[1.00]<4>{AD 914}/4/5/1
|        |-Ex-208[0.99]<5>{AD 950}/22/4/1
|        |  |-159^tx[1.00]<6>{AD 1000}/0/2/1
a        b  c
```

```
a         b  c
|         |  |-159^mg[1.00]<6>{AD 1000}/1/2/1
|         |-Ex-226[0.99]<5>{AD 1186}/28/2/1
|         |  |-503*[1.00]<6>{AD 1200}/3/1/1
|         |  |-503^c[1.00]<6>{AD 1300}/0/1/1
|         |-Ex-242[0.99]<5>{AD 950}/19/1/1
|            |-139^tx[1.00]<6>{AD 1000}/3/1/1
|            |-139^mg[1.00]<6>{AD 1000}/3/1/1
|            |-Ex-213[0.98]<6>{AD 1300}/51/3/1
|               |-798*[1.00]<7>{AD 1350}/0/2/1
|               |-798^c[1.00]<7>{AD 1450}/1/2/1
|-Ex-314[0.93]<2>{AD 100}/159/120/1
   |-Ex-313[0.98]<3>{AD 150}/36/12/1
   |  |-Ex-218[0.97]<4>{AD 300}/59/6/1
   |  |  |-GregNy^lem[1.00]<5>{AD 350}/0/4/1
   |  |  |-GregNy^com[1.00]<5>{AD 350}/2/4/1
   |  |-Ex-233[1.00]<4>{AD 200}/8/3/1
   |  |  |-Dion^lem[0.98]<5>{AD 250}/29/4/1
   |  |  |-298[0.98]<5>{AD 1150}/35/1/1
   |  |  |-Hi[0.82]<5>{AD 400}/398/19/1
   |  |  |-Chr[0.98]<5>{AD 400}/53/4/1
   |  |  |-Dion^com[0.98]<5>{AD 250}/31/4/1
   |  |  |-969%[0.98]<5>{AD 600}/2/0/1
   |  |-Ex-235[0.97]<4>{AD 1000}/70/10/1
   |     |-539*[1.00]<5>{AD 1050}/3/3/1
   |     |-Ex-234[1.00]<5>{AD 1023}/1/1/1
   |        |-539^c[1.00]<6>{AD 1150}/3/12/1
   |        |-539^com[1.00]<6>{AD 1050}/1/12/1
   |-Ex-249[0.97]<3>{AD 300}/72/9/1
   |  |-252^c[1.00]<4>{AD 1050}/3/5/1
   |  |-252*[0.99]<4>{AD 950}/11/6/1
   |  |-252^mg[1.00]<4>{AD 950}/6/5/1
   |  |-Ex-223[0.98]<4>{AD 350}/51/1/1
   |     |-549*[0.99]<5>{AD 1050}/26/3/1
   |     |-339[0.97]<5>{AD 1050}/69/4/1
   |     |-549^c[0.99]<5>{AD 1150}/27/3/1
   |     |-788[0.97]<5>{AD 950}/72/1/1
   |     |-155*%[0.92]<5>{AD 1050}/75/0/1
   |     |-155^c%[0.92]<5>{AD 1150}/62/0/1
   |     |-Ex-212[0.96]<5>{AD 400}/80/3/1
   |        |-C*[1.00]<6>{AD 450}/1/3/1
   |        |-C^c[1.00]<6>{AD 550}/0/3/1
   |        |-705%[0.83]<6>{AD 1300}/22/0/1
   |-Ex-308[0.97]<3>{AD 300}/54/14/1
   |  |-Aeth[0.95]<4>{AD 800}/108/9/1
   |  |-Syh^tx[0.93]<4>{AD 850}/146/18/1
   |  |-Syh^mg[0.93]<4>{AD 850}/151/19/1
   |  |-Ex-289[0.93]<4>{AD 914}/145/14/1
   |  |  |-443^c[1.00]<5>{AD 1050}/9/15/1
   |  |  |-443*[0.99]<5>{AD 950}/15/16/1
   |  |-Ex-307[0.95]<4>{AD 350}/116/21/1
   |     |-Sa^II[0.89]<5>{AD 600}/231/5/1
   |     |-Ex-209[1.00]<5>{AD 400}/0/22/1
   |        |-A*[1.00]<6>{AD 450}/1/4/1
   |        |-A^c[1.00]<6>{AD 550}/0/4/1
   a         b
```

```
a
 |-Ex-309[0.97]<3>{AD 550}/68/16/1
    |-Arm[0.90]<4>{AD 600}/219/19/1
    |-Ex-231[0.94]<4>{AD 1023}/127/12/1                    Bc
    |   |-534*[1.00]<5>{AD 1050}/1/4/1
    |   |-534^c[1.00]<5>{AD 1150}/3/4/1
    |-Ex-291[0.95]<4>{AD 900}/115/15/1                     d
    |   |-357[0.89]<5>{AD 1150}/239/39/1
    |   |-Ex-278[0.99]<5>{AD 1023}/18/18/1
    |   |   |-342[0.99]<6>{AD 1250}/16/11/1
    |   |   |-754[0.99]<6>{AD 1050}/19/19/1
    |   |-Ex-222[0.99]<5>{AD 914}/17/17/1
    |       |-254*[1.00]<6>{AD 950}/3/4/1
    |       |-254^c[1.00]<6>{AD 1050}/0/3/1
    |-Ex-303[0.93]<4>{AD 900}/149/12/1                     OL
        |-Ex-290[0.97]<5>{AD 1000}/56/5/1
        |   |-OL^M[1.00]<6>{AD 1023}/7/12/1
        |   |-OL^Mcom[0.99]<6>{AD 1023}/24/14/1
        |   |-Ex-281[0.97]<6>{AD 1186}/55/11/1
        |       |-Ex-252[0.97]<7>{AD 1550}/59/2/1
        |       |   |-OL^Q[1.00]<8>{AD 1600}/4/2/1
        |       |   |-OL^Qcom[0.99]<8>{AD 1600}/24/2/1
        |       |-Ex-275[1.00]<7>{AD 1200}/4/4/1
        |       |   |-OL^D[1.00]<8>{AD 1250}/10/1/1
        |       |   |-Ex-266[0.99]<8>{AD 1202}/16/1/1
        |       |       |-OL^I[0.99]<9>{AD 1350}/19/4/1
        |       |       |-OL^K[1.00]<9>{AD 1250}/8/2/1
        |       |-Ex-276[0.99]<7>{AD 1200}/26/3/1
        |           |-OL^Dcom[0.99]<8>{AD 1250}/12/3/1
        |           |-Ex-267[0.99]<8>{AD 1202}/15/2/1
        |               |-OL^Icom[0.99]<9>{AD 1350}/19/4/1
        |               |-OL^Kcom[1.00]<9>{AD 1250}/9/2/1
        |-Ex-298[0.99]<5>{AD 914}/30/2/1
            |-OL^N%[0.95]<6>{AD 1450}/18/0/1
            |-OL^Ncom%[0.94]<6>{AD 1450}/20/0/1
            |-Ex-296[0.97]<6>{AD 950}/57/7/1
            |   |-OL^B[1.00]<7>{AD 1000}/7/23/1
            |   |-OL^Bcom[0.99]<7>{AD 1000}/29/26/1
            |   |-Ex-268[0.97]<7>{AD 1300}/60/24/1
            |       |-OL^H[1.00]<8>{AD 1350}/5/2/1
            |       |-OL^Hcom[0.99]<8>{AD 1350}/25/1/1
            |-Ex-295[0.97]<6>{AD 950}/58/12/1
                |-OL^Z[1.00]<7>{AD 1000}/8/9/1
                |-OL^Zcom[0.99]<7>{AD 1000}/24/19/1
                |-Ex-287[0.97]<7>{AD 1075}/74/10/1
                    |-OL^G[1.00]<8>{AD 1100}/6/9/1
                    |-OL^Gcom[0.99]<8>{AD 1100}/23/8/1
                    |-Ex-280[0.94]<8>{AD 1186}/122/15/1
                        |-OL^A[1.00]<9>{AD 1200}/9/9/1
                        |-OL^Acom[0.99]<9>{AD 1200}/22/9/1
```

APPENDIX F

List of Autographic Readings

For Matthew

This appendix contains the list of autographic readings for the Greek text of the Gospel of Matthew as determined by the genealogical method described in this book. The list contains the index of each place of variation (variation unit), the associated reference, the Greek reading at that place, and the probability that the reading is autographic.

VarUnit	Reference	Autographic Reading	Prob.
1.1	1:3,1.1	⌜Ζαρα	1
2.2	1:5,1.2	Βοοζ	0.67
3.2	1:5,2.2	Βοοζ	0.67
4.2	1:6,1.2	ο βασιλευς	0.67
5.1	1:7,1.1	⌜’Αβια	0.67
6.1	1:7,2.1	⌜’Αβια	0.67
7.1	1:7,3.1	⌜’Ασαφ	1
8.1	1:7,4.1	⌜’Ασαφ	1
9.1	1:7,5.1	⊤ ομιτ	0.67
10.1	1:9,1.1	⌜’Αχαζ	0.67
11.1	1:9,2.1	⌜’Αχαζ	0.67
12.1	1:10,1.1	⌜Ναναασση	1
13.1	1:10,2.1	⌜Ναναασσης	1
14.1	1:10,3.1	⌜’Αμως	0.67
15.1	1:10,4.1	⌜’Αμως	0.67
16.1	1:11,1.1	⊤ ομιτ	1
17.1	1:16,1.1	‘τον ανδρα Ναριας ἐξ ης ἐγεννηθη ’Ιησους ο λεγομενος χριστος	0.67
18.1	1:18,1.1	‘’Ιησου Χριστου	1
19.2	1:18,2.2	γεννησις	1
20.2	1:19,1.2	παραδ—	1
21.2	1:20,1.2	Μαριαμ	1
22.1	1:21,1.1	⊤ ομιτ	1
23.1	1:21,2.1	‘λαον αὐτου	1
24.1	1:22,1.1	⊤ ομιτ	0.67
25.1	1:22,2.1	⊤ ομιτ	0.67
26.1	1:23,1.1	⌜καλεσουσιν	0.67
27.2	1:24,1.2	διεγ—	1
28.1	1:24,2.1	○ο	1
29.1	1:25,1.1	□οὐκ ἐγινωσκεν αὐτην εως ○ου	1
30.1	1:25,2.1	○ου	1
31.2	1:25,3.2	τον υ. αυτης τον πρωτοτοκον	0.67
32.1	2:3,1.1	○πασα	0.67
33.1	2:4,1.1	□παρ’ αὐτων	0.67
34.1	2:6,1.1	‘ γη ’Ιουδα	0.67
35.1	2:8,1.1	ˢἐξετασατε ἀκριβως⊤	0.67
36.1	2:9,1.1	⌜ἐσταθη	0.67
37.1	2:9,2.1	‘ου ην το παιδιον	0.67
38.1	2:11,1.1	⌜ειδον	1

VarUnit	Reference	Autographic Reading	Prob.
39.1	2:13,1.1	⊤ *ομιτ*	1
40.1	2:13,2.1	⸂*φαινεται κατ' οναρ*	1
41.1	2:15,1.1	⊤ *ομιτ*	1
42.1	2:16,1.1	⸂*διετους και κατωτερω*	1
43.1	2:17,1.1	⊤ *ομιτ*	0.67
44.2	2:18,1.2	*θρηνος και*	0.67
45.1	2:19,1.1	⸃*φαινεται κατ' οναρ*⊤	0.67
46.2	2:21,1.2	*ηλθεν*	1
47.2	2:22,1.2	*4 1 2 3*	1
48.1	2:23,1.1	⸢*Ναζαρετ*	0.67
49.2	3:1,1.2	○ *ομιτ*	0.67
50.1	3:2,1.1	○*και*	1
51.1	3:3,1.1	□*φωνη βοωντος ἐν τη ἐρημω*	1
52.1	3:3,2.1	□*εἰθειας ποιειτε τας τριβους αὐτου*	1
53.2	3:6,1.2	○ *ομιτ*	0.67
54.1	3:7,1.1	○*αὐτου*	1
55.1	3:9,1.1	□*ἐν εαυτοις*	1
56.1	3:10,1.1	⊤ *ομιτ*	0.67
57.1	3:10,2.1	○*καλον*	1
58.1	3:11,1.1	□*ὀπισω μου*	1
59.1	3:12,1.1	⸂*αὐτου εἰς την ἀποθηκην*	1
60.1	3:14,1.1	○*Ἰωαννης*	1
61.1	3:15,1.1	⸂*προς αὐτον*	1
62.1	3:15,2.1	⊤ *ομιτ*	1
63.1	3:16,1.1	⸂*εὐθυς ἀνεβη*	0.67
64.1	3:16,2.1	○*αὐτω*	1
65.1	3:16,3.1	○*το*	1
66.1	3:16,4.1	○*του*	1
67.1	3:16,5.1	⸂*καταβαινον ωσει*	0.67
68.1	3:16,6.1	○*και*	1
69.1	3:17,1.1	⊤ *ομιτ*	0.67
70.1	3:17,2.1	⸂*ουτος ἐστιν*	0.67
71.1	4:1,1.1	○*ο*	1
72.1	4:1,2.1	⸂*εἰς την ερημον υπο του πνευματος πειρασθηναι υπο του διαβολου*	1
73.1	4:2,1.1	⸂*και νυκτας τεσσερακοντα*	0.67
74.1	4:3,1.1	⸂*ο πειραζων ειπεν αὐτω*	0.67
75.1	4:4,1.1	⸢*ἐπι*	0.67
76.1	4:4,2.1	□*ἐκπορευομενω δια στοματος*	0.67

VarUnit	Reference	Autographic Reading	Prob.
77.1	4:5,1.1	⌜εστησεν	0.67
78.1	4:6,1.1	⊤ ομιτ	1
79.1	4:7,1.1	⌜οὐκ ἐκπειρασεις	0.67
80.1	4:9,1.1	⌜ειπεν	0.67
81.1	4:10,1.1	⊤ ομιτ	0.67
82.1	4:12,1.1	⊤ ομιτ	0.67
83.3	4:13,1.3	—ρεθ	0.67
84.1	4:13,2.1	⌞Λαφαρναουμ	0.67
85.1	4:16,1.1	⌜σκοτει	0.67
86.1	4:17,1.1	○μετανοειτε	1
87.1	4:17,2.1	○γαρ	1
88.1	4:18,1.1	⌜Θεριπατων	0.67
89.1	4:18,2.1	□τον λεγομενον Θετρον	1
90.1	4:19,1.1	⊤ ομιτ	0.67
91.1	4:20,1.1	⊤ ομιτ	1
92.1	4:21,1.1	□και προβας ἐκειθεν ειδεν αλλους δυο ἀδελφους Ἰακωβον τον του Ζεβεδαιου και Ἰωαννην τον ἀδελφον αὐτου ἐν τω πλοιω μετα Ζεβεδαιου του πατρος αὐτων καταρτιζοντας τα δικτυα αὐτων και ἐκαλεσεν αὐτους	1
93.1	4:23,1.1	⌜ἐν ολη τη Γαλιλαια	0.33
94.1	4:24,1.1	□Λαι ⌜ἀπηλθεν η ἀκοη αὐτου εἰς ολην την Τυριαν	1
95.1	4:24,2.1	⌜ἀπηλθεν	1
96.1	4:24,3.1	○και	1
97.1	4:24,4.1	□δαιμονιζομενους και σεληνιαζομενους και παραλυτικους	1
98.1	5:1,1.1	○αὐτω	1
99.1	5:4,1.1	ˢμακαριοι οι πενθουντες⊤ οτι αὐτοι παρακληθησονται	0.67
100.1	5:4,2.1	⊤ ομιτ	1
101.1	5:9,1.1	○αὐτοι	0.67
102.1	5:11,1.1	⊤ ομιτ	1
103.1	5:11,2.1	ˢὀνειδισωσιν υμας και ⌜διωξωσιν⊥	0.67
104.1	5:11,3.1	⌜διωξωσιν	0.67
105.1	5:11,4.1	ˢπαν πονηρον ⊥ καθ' υμων⊥	0.67
106.1	5:11,5.1	⊥ ομιτ	0.67
107.1	5:11,6.1	○ψευδομενοι	0.67
108.1	5:11,7.1	⌞ἐμου	0.67
109.1	5:12,1.1	□τους προ υμων	1
110.1	5:12,2.1	⊤ ομιτ	0.67
111.1	5:13,1.1	○ετι	0.67
112.2	5:13,2.2	—θηναι εξω και	0.67
113.1	5:16,1.1	○εργα	1
114.1	5:18,1.1	⊤ ομιτ	1

VarUnit	Reference	Autographic Reading	Prob.
115.1	5:18,2.1	°αν	1
116.1	5:18,3.1	⊤ ομιτ	1
117.1	5:19,1.1	□ος δ' αν ποιηση και διδαξη ουτος μεγας κληθησεται ἐν τη βασιλεια των οὐρανων	0.67
118.1	5:20,1.1	□Μεγω γαρ υμιν οτι ἐαν μη περισσευση υμων η δικαιοσυνη πλειον των γραμματεων και Φαρισαιων οὐ μη εἰσελθητε εἰς την βασιλειαν των οὐρανων	0.67
119.2	5:22,1.2	εικη	1
120.1	5:22,2.1	⌈ρακα	0.67
121.1	5:22,3.1	⊤ ομιτ	1
122.1	5:25,1.1	⌊μετ' αὐτου ἐν τη οδω⊤	0.67
123.1	5:25,2.1	□και ο κριτης ⊤ τω υπηρετη	1
124.2	5:25,3.2	π) σε παραδω	0.67
125.1	5:26,1.1	⌈αν	1
126.1	5:27,1.1	⊤ ομιτ	1
127.1	5:28,1.1	⌈αὐτην	1
128.1	5:29,1.1	⌈βληθη	0.67
129.1	5:30,1.1	□και εἰ ⌊η δεξια σου χειρ σκανδαλιζει σε εκκοψον αὐτην και βαλε ἀπο σου συμφερει γαρ σοι ινα ἀποληται εν των μελων σου και μη ολον το σωμα σου ⌊εἰς γεενναν ἀπελθη	0.67
130.1	5:30,2.1	⌊η δεξια σου χειρ	1
131.1	5:30,3.1	⌊εἰς γεενναν ἀπελθη	0.67
132.2	5:32,1.2	π) ος αν απολυση	0.67
133.1	5:32,2.1	⌊και ος ἐαν ἀπολελυμενην γαμηση μοιχαται	0.67
134.1	5:33,1.1	□τοις ἀρχαιοις	1
135.1	5:36,1.1	⌊μιαν τριχα λευκην ποιησαι η μελαιναν	0.33
136.1	5:37,1.1	⌈εστω	1
137.1	5:37,2.1	⌊ναι ναι	1
138.1	5:38,1.1	°και	0.67
139.2	5:39,1.2	—σει	1
140.2	5:39,2.2	π) επι	1
141.1	5:39,3.1	⌊δεξιαν σιαγονα σου	0.33
142.1	5:40,1.1	⌊τω θελοντι	0.67
143.1	5:40,2.1	⊤ ομιτ	1
144.1	5:41,1.1	⌈ἀγγαρευσει	1
145.1	5:41,2.1	⊤ ομιτ	0.67
146.1	5:42,1.1	⌈δος	0.67
147.1	5:42,2.1	⌊τον θελοντα ἀπο σου δανισασθαι	0.67
148.2	5:44,1.2	π) ευλογειτε τους καταρωμενους υμας , καλως ποιειτε τοις μισουσιν υμας και προσευχεσθε υπερ των επηρεαζοντων υμας και	1
149.1	5:45,1.1	⌈οτι	1
150.1	5:46,1.1	⌊το αὐτο	0.67
151.1	5:47,1.1	□και ἐαν ἀσπασησθε τους ⌈ἀδελφους υμων μονον τι περισσον ποιειτε οὐχι και οι ⌈ἐθνικοι ⌊το αὐτο ποιουσιν	1
152.1	5:47,2.1	⌈ἀδελφους	0.67

VarUnit	Reference	Autographic Reading	Prob.
153.1	5:47,3.1	⌜ἐθνικοι	0.67
154.1	5:47,4.1	‘το αὐτο	0.67
155.2	5:48,1.2	ωσπερ	0.67
156.1	5:48,2.1	⌜οὐρανιος	1
157.2	6:1,1.2	° ομιτ	1
158.1	6:1,2.1	⌜δικαιοσυνην	0.67
159.1	6:1,3.1	°τοις	0.67
160.1	6:2,1.1	⊤ ομιτ	1
161.1	6:4,1.1	ˢη σου η ἐλεημοσυνη⊥	0.67
162.1	6:4,2.1	⊤ ομιτ	0.67
163.1	6:4,3.1	⊥ ομιτ	0.67
164.1	6:5,1.1	□Λαι οταν ‘προσευχησθε οὐκ εσεσθε ως οι υποκριται οτι φιλουσιν ⊤ ἐν ταις συναγωγαις και ἐν ταις γωνιαις των πλατειων εστωτες προσευχεσθαι οπως ⊥ φανωσιν τοις ἀνθρωποις ἀμην λεγω υμιν ⊤ ἀπεχουσιν τον μισθον αὐτων	1
165.2	6:5,2.2	—χη, ουκ εση	1
166.1	6:5,3.1	⊤ ομιτ	0.67
167.1	6:5,4.1	⊥ ομιτ	0.67
168.1	6:5,5.1	⊤ ομιτ	0.67
169.1	6:6,1.1	⊤ ομιτ	0.67
170.1	6:7,1.1	⌜ἐθνικοι	1
171.1	6:8,1.1	‘ο πατηρ υμων	1
172.1	6:8,2.1	‘αἰτησαι αὐτον	0.67
173.1	6:9,1.1	‘τοις οὐρανοις	1
174.1	6:10,1.1	°ως	1
175.2	6:10,2.2	της	0.67
176.1	6:11,1.1	⌜ἐπιουσιον	1
177.1	6:12,1.1	‘τα ὀφειληματα	1
178.1	6:12,2.1	⌜ἀφηκαμεν	0.33
179.1	6:13,1.1	⊤ ομιτ	0.67
180.1	6:14,1.1	°γαρ	1
181.1	6:14,2.1	⌜οὐρανιος	1
182.1	6:15,1.1	⊤ ομιτ	0.67
183.1	6:15,2.1	‘υμων ἀφησει	0.67
184.1	6:16,1.1	⌜ως	0.67
185.1	6:16,2.1	⌜αὐτων	1
186.1	6:16,3.1	⊤ ομιτ	1
187.1	6:18,1.1	ˢτοις ἀνθρωποις νηστευων⊥	1
188.3	6:18,2.3	τω κρυπτω	0.67
189.3	6:18,3.3	τω κρυπτω	0.67
190.1	6:18,4.1	⊤ ομιτ	1

VarUnit	Reference	Autographic Reading	Prob.
191.1	6:20,1.1	‘οὐδε κλεπτουσιν	1
192.1	6:21,1.1	⌜σου	0.67
193.1	6:21,2.1	°και	1
194.1	6:21,3.1	⌜σου	0.67
195.1	6:22,1.1	°ουν	1
196.2	6:22,2.2	2 3 4 5 1	1
197.1	6:23,1.1	ˢο ὀφθαλμος σου πονηρος η⊤	1
198.1	6:24,1.1	⊤ ομιτ	1
199.1	6:25,1.1	‘η τι πιητε	0.67
200.1	6:26,1.1	⊤ ομιτ	1
201.4	6:28,1.4	αυξανει· ου κοπια ουδε νηθει	1
202.1	6:32,1.1	ˢπαντα γαρ ταυτα⊤	1
203.2	6:32,2.2	επιζητει	0.67
204.1	6:33,1.1	‘βασιλειαν του θεου και την δικαιοσυνην	1
205.3	6:34,1.3	τα εαυ—	0.67
206.1	7:2,1.1	⌜μετρηθησεται	1
207.1	7:4,1.1	⌜ἐρεις	1
208.1	7:4,2.1	⌜ἐκ	0.67
209.2	7:5,1.2	5 6 1 2 3 4	1
210.2	7:6,1.2	—σωσιν	1
211.1	7:8,1.1	⌜ἀνοιγησεται	1
212.1	7:9,1.1	°ἐστιν	1
213.1	7:9,2.1	⌜αἰτησει	0.67
214.2	7:10,1.2	η κ. εαν ι. —ση	0.67
215.1	7:11,1.1	‘δοματα ἀγαθα	1
216.1	7:12,1.1	°ουν	1
217.1	7:13,1.1	⌜οτι	1
218.1	7:13,2.1	⊡η πυλη	1
219.1	7:13,3.1	°εἰσιν	1
220.1	7:14,1.1	⌜τι	1
221.1	7:14,2.1	⊡η πυλη	1
222.1	7:15,1.1	⊤ ομιτ	0.67
223.1	7:16,1.1	⌜σταφυλας	0.67
224.1	7:17,1.1	ˢκαλους ποιει⊤	1
225.1	7:18,1.1	⌜ποιειν	1
226.1	7:18,2.1	⌜ποιειν	1
227.1	7:19,1.1	⊤ ομιτ	1
228.2	7:21,1.2	° ομιτ	0.67

VarUnit	Reference	Autographic Reading	Prob.
229.1	7:21,2.1	⊤ *ομιτ*	1
230.1	7:22,1.1	⊤ *ομιτ*	1
231.1	7:22,2.1	⊤ *ομιτ*	1
232.1	7:23,1.1	⌜*ἀποχωρειτε*	1
233.1	7:23,2.1	⊤ *ομιτ*	1
234.1	7:24,1.1	○*τουτους*	1
235.1	7:24,2.1	⌜*ομοιωθησεται*	1
236.1	7:25,1.1	⌜*προσεπεσαν*	1
237.1	7:26,1.1	⌜*ο ἀκουων*	1
238.1	7:26,2.1	⌜*ποιων*	1
239.2	7:26,3.2	*2 3 1*	0.67
240.1	7:27,1.1	□*επνευσαν οι ανεμοι και*	1
241.1	7:27,2.1	⌜*προσεκοψαν*	1
242.1	7:27,3.1	⊤ *ομιτ*	1
243.1	7:28,1.1	⌜*ἐτελεσεν*	0.67
244.1	7:28,2.1	⌜*οι οχλοι*	1
245.1	7:29,1.1	○*αὐτων*	0.67
246.1	7:29,2.1	⊤ *ομιτ*	1
247.1	8:1,1.1	⌜*Λαταβαντος δε αὐτου*	0.67
248.1	8:2,1.1	⌜*προσελθων*	0.67
249.2	8:3,1.2	*ο Ιησους*	0.67
250.1	8:5,1.1	⌜*Εἰσελθοντος δε αὐτου εἰς Λαφαρναουμ*	0.33
251.1	8:5,2.1	⌜*εκατονταρχος*	1
252.1	8:6,1.1	○*κυριε*	1
253.1	8:7,1.1	○*και*	0.67
254.2	8:7,2.2	*ο Ιησους*	1
255.1	8:8,1.1	⌜*και ἀποκριθεις*	1
256.1	8:8,2.1	⌜*εκατονταρχος*	1
257.1	8:8,3.1	□*ο παις μου*	1
258.1	8:9,1.1	⊤ *ομιτ*	1
259.2	8:10,1.2	*π) ουδε εν τω Ι. τοσ. πισ.*	1
260.1	8:12,1.1	⌜*ἐκβληθησονται*	1
261.1	8:13,1.1	⌜*εκατονταρχη*	1
262.2	8:13,2.2	*και*	1
263.2	8:13,3.2	○ *ομιτ*	0.67
264.1	8:13,4.1	⌜*ἐν τη ωρα ἐκεινη*	1
265.1	8:13,5.1	⊤ *ομιτ*	1
266.1	8:15,1.1	⌜*αὐτω*	1

VarUnit	Reference	Autographic Reading	Prob.
267.2	8:18,1.2	πολλους οχλους	1
268.1	8:21,1.1	◦αὐτου	0.67
269.1	8:22,1.1	◦Ἰησους	1
270.2	8:22,2.2	ειπεν	0.67
271.1	8:23,1.1	◦το	1
272.1	8:25,1.1	⊤ ομιτ	0.67
273.2	8:25,2.2	ημας	0.67
274.1	8:27,1.1	⊤ ομιτ	1
275.1	8:28,1.1	‘ἐλθοντος αὐτου	0.67
276.1	8:28,2.1	⌜Γαδαρηνων	0.33
277.2	8:29,1.2	π) Ιησου	0.67
278.1	8:29,2.1	‘προ καιρου βασανισαι ημας	1
279.1	8:30,1.1	⊤ ομιτ	1
280.1	8:30,2.1	◦πολλων	1
281.1	8:31,1.1	‘ἀποστειλον ημας	0.67
282.1	8:32,1.1	‘τους χοιρους	0.67
283.1	8:32,2.1	⊤ ομιτ	0.67
284.2	8:34,1.2	συναντ—	0.67
285.1	8:34,2.1	⌜τω	1
286.1	8:34,3.1	‘οπως μεταβη	1
287.1	8:34,4.1	◻των οριων	1
288.1	9:1,1.1	⊤ ομιτ	1
289.1	9:1,2.1	⊤ ομιτ	0.67
290.1	9:2,1.1	⌜ἀφιενται	0.67
291.1	9:2,2.1	‘σου αι αμαρτιαι	0.33
292.1	9:4,1.1	⌜ἰδων	0.67
293.1	9:4,2.1	⊤ ομιτ	0.67
294.1	9:4,3.1	⊤ ομιτ	0.67
295.1	9:5,1.1	⌜ἀφιενται	0.67
296.1	9:6,1.1	⌜ἐγερθεις	0.67
297.1	9:8,1.1	⌜ἐφοβηθησαν	0.67
298.1	9:9,1.1	‘ο Ἰησους ἐκειθεν	0.67
299.1	9:9,2.1	⌜ἠκολουθησεν	0.67
300.1	9:10,1.1	◦και	0.67
301.2	9:11,1.2	ειπον	0.67
302.1	9:11,2.1	‘ἐσθιει ο διδασκαλος υμων	1
303.1	9:12,1.1	⊤ ομιτ	0.67
304.1	9:12,2.1	⊤ ομιτ	0.67

VarUnit	Reference	Autographic Reading	Prob.
305.1	9:13,1.1	⊤ *ομιτ*	1
306.1	9:14,1.1	⌜*πολλα*	1
307.1	9:15,1.1	⌜*νυμφωνος*	0.67
308.1	9:15,2.1	⌜*πενθειν*	0.67
309.1	9:15,3.1	⊤ *ομιτ*	0.67
310.1	9:17,1.1	○*γε*	1
311.1	9:17,2.1	⌜*ρηγνυνται οι ἀσκοι*	0.67
312.1	9:17,3.1	⌜*ἐκχειται και οι ἀσκοι ἀπολλυνται*	0.67
313.1	9:17,4.1	⌜*ἀλλα βαλλουσιν οινον νεον εἰς ἀσκους καινους*	1
314.1	9:18,1.1	⌜*εις ἐλθων*	0.67
315.1	9:18,2.1	⌜*οτι*	0.67
316.1	9:19,1.1	⌜*ἠκολουθησεν*	0.67
317.1	9:20,1.1	⊤ *ομιτ*	1
318.1	9:21,1.1	⌜*μονον αψωμαι*	0.67
319.1	9:22,1.1	○*Ἰησους*	0.67
320.1	9:22,2.1	⌜*στραφεις*	0.33
321.1	9:22,3.1	⌜*θυγατερ*	0.67
322.1	9:24,1.1	⌜*ελεγεν*	0.67
323.1	9:25,1.1	⌜*εἰσελθων*	0.67
324.1	9:26,1.1	⌜*αυτη*	0.67
325.1	9:27,1.1	○*αὐτω*	0.67
326.1	9:27,2.1	⌜*υιος*	0.67
327.1	9:28,1.1	⌜*ἐλθοντι δε*	0.67
328.1	9:28,2.1	⊤ *ομιτ*	0.67
329.1	9:28,3.1	⌜*δυναμαι τουτο ποιησαι*	1
330.1	9:29,1.1	⌜*ὀφθαλμων*	0.67
331.2	9:30,1.2	—*μησατο*	0.67
332.1	9:31,1.1	○*ολη*	1
333.1	9:32,1.1	○*ανθρωπον*	1
334.1	9:34,1.1	◻*οι δε Φαρισαιοι ελεγον ἐν τω αρχοντι των δαιμονιων ἐκβαλλει τα δαιμονια*	0.67
335.1	9:35,1.1	⊤ *ομιτ*	1
336.1	9:36,1.1	⊤ *ομιτ*	1
337.1	9:36,2.1	⌜*ἐσκυλμενοι*	1
338.1	10:1,1.1	⊤ *ομιτ*	1
339.1	10:1,2.1	⊤ *ομιτ*	1
340.1	10:2,1.1	○*δε*	1
341.2	10:2,2.2	○ *ομιτ*	1
342.3	10:3,1.3	*Λ. ο επικληθεις Θαδδ.*	0.67

VarUnit	Reference	Autographic Reading	Prob.
343.1	10:4,1.1	⌜Λαναναιος	0.67
344.1	10:4,2.1	⊤ ομιτ	1
345.1	10:4,3.1	‘ο Ἰσκαριωτης	0.67
346.1	10:5,1.1	⌜λεγων	0.67
347.1	10:6,1.1	‘πορευεσθε δε	0.67
348.1	10:7,1.1	⌜οτι	1
349.1	10:8,1.1	‘νεκρους ἐγειρετε λεπρους καθαριζετε δαιμονια ἐκβαλλετε	0.67
350.1	10:10,1.1	⌜ραβδον	0.67
351.1	10:10,2.1	‘της τροφης	1
352.1	10:11,1.1	‘εἰς ην δ’ αν πολιν η κωμην εἰσελθητε	0.67
353.1	10:12,1.1	⊤ ομιτ	0.67
354.1	10:13,1.1	‘ἐαν δε μη η ἀξια	0.67
355.1	10:13,2.1	⌜προς	1
356.1	10:14,1.1	◻της οἰκιας η	0.67
357.1	10:14,2.1	⊤ ομιτ	1
358.1	10:14,3.1	⊤ ομιτ	1
359.1	10:15,1.1	⌜Γομορρων	0.67
360.1	10:16,1.1	‘ἐν μεσω	1
361.1	10:16,2.1	‘οι οφεις	1
362.1	10:16,3.1	⌜ἀκεραιοι	0.67
363.1	10:17,1.1	◦δε	0.67
364.1	10:17,2.1	‘ἐν ταις συναγωγαις αὐτων	0.67
365.1	10:18,1.1	‘ηγεμονας δε και βασιλεις ἀχθησεσθε	0.67
366.2	10:19,1.2	—δωσουσιν	0.67
367.1	10:19,2.1	◻δοθησεται γαρ υμιν ἐν ἐκεινη τη ωρα τι λαλησητε	0.67
368.1	10:21,1.1	⌜ἐπαναστησονται	1
369.2	10:23,1.2	αλλην	0.67
370.1	10:23,2.1	⊤ ομιτ	0.67
371.1	10:23,3.1	◦του	0.67
372.1	10:23,4.1	⌜αν	1
373.1	10:24,1.1	⊤ ομιτ	1
374.1	10:25,1.1	‘τον οἰκοδεσποτην	1
375.1	10:25,2.1	⌜Βεελζεβουλ	1
376.1	10:25,3.1	⌜ἐπεκαλεσαν	0.67
377.1	10:25,4.1	‘τους οἰκιακους	1
378.1	10:27,1.1	⌜κηρυξατε	0.67
379.1	10:28,1.1	⌜φοβεισθε	0.67
380.2	10:28,2.2	φοβηθητε	1

VarUnit	Reference	Autographic Reading	Prob.
381.1	10:30,1.1	ʻυμων δε	0.67
382.1	10:30,2.1	⊤ ομιτ	0.67
383.1	10:31,1.1	⌜φοβεισθε	0.67
384.1	10:31,2.1	⊤ ομιτ	1
385.2	10:32,1.2	○ ομιτ	1
386.1	10:33,1.1	ʻοστις δ’ αν	1
387.1	10:33,2.1	ˢκἀγω αὐτον⊤	0.67
388.2	10:33,3.2	○ ομιτ	1
389.1	10:34,1.1	⌜μαχαιραν	1
390.1	10:35,1.1	⌜ανθρωπον	0.67
391.1	10:37,1.1	□και ο φιλων υιον η θυγατερα υπερ ἐμε οὐκ εστιν μου αξιος	0.67
392.1	10:39,1.1	□ο ευρων την ψυχην αὐτου ἀπολεσει αὐτην και	1
393.1	10:41,1.1	□και ο δεχομενος δικαιον εἰς ονομα δικαιου μισθον δικαιου λημψεται	0.67
394.1	10:42,1.1	ʻμικρων τουτων	0.67
395.1	10:42,2.1	⌜ψυχρου	0.67
396.1	10:42,3.1	○μονον	0.67
397.1	10:42,4.1	ʻἀπολεση τον μισθον	0.67
398.1	11:2,1.1	⌜Χριστου	0.67
399.1	11:2,2.1	⌜δια	0.67
400.1	11:3,1.1	⌜ἐρχομενος	1
401.1	11:5,1.1	ʻκαι χωλοι περιπατουσιν	0.67
402.1	11:5,2.1	ʻνεκροι ἐγειρονται και πτωχοι εὐαγγελιζονται	1
403.1	11:6,1.1	○ἐαν	1
404.1	11:8,1.1	ˢἰδειν ανθρωπον⊤	1
405.1	11:8,2.1	⊤ ομιτ	0.67
406.1	11:8,3.1	⌜βασιλεων	1
407.1	11:8,4.1	○εἰσιν	1
408.1	11:9,1.1	ˢἰδειν προφητην⊤	1
409.1	11:10,1.1	⊤ ομιτ	0.67
410.1	11:13,1.1	□και ο νομος	1
411.1	11:15,1.1	⊤ ομιτ	0.67
412.1	11:16,1.1	⌜ετεροις	1
413.1	11:16,2.1	⊤ ομιτ	0.67
414.1	11:17,1.1	⊤ ομιτ	0.67
415.1	11:18,1.1	⊤ ομιτ	1
416.2	11:19,1.2	π) τ. τεκνων	1
417.1	11:20,1.1	⊤ ομιτ	1
418.1	11:21,1.1	ʻ οὐαι σοι	0.67

VarUnit	Reference	Autographic Reading	Prob.
419.1	11:21,2.1	⊤ *ομιτ*	1
420.1	11:23,1.1	‘*μη εως οὐρανου υψωθηση*	0.67
421.1	11:23,2.1	⌜*καταβηση*	0.67
422.1	11:23,3.1	⌜*ἐγενηθησαν*	0.67
423.1	11:24,1.1	‘*η σοι*	0.67
424.1	11:25,1.1	⌜*εκρυψας*	0.67
425.1	11:27,1.1	○*μου*	1
426.1	11:27,2.1	‘*τον υιον εἰ μη ο πατηρ οὐδε τον πατερα τις ἐπιγινωσκει εἰ μη ο υιος*	1
427.1	11:28,1.1	⊤ *ομιτ*	1
428.1	11:29,1.1	□*ἀπ᾽ ἐμου*	1
429.1	12:1,1.1	⊤ *ομιτ*	1
430.1	12:1,2.1	⊤ *ομιτ*	0.67
431.1	12:1,3.1	⊤ *ομιτ*	1
432.1	12:2,1.1	⊤ *ομιτ*	0.67
433.1	12:2,2.1	⌜*ἰδου*	1
434.1	12:2,3.1	□*ἐν σαββατω*	1
435.2	12:4,1.2	—*γεν*	1
436.1	12:4,2.1	⌜*ο*	0.67
437.1	12:5,1.1	⊤ *ομιτ*	0.67
438.1	12:6,1.1	⌜*μειζον*	1
439.1	12:9,1.1	⊤ *ομιτ*	1
440.1	12:10,1.1	⊤ *ομιτ*	0.67
441.1	12:10,2.1	□*τοις σαββασιν* ⌜*θεραπευσαιι*	1
442.1	12:10,3.1	⌜*θεραπευσαι*	0.67
443.1	12:11,1.1	⌜*εσται*	0.67
444.1	12:11,2.1	⌜*εξει*	0.67
445.1	12:11,3.1	⌜*ἐαν*	0.67
446.1	12:11,4.1	○*τουτο*	0.67
447.1	12:11,5.1	‘*κρατησει αὐτο και ἐγερει*	0.67
448.1	12:12,1.1	⊤ *ομιτ*	1
449.1	12:13,1.1	□*ως η αλλη*	1
450.1	12:14,1.1	‘*ἐξελθοντες δε οι Φαρισαιοι*	0.67
451.1	12:15,1.1	‘*οχλοι πολλοι*	1
452.1	12:15,2.1	‘*παντας*	0.67
453.1	12:17,1.1	⌜*ινα*	0.67
454.1	12:18,1.1	⊤ *ομιτ*	0.67
455.2	12:18,2.2	⌒*ον*	0.33
456.1	12:20,1.1	□*καλαμον συντετριμμενον*	1

VarUnit	Reference	Autographic Reading	Prob.
457.1	12:20,2.1	⊤ *ομιτ*	1
458.1	12:21,1.1	⊤ *ομιτ*	0.67
459.1	12:22,1.1	‹*προσηνεχθη αὐτω δαιμονιζομενος τυφλος και κωφος*	1
460.1	12:22,2.1	‹*τον κωφον*	0.67
461.1	12:22,3.1	⊤ *ομιτ*	0.67
462.1	12:24,1.1	⌈*Βεελζεβουλ*	1
463.2	12:25,1.2	*ειδως δε ο Ιησους*	0.67
464.1	12:27,1.1	⌈*Βεελζεβουλ*	1
465.1	12:27,2.1	⌊*αὐτοι κριται εσονται υμων*⊤	0.67
466.2	12:29,1.2	*διαρπασαι*	1
467.2	12:29,2.2	*ιαρπαση*	0.67
468.1	12:30,1.1	⊤ *ομιτ*	1
469.1	12:31,1.1	⊤ *ομιτ*	1
470.2	12:31,2.2	*τοις ανθρωποις*	0.67
471.1	12:32,1.1	⊤ *ομιτ*	1
472.1	12:32,2.1	‹*οὐκ ἀφεθησεται*	1
473.1	12:34,1.1	⊤ *ομιτ*	1
474.1	12:35,1.1	⊤ *ομιτ*	1
475.1	12:35,2.1	⊤ *ομιτ*	1
476.1	12:35,3.1	⊤ *ομιτ*	1
477.1	12:35,4.1	⊤ *ομιτ*	1
478.3	12:36,1.3	*εαν λαλησωσιν*	0.67
479.1	12:38,1.1	○*αὐτω*	0.67
480.1	12:38,2.1	□*και Φαρισαιων*	1
481.1	12:40,1.1	⌈*ην*	0.67
482.1	12:40,2.1	⊤ *ομιτ*	0.67
483.1	12:44,1.1	⊤ *ομιτ*	0.67
484.1	12:44,2.1	⊤ *ομιτ*	1
485.1	12:46,1.1	‹*Ετι αὐτου λαλουντος*	0.33
486.1	12:46,2.1	‹*ζητουντες αὐτω λαλησαι*	0.67
487.1	12:47,1.1	□*ειπεν δε τις* ⌈*αὐτω ἰδου η μητηρ σου και οι ἀδελφοι σου εξω εστηκασιν ζητουντες σοι λαλησαι*	0.67
488.1	12:47,2.1	⌈*αὐτω*	1
489.1	12:48,1.1	‹*τω λεγοντι αὐτω*	0.67
490.1	12:48,2.1	⌈*και*	0.67
491.1	12:48,3.1	○*εἰσιν*	1
492.1	12:48,4.1	○*μου*	1
493.1	12:49,1.1	○*αὐτου*	0.67
494.1	12:50,1.1	‹*αν ποιηση*	0.67

VarUnit	Reference	Autographic Reading	Prob.
495.1	12:50,2.1	⊤ *ομιτ*	1
496.2	13:1,1.2	*δε*	0.67
497.1	13:1,2.1	‘*της οἰκιας*	0.33
498.2	13:2,1.2	*το*	0.67
499.1	13:3,1.1	⌜*σπειρειν*	0.67
500.2	13:4,1.2	*ηλθεν*	1
501.1	13:4,2.1	⊤ *ομιτ*	1
502.2	13:4,3.2	*αι*	1
503.1	13:6,1.1	⌜*ἐκαυματισθη*	0.67
504.1	13:6,2.1	⌜*ριζαν*	1
505.1	13:6,3.1	⌜*ἐξηρανθη*	0.67
506.1	13:7,1.1	⌜*επνιξαν*	0.67
507.2	13:9,1.2	*π) ακουειν*	0.67
508.1	13:11,1.1	○*αὐτοις*	1
509.1	13:13,1.1	‘*αὐτοις λαλω*	0.67
510.1	13:13,2.1	‘*οτι βλεποντες οὐ βλεπουσιν και ἀκουοντες οὐκ ἀκουουσιν οὐδε συνιουσιν*	0.67
511.1	13:14,1.1	⌜*ἀναπληρουται*	0.67
512.1	13:14,2.1	⊤ *ομιτ*	0.67
513.1	13:15,1.1	⊤ *ομιτ*	1
514.1	13:16,1.1	○*υμων*	1
515.1	13:16,2.1	⌜*ἀκουουσιν*	1
516.1	13:17,1.1	○*γαρ*	1
517.1	13:17,2.1	⌜*ειδαν*	0.67
518.2	13:18,1.2	*σπειροντος*	1
519.1	13:19,1.1	‘*το ἐσπαρμενον*	0.67
520.1	13:22,1.1	⊤ *ομιτ*	0.67
521.1	13:23,1.1	⌜*συνιεις*	0.67
522.1	13:23,2.1	‘*ος δη*	0.67
523.2	13:24,1.2	*σπειροντι*	0.67
524.3	13:25,1.3	*εσπειρεν*	0.67
525.1	13:26,1.1	○*και*	0.67
526.1	13:27,1.1	⊤ *ομιτ*	1
527.1	13:28,1.1	○*δουλοι*	1
528.1	13:28,2.1	‘*λεγουσιν αὐτω*	0.67
529.1	13:29,1.1	⌜*φησιν*	0.33
530.1	13:30,1.1	⌜*εως*	0.67
531.1	13:30,2.1	⊤ *ομιτ*	1
532.1	13:30,3.1	‘*αὐτα εἰς δεσμας*	0.67

VarUnit	Reference	Autographic Reading	Prob.
533.1	13:30,4.1	⌜συναγαγετε	0.67
534.1	13:31,1.1	⌜παρεθηκεν	0.67
535.1	13:32,1.1	⌜αἰξηθη	0.67
536.1	13:33,1.1	⌜ἐλαλησεν αὐτοις	0.67
537.2	13:34,1.2	π) ουκ	1
538.1	13:35,1.1	⊤ ομιτ	1
539.1	13:35,2.1	○κοσμου	1
540.1	13:36,1.1	⊤ ομιτ	0.67
541.2	13:36,2.2	φρασον	1
542.1	13:37,1.1	⊤ ομιτ	0.67
543.1	13:37,2.1	⌜ο υιος του ἀνθρωπου	1
544.1	13:39,1.1	⊡ο δε θερισμος συντελεια ⊤ αἰωνος ἐστιν	1
545.1	13:39,2.1	⊤ ομιτ	0.67
546.1	13:40,1.1	⌜κατακαιεται	0.33
547.1	13:40,2.1	⊤ ομιτ	0.67
548.1	13:42,1.1	⌜βαλουσιν	0.67
549.1	13:43,1.1	⌜του πατρος αὐτων	1
550.2	13:43,2.2	ακουειν	1
551.1	13:44,1.1	⊤ ομιτ	0.67
552.1	13:44,2.1	○παντα	1
553.1	13:45,1.1	○ἀνθρωπω	1
554.1	13:46,1.1	⌜ευρων δε	0.67
555.1	13:46,2.1	○ενα	0.67
556.1	13:48,1.1	⌜ην οτε	0.67
557.1	13:48,2.1	⌜ἀναβιβασαντες	0.67
558.1	13:48,3.1	⌜καλα	0.67
559.2	13:48,4.2	αγγεια	0.67
560.1	13:49,1.1	⌜αἰωνος	0.67
561.1	13:50,1.1	⌜βαλουσιν	1
562.1	13:51,1.1	⊤ ομιτ	0.67
563.1	13:51,2.1	⊤ ομιτ	0.67
564.1	13:52,1.1	⌜ο δε ειπεν	0.67
565.1	13:52,2.1	⌜τη βασιλεια	0.67
566.1	13:54,1.1	⊤ ομιτ	0.67
567.2	13:55,1.2	ουχι	1
568.1	13:55,2.1	⌜Ἰωσηφ	0.33
569.1	13:57,1.1	⌜πατριδι	0.67
570.1	13:58,1.1	⌜την ἀπιστιαν	0.67

VarUnit	Reference	Autographic Reading	Prob.
571.1	14:1,1.1	⊤ *ομιτ*	0.67
572.1	14:2,1.1	⊤ *ομιτ*	0.67
573.1	14:2,2.1	⊤ *ομιτ*	0.67
574.1	14:3,1.1	⊤ *ομιτ*	1
575.1	14:3,2.1	○*αὐτον*	1
576.1	14:3,3.1	⸂*και ἐν φυλακη ἀπεθετο*	0.33
577.1	14:3,4.1	○*Φιλιππου*	0.67
578.6	14:4,1.6	*3 1 2*	0.67
579.1	14:6,1.1	⸂*Γενεσιοις δε γενομενοις*	0.67
580.1	14:6,2.1	⸂*της Ηρωδιαδος*	0.67
581.1	14:8,1.1	⊤ *ομιτ*	0.67
582.1	14:8,2.1	○*φησιν*	0.67
583.1	14:8,3.1	⊡*ἐπι πινακι*	0.67
584.1	14:9,1.1	⸂*λυπηθεις ο βασιλευς δια*	0.67
585.1	14:9,2.1	⊤ *ομιτ*	1
586.1	14:10,1.1	○*τον*	1
587.1	14:11,1.1	⸢*ἐπι*	0.67
588.1	14:12,1.1	⸢*πτωμα*	1
589.1	14:12,2.1	⊤ *ομιτ*	0.67
590.2	14:12,3.2	*αυτο*	1
591.1	14:13,1.1	⸂*Ἀκουσας δε*	1
592.1	14:13,2.1	⊡*ἐν πλοιω*	1
593.1	14:13,3.1	⸢*πεζη*	1
594.1	14:14,1.1	⸢*ἐξελθων*	0.67
595.1	14:14,2.1	⸂*ἐπ' αὐτοις*	0.67
596.1	14:14,3.1	⸢*ἀρρωστους*	0.67
597.2	14:15,1.2	*π) αυτου*	0.67
598.1	14:15,2.1	ˢ*ηδη παρηλθεν*⊤	1
599.1	14:15,3.1	⊤ *ομιτ*	1
600.1	14:15,4.1	⊤ *ομιτ*	1
601.1	14:16,1.1	○*Ἰησους*	0.67
602.1	14:16,2.1	ˢ*αὐτοις υμεις φαγειν*⊤	0.67
603.1	14:18,1.1	⸂*ωδε αὐτους*	0.33
604.1	14:19,1.1	⸢*κελευσας*	1
605.1	14:19,2.1	⸂*τους οχλους*	0.67
606.1	14:19,3.1	⸂*του χορτου*	0.33
607.1	14:19,4.1	⸢*λαβων*	0.67
608.1	14:21,1.1	⸢*ωσει*	0.67

VarUnit	Reference	Autographic Reading	Prob.
609.1	14:21,2.1	‘γυναικων και παιδιων	0.67
610.1	14:22,1.1	°εὐθεως	1
611.1	14:22,2.1	⊤ ομιτ	0.67
612.1	14:22,3.1	°το	1
613.1	14:22,4.1	°αὐτον	0.67
614.1	14:24,1.1	°ηδη	0.67
615.3	14:24,2.3	μεσον της θαλασσης ην	0.67
616.2	14:25,1.2	απηλθεν	0.67
617.1	14:25,2.1	‘την θαλασσαν	0.67
618.1	14:26,1.1	‘οι δε μαθηται ἰδοντες αὐτον	0.67
619.1	14:26,2.1	‘ἐπι της θαλασσης περιπατουντα	1
620.2	14:27,1.2	3 1 2	0.67
621.1	14:28,1.1	‘αὐτω ο Θετρος ειπεν	0.67
622.1	14:28,2.1	ˢἐλθειν προς σε⊤	0.67
623.1	14:29,1.1	°ο	0.67
624.2	14:29,2.2	ελθειν	1
625.1	14:30,1.1	°ἰσχυρον	1
626.1	14:32,1.1	‘ἀναβαντων αὐτων	0.67
627.2	14:33,1.2	ελθοντες	0.67
628.1	14:34,1.1	‘ἐπι την γην εἰς	0.67
629.1	14:34,2.1	⌈Γεννησαρετ	0.67
630.1	14:35,1.1	‘του τοπου ἐκεινου	1
631.1	14:36,1.1	°αὐτον	1
632.1	15:1,1.1	⊤ ομιτ	0.67
633.1	15:1,2.1	ˢΦαρισαιοι και γραμματεις⊤	0.67
634.1	15:2,1.1	°αὐτων	0.67
635.1	15:4,1.1	⌈ειπεν	0.67
636.1	15:4,2.1	⊤ ομιτ	1
637.1	15:4,3.1	⊤ ομιτ	1
638.1	15:5,1.1	⊤ ομιτ	1
639.1	15:6,1.1	⊤ ομιτ	0.67
640.1	15:6,2.1	°αὐτου	1
641.1	15:6,3.1	⊤ ομιτ	0.67
642.1	15:6,4.1	‘τον λογον	0.67
643.1	15:8,1.1	‘ο λαος ουτος	0.67
644.1	15:8,2.1	⌈ἀπεχει	0.67
645.1	15:11,1.1	⊤ ομιτ	0.67
646.1	15:11,2.1	⌈κοινοι	0.67

VarUnit	Reference	Autographic Reading	Prob.
647.1	15:11,3.1	⌜τουτο	0.67
648.1	15:11,4.1	⌜κοινοι	0.67
649.1	15:12,1.1	⊤ ομιτ	0.67
650.1	15:12,2.1	⌜λεγουσιν	0.67
651.1	15:14,1.1	⌜αὐτους	0.67
652.1	15:14,2.1	‘τυφλοι εἰσιν οδηγοι τυφλων	0.67
653.1	15:14,3.1	‘ἐαν οδηγη	1
654.1	15:14,4.1	‘εἰς βοθυνον πεσουνται	0.67
655.1	15:15,1.1	○ταυτην	1
656.1	15:16,1.1	⊤ ομιτ	0.67
657.1	15:17,1.1	⌜οὐ	1
658.1	15:18,1.1	◻ἐξερχεται κἀκεινα κοινοι τον ανθρωπον	1
659.1	15:22,1.1	⌜εκραζεν	1
660.1	15:22,2.1	⊤ ομιτ	0.33
661.1	15:22,3.1	⌜υιος	1
662.1	15:23,1.1	⌜ἠρωτουν	0.67
663.1	15:24,1.1	⊤ ομιτ	0.67
664.1	15:25,1.1	⌜προσεκυνει	0.67
665.1	15:26,1.1	‘εστιν καλον	0.67
666.1	15:27,1.1	○γαρ	1
667.1	15:28,1.1	◻ο Ἰησους	0.67
668.1	15:30,1.1	‘χωλους τυφλους κυλλους κωφους	0.33
669.1	15:30,2.1	⌜αὐτου	0.67
670.1	15:30,3.1	⊤ ομιτ	0.67
671.1	15:31,1.1	‘τον οχλον	0.67
672.1	15:31,2.1	⌜λαλουντας	1
673.1	15:31,3.1	‘κυλλους υγιεις	0.67
674.1	15:31,4.1	⌜ἐδοξασαν	1
675.1	15:32,1.1	○αὐτου	1
676.1	15:32,2.1	○ηδη	1
677.1	15:32,3.1	⌜ημεραι	1
678.1	15:32,4.1	⊤ ομιτ	0.67
679.1	15:32,5.1	◻μηποτε ἐκλυθωσιν ἐν τη οδω	1
680.2	15:33,1.2	αυτου	0.67
681.1	15:33,2.1	⊤ ομιτ	0.67
682.1	15:35,1.1	⌜παραγγειλας	0.67
683.1	15:35,2.1	‘τω οχλω	0.67
684.1	15:35,3.1	⌜ελαβεν	0.67

VarUnit	Reference	Autographic Reading	Prob.
685.1	15:35,4.1	○και	1
686.1	15:35,5.1	⌈ἐδιδου	0.67
687.1	15:35,6.1	⊤ ομιτ	0.67
688.2	15:35,7.2	π) τω οχλω	0.67
689.1	15:37,1.1	ˢτο περισσευον των κλασματων ηραν⊥	0.67
690.1	15:38,1.1	⊤ ομιτ	1
691.1	15:38,2.1	ˢγυναικων και παιδιων⊥	0.67
692.1	15:39,1.1	⌈Ναγαδαν	0.67
693.1	16:1,1.1	○οι	1
694.1	16:1,2.1	⌈ἐπηρωτησαν	1
695.1	16:2,1.1	□ὀψιας γενομενης λεγετε εὐδια πυρραζει γαρ ο οὐρανος	1
696.1	16:2,2.1	⌈οὐρανος	0.67
697.1	16:2,3.1	⌈δυνασθε	1
698.1	16:4,1.1	□και μοιχαλις	0.67
699.1	16:4,2.1	‘σημειον ἐπιζητει και	0.67
700.1	16:4,3.1	⊤ ομιτ	0.67
701.1	16:5,1.1	‘οι μαθηται	0.67
702.1	16:5,2.1	ˢαρτους λαβειν⊥	1
703.1	16:7,1.1	‘οι δε	0.67
704.1	16:8,1.1	⌈εχετε	0.67
705.1	16:11,1.1	⌈αρτων	0.67
706.1	16:11,2.1	‘ειπον υμιν προσεχετε δε	0.33
707.1	16:11,3.1	ˢΦαρισαιων και Ταδδουκαιων⊥	1
708.1	16:12,1.1	‘των αρτων	0.33
709.1	16:12,2.1	ˢΦαρισαιων και Ταδδουκαιων⊥	1
710.2	16:13,1.2	π) με	1
711.1	16:13,2.1	ˢλεγουσιν οι ανθρωποι ειναι⊥	0.67
712.1	16:13,3.1	○τον	0.67
713.1	16:14,1.1	□οι μεν	0.67
714.1	16:15,1.1	⊤ ομιτ	1
715.1	16:16,1.1	⊤ ομιτ	0.67
716.1	16:16,2.1	‘του ζωντος	1
717.1	16:17,1.1	‘ἀποκριθεις δε	0.67
718.1	16:17,2.1	⌈Βαριωνα	1
719.1	16:17,3.1	‘ἐν τοις οὐρανοις	1
720.1	16:19,1.1	‘δωσω σοι	0.33
721.2	16:19,2.2	κλεις	0.67
722.1	16:19,3.1	‘ο ἐαν	1

VarUnit	Reference	Autographic Reading	Prob.
723.1	16:19,4.1	⌈δεδεμενον	1
724.1	16:19,5.1	⌜ο εαν	1
725.1	16:19,6.1	⌈λελυμενον	1
726.1	16:20,1.1	⌈διεστειλατο	0.67
727.1	16:20,2.1	⊤ ομιτ	0.67
728.1	16:20,3.1	⌈αὐτος	0.67
729.2	16:20,4.2	Ιησους	0.67
730.1	16:21,1.1	⌜ο Ἰησους	1
731.1	16:21,2.1	ˢεἰς Ιεροσολυμα ἀπελθειν⊤	0.67
732.1	16:21,3.1	⊤ ομιτ	1
733.1	16:21,4.1	⌜τη τριτη ημερα ἐγερθηναι	0.67
734.1	16:22,1.1	⌜ηρξατο ἐπιτιμαν αὐτω λεγων	0.67
735.1	16:22,2.1	⌜σοι τουτο	0.67
736.1	16:23,1.1	⌈στραφεις	0.67
737.1	16:23,2.1	⌜ει ἐμου	0.67
738.1	16:23,3.1	⌜ἀλλα τα των ἀνθρωπων	0.67
739.1	16:24,1.1	⌜ο Ἰησους	1
740.2	16:26,1.2	ωφελειται	0.67
741.1	16:27,1.1	⌜την πραξιν	1
742.2	16:28,1.2	○ ομιτ	0.67
743.1	16:28,2.1	⌜των ωδε εστωτων	1
744.1	17:1,1.1	⊤ ομιτ	0.67
745.1	17:1,2.1	⊤ ομιτ	0.67
746.1	17:1,3.1	⌈ἀναφερει	0.67
747.1	17:1,4.1	⌜κατ' ἰδιαν	0.67
748.1	17:2,1.1	⌈μετεμορφωθη	0.67
749.1	17:2,2.1	○και	0.67
750.1	17:2,3.1	⌜το φως	0.67
751.1	17:3,1.1	⌈ωφθη	0.67
752.2	17:3,2.2	2 3 1	0.67
753.1	17:4,1.1	⌜εἰ θελεις	1
754.2	17:4,2.2	—σωμεν	1
755.1	17:4,3.1	ˢτρεις σκηνας⊤	1
756.1	17:4,4.1	ˢ'Ηλια μιαν⊤	1
757.1	17:5,1.1	ˢἀκουετε αὐτου⊤	0.67
758.3	17:7,1.3	π—ελθων ο Ι. ηψατο α. και ειπεν	0.67
759.2	17:8,1.2	τον	1
760.1	17:9,1.1	⌈ἐγερθη	0.67

VarUnit	Reference	Autographic Reading	Prob.
761.2	17:10,1.2	αυτου	1
762.1	17:11,1.1	⊤ ομιτ	0.67
763.1	17:11,2.1	⊤ ομιτ	0.67
764.1	17:11,3.1	‹και ἀποκαταστησει	0.67
765.1	17:12,1.1	○ἐν	0.67
766.1	17:12,2.1	ˢουτως και ο υιος του ἀνθρωπου μελλει πασχειν υπ' αὐτων	0.67
767.2	17:14,1.2	ελθοντων αυτων	0.67
768.1	17:15,1.1	⌜πασχει	0.67
769.1	17:15,2.1	⌜πολλακις	0.67
770.1	17:17,1.1	‹ἀποκριθεις δε ο Ἰησους	1
771.1	17:17,2.1	⌜απιστος	1
772.1	17:17,3.1	ˢμεθ' υμων εσομαι⊤	0.67
773.1	17:20,1.1	⊤ ομιτ	0.67
774.1	17:20,2.1	⌜λεγει	0.67
775.2	17:20,3.2	απιστιαν	0.67
776.3	17:20,4.3	μεταβηθι εντευθεν	0.67
777.2	17:20,5.2	π) [2Ἰ τουτο δε το γενος ουκ εκπορευεται ει μη εν προσευχη και νηστεια	0.67
778.2	17:22,1.2	αναστρεφομενων	0.67
779.1	17:23,1.1	‹τη τριτη ημερα	0.67
780.1	17:23,2.1	⌜ἐγερθησεται	1
781.1	17:23,3.1	⊡και ἐλυπηθησαν σφοδρα	1
782.1	17:24,1.1	⌜τα	0.67
783.1	17:25,1.1	⌜ἐλθοντα	0.33
784.1	17:25,2.1	⌜τινων	1
785.1	17:26,1.1	‹εἰποντος δε	0.33
786.1	17:26,2.1	⊤ ομιτ	1
787.1	17:27,1.1	⌜σκανδαλισωμεν	1
788.1	17:27,2.1	⊤ ομιτ	0.67
789.1	17:27,3.1	⊤ ομιτ	0.67
790.1	18:1,1.1	⊤ ομιτ	1
791.1	18:1,2.1	⌜ωρα	1
792.2	18:2,1.2	ο Ιησους	0.67
793.1	18:2,2.1	⊤ ομιτ	0.67
794.1	18:6,1.1	⌜περι	0.33
795.2	18:7,1.2	εστιν	0.67
796.1	18:7,2.1	⊤ ομιτ	0.67
797.1	18:8,1.1	⌜αὐτον	0.67
798.2	18:8,2.2	3 2 1	1

VarUnit	Reference	Autographic Reading	Prob.
799.1	18:9,1.1	‘και ει	0.67
800.1	18:10,1.1	⊤ ομιτ	0.67
801.1	18:10,2.1	‘εν ουρανοις	1
802.2	18:10,3.2	[1ℓ ηλθεν γαρ ο υιος του ανθρωπου 579. 892χ αλ χ σψη βοπτ) σωσαι το απολωλος	0.67
803.1	18:12,1.1	⌜αφησει	0.67
804.1	18:12,2.1	⊤ ομιτ	1
805.1	18:12,3.1	◻επι τα ορη	1
806.1	18:12,4.1	○και	0.67
807.1	18:12,5.1	⌜ζητει	1
808.1	18:14,1.1	○εμπροσθεν	1
809.1	18:14,2.1	⌜υμων	1
810.1	18:14,3.1	⌜εν	0.67
811.1	18:15,1.1	◻εις σε	1
812.1	18:16,1.1	‘μετα σου ετι ενα η δυο	1
813.1	18:16,2.1	‘δυο μαρτυρων η τριων	0.67
814.1	18:17,1.1	⊤ ομιτ	0.67
815.1	18:18,1.1	◻εσται δεδεμενα ἐν ⌜οὐρανω και οσα ἐαν λυσητε ἐπι της γης	1
816.2	18:18,2.2	τοις ουρανοις	0.67
817.1	18:18,3.1	⌜οὐρανω	0.33
818.1	18:19,1.1	⌜ἀμην	0.67
819.5	18:19,2.5	συμφωνησουσιν εξ υμων	0.67
820.1	18:20,1.1	‘ου γαρ εἰσιν	1
821.1	18:20,2.1	⌜ἐκει	1
822.1	18:21,1.1	‘ο Θετρος ειπεν αὐτω	0.67
823.1	18:21,2.1	ˢεἰς ἐμε ο ἀδελφος μουᵀ	1
824.1	18:24,1.1	⌜προσηνεχθη	0.67
825.1	18:24,2.1	ˢαὐτω εις ᵀ	1
826.1	18:24,3.1	⌜μυριων	1
827.1	18:25,1.1	‘ο κυριος	0.67
828.2	18:25,2.2	αυτου	1
829.2	18:25,3.2	ειχεν	1
830.1	18:26,1.1	⊤ ομιτ	0.67
831.1	18:26,2.1	ᵀ ομιτ	0.67
832.1	18:26,3.1	‘και παντα ἀποδωσω σοι	0.33
833.1	18:27,1.1	‘ο κυριος του δουλου ἐκεινου	1
834.1	18:28,1.1	○ἐκεινος	1
835.1	18:28,2.1	⊤ ομιτ	0.67
836.1	18:29,1.1	⊤ ομιτ	0.67

VarUnit	Reference	Autographic Reading	Prob.
837.2	18:30,1.2	*οὗ*	0.67
838.1	18:31,1.1	⌜*ουν*	0.67
839.1	18:31,2.1	⌜*γενομενα*	0.67
840.1	18:31,3.1	⌜*εαυτων*	0.67
841.1	18:32,1.1	○*αὐτω*	0.67
842.1	18:32,2.1	⸢*δουλε πονηρε*⸣	1
843.1	18:33,1.1	‘*και σε*	0.67
844.1	18:33,2.1	‘*σε ἠλεησα*	1
845.1	18:34,1.1	○*ου*	1
846.1	18:34,2.1	○*παν*	0.67
847.1	18:34,3.1	⊤ *ομιτ*	0.67
848.1	18:35,1.1	⌜*οὐρανιος*	0.67
849.1	18:35,2.1	⊤ *ομιτ*	0.67
850.1	19:1,1.1	⌜*ἐτελεσεν*	0.67
851.1	19:2,1.1	○*ἐκει*	1
852.1	19:3,1.1	⊤ *ομιτ*	0.67
853.1	19:3,2.1	⸢ *ομιτ*	0.67
854.1	19:3,3.1	⌜*ἀνθρωπω*	0.67
855.1	19:4,1.1	⊤ *ομιτ*	0.67
856.2	19:4,2.2	*ποιησας*	1
857.1	19:4,3.1	⌜*κολληθησεται*	0.67
858.1	19:6,1.1	⸢*σαρξ μια*⸣	0.67
859.1	19:6,2.1	⊤ *ομιτ*	0.67
860.1	19:7,1.1	○*αὐτην*	0.67
861.1	19:8,1.1	⊤ *ομιτ*	1
862.1	19:9,1.1	○*οτι*	0.67
863.1	19:9,2.1	‘*μη ἐπι πορνεια και γαμηση αλλην μοιχαται*	0.67
864.1	19:9,3.1	⊤ *ομιτ*	0.67
865.1	19:10,1.1	○*αὐτω*	1
866.1	19:10,2.1	○*αὐτου*	1
867.1	19:10,3.1	⌜*ἀνθρωπου*	0.67
868.1	19:11,1.1	○*τουτον*	1
869.1	19:13,1.1	⌜*προσηνεχθησαν*	0.67
870.1	19:14,1.1	⊤ *ομιτ*	0.67
871.1	19:14,2.1	⌜*με*	1
872.2	19:16,1.2	*2 1*	1
873.1	19:16,2.1	⊤ *ομιτ*	0.67
874.1	19:16,3.1	‘*ποιησω ινα σχω ζωην αἰωνιον*	0.67

VarUnit	Reference	Autographic Reading	Prob.
875.1	19:17,1.1	‘τι με ἐρωτας περι του ἀγαθου εις ἐστιν ο ἀγαθος⊤	0.67
876.1	19:17,2.1	⊤ ομιτ	1
877.1	19:17,3.1	ˢεἰς την ζωην εἰσελθειν⊤	0.67
878.1	19:17,4.1	⌜τηρησον	0.67
879.1	19:18,1.1	‘λεγει αὐτω ποιας	1
880.1	19:18,2.1	⌜ειπεν	1
881.1	19:20,1.1	ˢπαντα ταυτα⊤	0.67
882.2	19:20,2.2	π) εκ νεοτητος μου	0.67
883.1	19:21,1.1	⌜εφη	1
884.1	19:21,2.1	◦τοις	0.67
885.1	19:21,3.1	⌜οὐρανοις	0.67
886.1	19:22,1.1	‘τον λογον	1
887.1	19:22,2.1	⌜κτηματα	1
888.1	19:24,1.1	⊤ ομιτ	1
889.1	19:24,2.1	⌜καμηλον	1
890.1	19:24,3.1	⌜τρυπηματος	0.67
891.1	19:24,4.1	⌜διελθειν	1
892.1	19:24,5.1	‘εἰσελθειν εἰς την βασιλειαν του θεου	1
893.1	19:25,1.1	⊤ ομιτ	1
894.1	19:25,2.1	⊤ ομιτ	0.67
895.1	19:26,1.1	ˢπαντα δυνατα⊤	1
896.2	19:28,1.2	καθισεσθε	0.67
897.1	19:28,2.1	⌜υμεις	0.67
898.1	19:29,1.1	‘οἰκιας η ἀδελφους η ἀδελφας η πατερα η μητερα η τεκνα η ἀγρους	0.67
899.1	19:29,2.1	‘ὀνοματος μου	1
900.1	19:29,3.1	⌜εκατονταπλασιονα	1
901.1	20:3,1.1	⌜ειδεν	0.67
902.1	20:4,1.1	⊤ ομιτ	1
903.1	20:5,1.1	◦δε	0.67
904.1	20:5,2.1	ˢεκτην και ἐνατην ωραν⊤	0.67
905.1	20:6,1.1	⊤ ομιτ	0.67
906.1	20:6,2.1	⊤ ομιτ	1
907.1	20:7,1.1	⊤ ομιτ	0.33
908.1	20:8,1.1	◦αὐτοις	1
909.1	20:9,1.1	‘και ἐλθοντες	0.67
910.1	20:10,1.1	‘και ἐλθοντες	0.67
911.2	20:10,2.2	πλειονα	0.67
912.4	20:10,3.4	4 5 2 3	0.67

VarUnit	Reference	Autographic Reading	Prob.
913.1	20:12,1.1	ˢημιν αὐτουςᵀ	0.67
914.2	20:13,1.2	3 1 2	0.67
915.1	20:13,2.1	ʿσυνεφωνησας μοι	1
916.1	20:14,1.1	⌜δε	1
917.1	20:15,1.1	°η	0.67
918.1	20:15,2.1	ˢο θελω ποιησαιᵀ	0.67
919.2	20:16,1.2	πολλοι γαρ εισιν κλητοι, ολιγοι δε εκλεκτοι	0.67
920.1	20:17,1.1	ʿΛαι ἀναβαινων ο Ἰησους	1
921.1	20:17,2.1	⌜μαθητας	0.67
922.1	20:17,3.1	ʿκαι ἐν τη οδω	0.67
923.1	20:18,1.1	⌜θανατω	1
924.2	20:19,1.2	π) αναστησεται	1
925.1	20:20,1.1	ʿἀπ' αὐτου	0.67
926.1	20:21,1.1	ʿλεγει αὐτω	1
927.1	20:21,2.1	°σου	1
928.1	20:21,3.1	°σου	0.67
929.1	20:22,1.1	ᵀ ομιτ	0.67
930.1	20:23,1.1	ᵀ ομιτ	0.67
931.1	20:23,2.1	ᵀ ομιτ	0.67
932.1	20:23,3.1	ᵀ ομιτ	0.67
933.1	20:23,4.1	⌜και	1
934.1	20:23,5.1	ᵀ ομιτ	1
935.2	20:23,6.2	° ομιτ	0.67
936.1	20:23,7.1	ʿἀλλ' οις	1
937.1	20:24,1.1	ʿΛαι ἀκουσαντες	1
938.1	20:26,1.1	⌜εσται	0.67
939.1	20:26,2.1	ʿἐν υμιν μεγας γενεσθαι	1
940.1	20:26,3.1	⌜εσται	1
941.1	20:27,1.1	⌜αν	0.67
942.1	20:27,2.1	ʿἐν υμιν ειναι πρωτος	1
943.1	20:27,3.1	⌜εσται	1
944.1	20:28,1.1	ᵀ ομιτ	0.67
945.1	20:29,1.1	ʿἠκολουθησεν αὐτω οχλος πολυς	0.67
946.2	20:30,1.2	⌒ 3 1 2	0.33
947.1	20:30,2.1	⌜υιος	0.67
948.1	20:31,1.1	⌜εκραξαν	0.67
949.2	20:31,2.2	⌒ 3 1 2	0.67
950.1	20:31,3.1	⌜υιος	0.67

VarUnit	Reference	Autographic Reading	Prob.
951.1	20:32,1.1	◦*ο*	1
952.1	20:33,1.1	ˢ*οι ὀφθαλμοι ημων*ᵀ	0.67
953.1	20:33,2.1	ᵀ *ομιτ*	1
954.1	20:33,3.1	ᵀ *ομιτ*	1
955.4	20:34,1.4	*π) των οφθαλμων αυτων*	0.67
956.1	20:34,2.1	ᵀ *ομιτ*	0.67
957.1	21:1,1.1	⌜*ηγγισαν*	1
958.1	21:1,2.1	⌜*ηλθον*	1
959.2	21:1,3.2	*π) προς*	1
960.1	21:1,4.1	ᵀ *ομιτ*	0.67
961.1	21:2,1.1	⌜*πορευεσθε*	0.67
962.1	21:2,2.1	⌜*κατεναντι*	1
963.1	21:2,3.1	◦*εὐθεως*	1
964.1	21:2,4.1	⌜*ἀγαγετε*	0.67
965.1	21:3,1.1	⌜*αὐτων*	1
966.1	21:3,2.1	‘*εὐθυς δε*	0.33
967.1	21:3,3.1	⌜*ἀποστελει*	0.67
968.1	21:4,1.1	ᵀ *ομιτ*	0.67
969.1	21:4,2.1	⌜*δια*	1
970.2	21:5,1.2	◦ *ομιτ*	0.67
971.1	21:5,2.1	◦*υιον*	1
972.1	21:6,1.1	⌜*συνεταξεν*	0.67
973.1	21:7,1.1	⌜*ἐπ’*	0.67
974.1	21:7,2.1	⌜*αὐτων*	0.67
975.1	21:7,3.1	ᵀ *ομιτ*	0.67
976.1	21:8,1.1	⌜*εαυτων*	0.67
977.1	21:8,2.1	⌜*ἐστρωννυον*	0.67
978.1	21:9,1.1	◦*αὐτον*	0.67
979.1	21:9,2.1	ᵀ *ομιτ*	1
980.1	21:11,1.1	‘*ο προφητης Ἰησους*	0.67
981.2	21:12,1.2	*ο*	1
982.2	21:12,2.2	*του θεου*	0.67
983.2	21:13,1.2	*π) εποιησατε*	0.67
984.1	21:14,1.1	ˢ*τυφλοι και χωλοι*ᵀ	0.67
985.1	21:15,1.1	◦*τους*	0.67
986.1	21:16,1.1	◦*οτι*	0.67
987.1	21:18,1.1	⌜*Θρωι*	0.67
988.2	21:18,2.2	ⁿ *επαναγαγων*	0.33

VarUnit	Reference	Autographic Reading	Prob.
989.1	21:19,1.1	⊤ *ομιτ*	1
990.1	21:19,2.1	⌈*γενηται*	1
991.1	21:22,1.1	⌈*αν*	0.67
992.1	21:23,1.1	⌜*ἐλθοντος αὐτου*	0.67
993.1	21:24,1.1	○*δε*	1
994.1	21:24,2.1	⸗*λογον ενα*⊥	0.67
995.2	21:25,1.2	○ *ομιτ*	0.67
996.2	21:25,2.2	*παρ*	0.67
997.1	21:25,3.1	○*ουν*	0.67
998.2	21:26,1.2	*3 4 5 1 2*	0.67
999.1	21:27,1.1	⌜*και αὐτος*	1
1000.1	21:28,1.1	⊤ *ομιτ*	1
1001.1	21:28,2.1	⸗*τεκνα δυο*⊥	1
1002.1	21:28,3.1	○*και*	1
1003.1	21:28,4.1	⌜*ἐν τω ἀμπελωνι*	0.67
1004.1	21:29,1.1	⊥ *ομιτ*	1
1005.1	21:29,2.1	⌜*οὐ θελω υστερον* ○*δε μεταμεληθεις ἀπηλθεν*	0.67
1006.1	21:29,3.1	○*δε*	1
1007.1	21:29,4.1	⌜*προσελθων δε*	0.67
1008.1	21:29,5.1	⌈*ετερω*	0.67
1009.1	21:29,6.1	⌜*ἐγω κυριε και οὐκ ἀπηλθεν*	0.67
1010.1	21:29,7.1	⊤ *ομιτ*	0.67
1011.1	21:29,8.1	⌜*ο πρωτος*	0.67
1012.2	21:32,1.2	*2 3 1*	0.67
1013.2	21:32,2.2	*ου*	0.67
1014.1	21:36,1.1	⌈*παλιν*	0.67
1015.1	21:38,1.1	⌈*σχωμεν*	0.67
1016.1	21:39,1.1	⸗*αὐτον ἐξεβαλον εξω του ἀμπελωνος και ἀπεκτειναν*⊥	0.67
1017.1	21:42,1.1	⌈*ημων*	1
1018.1	21:43,1.1	○*οτι*	1
1019.1	21:44,1.1	□*ομιτ*	0.67
1020.1	21:45,1.1	⌜*Λαι ἀκουσαντες*	1
1021.1	21:46,1.1	⌈*ἐπει*	0.67
1022.2	21:46,2.2	*ως*	0.67
1023.1	22:2,1.1	⌈*ἐποιησεν*	1
1024.1	22:2,2.1	○*και*	1
1025.1	22:4,1.1	□*το αριστον μου* ⌈*ητοιμακα οι ταυροι μου και τα σιτιστα τεθυμενα και*	1
1026.1	22:4,2.1	⌈*ητοιμακα*	0.67

VarUnit	Reference	Autographic Reading	Prob.
1027.2	22:7,1.2	*και ακουσας ο βασιλευς εκεινος*	0.67
1028.1	22:7,2.1	ʻ*τα στρατευματα*	0.67
1029.2	22:10,1.2	*οσους*	0.67
1030.1	22:10,2.1	⌜*γαμος*	0.67
1031.1	22:10,3.1	⊤ *ομιτ*	0.67
1032.1	22:12,1.1	⌜*εἰσηλθες*	0.67
1033.2	22:13,1.2	*3 1 2*	0.67
1034.1	22:13,2.1	ʻ*δησαντες αὐτου ποδας και χειρας ἐκβαλετε αὐτον*	0.33
1035.1	22:14,1.1	⊤ *ομιτ*	1
1036.1	22:14,2.1	⊤ *ομιτ*	1
1037.1	22:16,1.1	⌜*λεγοντες*	0.67
1038.1	22:17,1.1	◻*εἰπε ουν ημιν*	0.67
1039.1	22:20,1.1	ʻ*και λεγει αὐτοις*	0.67
1040.1	22:21,1.1	○*αὐτω*	1
1041.1	22:21,2.1	⊤ *ομιτ*	0.67
1042.1	22:23,1.1	⌜*Ταδδουκαιοι*	1
1043.1	22:24,1.1	◻*την γυναικα αὐτου*	0.67
1044.2	22:25,1.2	*γαμησας*	0.67
1045.2	22:27,1.2	*π) και*	0.67
1046.1	22:28,1.1	ʻ*ἀναστασει ουν*	1
1047.1	22:28,2.1	ˢ*των επτα εσται*⊥	0.67
1048.1	22:30,1.1	⌜*γαμιζονται*	0.67
1049.1	22:30,2.1	⌜*αγγελοι*	0.67
1050.2	22:30,3.2	*2*	0.67
1051.1	22:32,1.1	○*ο*	1
1052.1	22:32,2.1	○*ο*	1
1053.1	22:32,3.1	ʻ*ο θεος*	0.33
1054.1	22:34,1.1	ʻ*ἐπι το αὐτο*	0.67
1055.1	22:35,1.1	⌜*νομικος*	1
1056.2	22:35,2.2	*και λεγων*	0.67
1057.1	22:37,1.1	ʻ*ο δε εφη αὐτω*	0.33
1058.1	22:37,2.1	○*τη*	1
1059.1	22:37,3.1	○*τη*	1
1060.1	22:37,4.1	⌜*διανοια*	1
1061.1	22:39,1.1	○*δε*	1
1062.1	22:39,2.1	ʻ*ομοια αὐτη*	0.33
1063.1	22:40,1.1	○*ολος*	1
1064.1	22:43,1.1	⊤ *ομιτ*	1

VarUnit	Reference	Autographic Reading	Prob.
1065.1	22:43,2.1	ˢκαλει αὐτον κυριον˖	0.67
1066.1	22:44,1.1	˖ ομιτ	0.67
1067.1	22:44,2.1	⌜υποκατω	0.67
1068.1	22:45,1.1	˖ ομιτ	0.67
1069.1	22:46,1.1	⌜ημερας	0.67
1070.1	23:1,1.1	‘ο Ἰησους ἐλαλησεν	0.67
1071.1	23:2,1.1	ˢΝωυσεως καθεδρας˖	0.67
1072.1	23:3,1.1	˖ ομιτ	0.67
1073.1	23:3,2.1	‘ποιησατε και τηρειτε	0.33
1074.1	23:4,1.1	‘βαρεα και δυσβαστακτα	1
1075.1	23:4,2.1	‘αὐτοι δε τω	0.67
1076.1	23:5,1.1	˖ ομιτ	0.67
1077.1	23:6,1.1	‘την πρωτοκλισιαν	1
1078.2	23:7,1.2	ραββι	0.67
1079.1	23:8,1.1	‘μη κληθητε	1
1080.2	23:8,2.2	καθηγητης	1
1081.1	23:8,3.1	˖ ομιτ	0.67
1082.1	23:9,1.1	⌜υμων	0.67
1083.2	23:9,2.2	2 3 1	0.67
1084.2	23:9,3.2	εν τοις ουρανοις	0.67
1085.1	23:10,1.1	‘οτι καθηγητης υμων ἐστιν εις	0.33
1086.1	23:13,1.1	°δε	0.67
1087.1	23:13,2.1	˖ ομιτ	0.67
1088.1	23:15,1.1	⌜ποιησαι	0.67
1089.1	23:17,1.1	⌜αγιασας	0.67
1090.1	23:19,1.1	˖ ομιτ	0.67
1091.2	23:21,1.2	κατοικησαντι	0.67
1092.1	23:23,1.1	‘το ελεος	0.67
1093.1	23:23,2.1	°δε	0.67
1094.1	23:23,3.1	⌜ἀφιεναι	0.67
1095.1	23:24,1.1	°οι	1
1096.1	23:25,1.1	⌜ἀκρασιας	1
1097.2	23:26,1.2	και της παροψιδος	0.67
1098.2	23:26,2.2	αυτων	0.67
1099.1	23:27,1.1	⌜παρομοιαζετε	1
1100.1	23:27,2.1	‘οιτινες εξωθεν μεν φαινονται ωραιοι εσωθεν δε γεμουσιν	0.67
1101.1	23:30,1.1	‘αὐτων κοινωνοι	0.67
1102.1	23:31,1.1	⌜πληρωσατε	0.67

VarUnit	Reference	Autographic Reading	Prob.
1103.1	23:34,1.1	⊤ *ομιτ*	0.67
1104.1	23:34,2.1	□*και ἐξ αὐτων μαστιγωσετε ἐν ταις συναγωγαις υμων*	0.67
1105.1	23:35,1.1	□*υιου Βαραχιου*	1
1106.1	23:36,1.1	ˢ*ταυτα παντα*⊥	1
1107.1	23:37,1.1	⌜*αὐτην*	0.67
1108.1	23:37,2.1	ˢ*ορνις ἐπισυναγει*⊥	1
1109.1	23:37,3.1	⌜*αὐτης*	0.67
1110.1	23:38,1.1	○*ερημος*	1
1111.1	24:1,1.1	‘*ἀπο του ιερου ἐπορευετο*	0.67
1112.2	24:3,1.2	*της*	0.67
1113.1	24:6,1.1	⊤ *ομιτ*	0.67
1114.1	24:7,1.1	‘*λιμοι και σεισμοι*	0.67
1115.1	24:8,1.1	ˢ*παντα δε ταυτα*⊥	1
1116.1	24:9,1.1	‘*παντων των ἐθνων*	1
1117.1	24:10,1.1	‘*και μισησουσιν ἀλληλους*	1
1118.1	24:14,1.1	□*της βασιλειας*	1
1119.1	24:15,1.1	□*εστος ἐν τοπω αγιω*	1
1120.1	24:16,1.1	⌜*εἰς*	0.67
1121.1	24:17,1.1	⌜*καταβατω*	0.67
1122.1	24:17,2.1	⌜*τα*	0.67
1123.1	24:18,1.1	‘*το ιματιον*	1
1124.1	24:19,1.1	⌜*θηλαζουσαις*	0.67
1125.1	24:20,1.1	⌜*σαββατω*	0.67
1126.1	24:21,1.1	‘*οὐ γεγονεν*	0.67
1127.1	24:21,2.1	‘*οὐδ’ οὐ*	0.67
1128.1	24:24,1.1	‘*μεγαλα και τερατα*	1
1129.1	24:24,2.1	⌜*πλανησαι*	0.67
1130.1	24:27,1.1	⌜*φαινεται*	0.67
1131.1	24:28,1.1	⊤ *ομιτ*	0.67
1132.1	24:29,1.1	⌜*ἀπο*	0.67
1133.1	24:30,1.1	‘*ἐν οὐρανω*	0.33
1134.1	24:30,2.1	‘*τοτε κοψονται*	0.67
1135.2	24:31,1.2	*φωνης*	0.67
1136.1	24:31,2.1	⊥ *ομιτ*	1
1137.2	24:31,3.2	○ *ομιτ*	1
1138.1	24:31,4.1	⊤ *ομιτ*	0.67
1139.2	24:33,1.2	*2 1*	1
1140.1	24:34,1.1	○*οτι*	0.67

VarUnit	Reference	Autographic Reading	Prob.
1141.1	24:34,2.1	◦αν	1
1142.1	24:34,3.1	‘παντα ταυτα	0.67
1143.1	24:35,1.1	◻ο οὐρανος και η γη ⌜παρελευσεται οι δε λογοι μου οὐ μη παρελθωσιν	1
1144.1	24:35,2.1	⌜παρελευσεται	0.67
1145.1	24:36,1.1	◻οὐδε ο υιος	0.67
1146.1	24:36,2.1	⊤ ομιτ	1
1147.1	24:37,1.1	⌜γαρ	0.67
1148.2	24:37,2.2	και	0.67
1149.2	24:38,1.2	ωσπερ	0.67
1150.1	24:38,2.1	⌜ἐκειναις	0.67
1151.1	24:38,3.1	⌜γαμιζοντες	0.67
1152.1	24:39,1.1	◦και	0.67
1153.1	24:40,1.1	ˢδυο εσονται⊤	1
1154.1	24:41,1.1	⌜μυλω	0.67
1155.1	24:41,2.1	⊤ ομιτ	0.67
1156.1	24:42,1.1	⌜ημερα	0.67
1157.1	24:43,1.1	⌜διορυχθηναι	0.67
1158.1	24:45,1.1	⊤ ομιτ	0.67
1159.1	24:45,2.1	⌜οἰκετειας	0.67
1160.1	24:46,1.1	ˢουτως ποιουντα⊤	0.67
1161.1	24:48,1.1	◦ἐκεινος	1
1162.2	24:48,2.2	ο κυριος μου ελθειν	0.67
1163.1	25:1,1.1	⌜εαυτων	0.67
1164.2	25:1,2.2	απαντ—	0.67
1165.1	25:1,3.1	‘του νυμφιου	0.67
1166.1	25:3,1.1	⌜αὐτων	1
1167.1	25:3,2.1	⊤ ομιτ	0.67
1168.1	25:4,1.1	⊤ ομιτ	1
1169.2	25:4,2.2	αυτων	1
1170.1	25:6,1.1	⌜ἐξερχεσθε	1
1171.1	25:6,2.1	‘ἀπαντησιν αὐτου	1
1172.2	25:7,1.2	αυτων	0.67
1173.1	25:9,1.1	‘οὐ μη	0.67
1174.1	25:13,1.1	⊤ ομιτ	0.67
1175.2	25:15,1.2	ευθεως. πορευθεις δε	1
1176.1	25:15,2.1	⌜ἐκερδησεν	0.67
1177.2	25:15,3.2	ταλαντα	0.67
1178.2	25:17,1.2	και	1

VarUnit	Reference	Autographic Reading	Prob.
1179.1	25:17,2.1	⌈ἐκερδησεν	0.33
1180.2	25:18,1.2	εν τη γη	0.67
1181.1	25:18,2.1	⌈εκρυψεν	0.67
1182.1	25:20,1.1	⌈ἐκερδησα	0.33
1183.1	25:21,1.1	⊤ ομιτ	1
1184.1	25:21,2.1	⌈ἐπι	0.67
1185.1	25:22,1.1	○δε	1
1186.2	25:22,2.2	λαβων	0.67
1187.1	25:22,3.1	⌈ἐκερδησα	0.33
1188.1	25:23,1.1	⌈ἐπι	0.67
1189.1	25:23,2.1	ˢης πιστος⊤	1
1190.1	25:24,1.1	○σε	0.67
1191.1	25:24,2.1	⌈οθεν	0.67
1192.1	25:27,1.1	ˢσε ουν⊤	0.67
1193.2	25:27,2.2	π) το αργυριον	1
1194.1	25:28,1.1	⌈δεκα	0.67
1195.1	25:29,1.1	○παντι	0.67
1196.1	25:29,2.1	⌈εχει	1
1197.1	25:29,3.1	⊤ ομιτ	1
1198.1	25:31,1.1	⊤ ομιτ	0.67
1199.1	25:32,1.1	⌈συναχθησονται	1
1200.1	25:33,1.1	ˢαὐτου τα δε ἐριφια ἐξ εὐωνυμων	1
1201.1	25:39,1.1	⌈ἀσθενουντα	0.67
1202.1	25:40,1.1	□των ἀδελφων μου	1
1203.1	25:41,1.1	○οι	0.67
1204.1	25:41,2.1	⌊το ητοιμασμενον	0.67
1205.1	25:42,1.1	⊤ ομιτ	1
1206.1	25:43,1.1	⊤ ομιτ	1
1207.1	25:43,2.1	⊤ ομιτ	1
1208.1	25:46,1.1	⌈κολασιν	1
1209.1	26:1,1.1	□αὐτου	0.67
1210.1	26:3,1.1	⊤ ομιτ	1
1211.1	26:3,2.1	□του λαου	1
1212.1	26:3,3.1	⌈Λαιαφα	0.67
1213.1	26:4,1.1	□και ἀποκτεινωσιν	1
1214.1	26:7,1.1	ˢεχουσα ἀλαβαστρον μυρου⊤	1
1215.1	26:7,2.1	⌈βαρυτιμου	0.67
1216.1	26:7,3.1	⌊της κεφαλης	0.67

VarUnit	Reference	Autographic Reading	Prob.
1217.1	26:8,1.1	⊤ *ομιτ*	1
1218.1	26:9,1.1	⊤ *ομιτ*	1
1219.1	26:9,2.1	⊤ *ομιτ*	0.67
1220.1	26:14,1.1	⌜*Ἰσκαριωτης*	0.67
1221.1	26:15,1.1	⌜*ειπεν*	0.67
1222.1	26:15,2.1	⌜*ἀργυρια*	0.67
1223.1	26:16,1.1	⊤ *ομιτ*	0.67
1224.1	26:18,1.1	◻*ο διδασκαλος λεγει*	1
1225.1	26:20,1.1	⊤ *ομιτ*	0.67
1226.1	26:21,1.1	○*οτι*	1
1227.1	26:22,1.1	○*αὐτω*	0.67
1228.1	26:22,2.1	‘*εις εκαστος*	0.33
1229.1	26:23,1.1	ˢ*μετ’ ἐμου την χειρα ἐν τω τρυβλιω*⊤	0.67
1230.1	26:25,1.1	⊤ *ομιτ*	1
1231.1	26:26,1.1	ˢ*Ἐσθιοντων δε αὐτων*⊤	0.67
1232.1	26:26,2.1	⊤ *ομιτ*	1
1233.1	26:26,3.1	‘*και εὐλογησας*	0.67
1234.1	26:26,4.1	‘*δους τοις μαθηταις*	1
1235.1	26:27,1.1	⊤ *ομιτ*	0.67
1236.1	26:27,2.1	○*και*	1
1237.1	26:28,1.1	⊤ *ομιτ*	0.67
1238.2	26:28,2.2	*π) καινης*	0.67
1239.1	26:29,1.1	⊤ *ομιτ*	0.67
1240.1	26:29,2.1	‘*τουτου του*	1
1241.1	26:29,3.1	⌜*πινω*	0.67
1242.1	26:29,4.1	ˢ*μεθ’ υμων καινον*⊤	1
1243.2	26:31,1.2	—*πισθησεται*	0.67
1244.1	26:33,1.1	○*αὐτω*	1
1245.1	26:33,2.1	‘*ἐν σοι ἐγω*	1
1246.1	26:34,1.1	⊤ *ομιτ*	1
1247.1	26:34,2.1	○*ἐν*	0.67
1248.1	26:34,3.1	‘*ἀλεκτορα φωνησαι*	1
1249.1	26:34,4.1	‘*τρις ἀπαρνηση με*	1
1250.1	26:35,1.1	⌜*και*	0.67
1251.1	26:36,1.1	ˢ*μετ’ αὐτων ο Ἰησους*⊤	0.67
1252.1	26:36,2.1	‘*τοις μαθηταις*	0.67
1253.1	26:36,3.1	⌜*αὐτου*	1
1254.1	26:36,4.1	⌜*ου*	0.67

VarUnit	Reference	Autographic Reading	Prob.
1255.1	26:36,5.1	‘εκει προσευξωμαι	1
1256.1	26:38,1.1	⊤ ομιτ	1
1257.2	26:39,1.2	προσελθων	1
1258.1	26:39,2.1	○μου	1
1259.1	26:39,3.1	⊤ ομιτ	1
1260.1	26:40,1.1	‘τους μαθητας	1
1261.1	26:42,1.1	○λεγων	1
1262.1	26:42,2.1	○μου	1
1263.2	26:42,3.2	τουτο το ποτηριον	0.67
1264.1	26:42,4.1	⊤ ομιτ	1
1265.1	26:43,1.1	‘παλιν ευρεν αὐτους	1
1266.1	26:44,1.1	‘παλιν ἀπελθων προσηυξατο	0.67
1267.1	26:44,2.1	□ἐκ τριτου	0.67
1268.2	26:44,3.2	○ ομιτ	0.67
1269.2	26:45,1.2	αυτου	0.67
1270.1	26:45,2.1	○το	1
1271.1	26:45,3.1	‘ἰδου ηγγικεν	1
1272.1	26:49,1.1	⊤ ομιτ	1
1273.1	26:49,2.1	□χαιρε ραββι και κατεφιλησεν αὐτον	1
1274.1	26:49,3.1	⁵εταιρε ἐφ’ ο παρει⊥	0.67
1275.1	26:52,1.1	‘την μαχαιραν σου	1
1276.1	26:52,2.1	⌈ἀπολουνται	1
1277.1	26:53,1.1	⊤ ομιτ	1
1278.2	26:53,2.2	π. δυναμαι	0.67
1279.1	26:53,3.1	⌈πλειω	0.67
1280.1	26:53,4.1	⊥ ομιτ	0.67
1281.1	26:53,5.1	‘λεγιωνας ἀγγελων	0.67
1282.2	26:55,1.2	π) προς υμας	0.67
1283.1	26:55,2.1	‘ἐν τω ιερω ἐκαθεζομην διδασκων	0.67
1284.1	26:56,1.1	⊤ ομιτ	1
1285.1	26:57,1.1	⌈Λαιαφαν	0.67
1286.1	26:58,1.1	○ἀπο	1
1287.1	26:59,1.1	⊤ ομιτ	0.67
1288.1	26:59,2.1	‘αὐτον θανατωσωσιν	0.33
1289.2	26:60,1.2	·και	0.67
1290.1	26:60,2.1	⁵προσελθοντων ψευδομαρτυρων⊥	0.67
1291.2	26:60,3.2	υχ ευρον	0.67
1292.2	26:60,4.2	ψευδομαρτυρες	0.67

VarUnit	Reference	Autographic Reading	Prob.
1293.3	26:61,1.3	οικοδ. αυτον	0.67
1294.2	26:63,1.2	αποκριθεις	0.67
1295.1	26:63,2.1	⌈ἐξορκιζω	0.67
1296.1	26:63,3.1	⊤ ομιτ	1
1297.1	26:65,1.1	⊤ ομιτ	0.67
1298.1	26:65,2.1	⊤ ομιτ	0.67
1299.1	26:66,1.1	⌈ἀποκριθεντες	0.67
1300.1	26:67,1.1	⊤ ομιτ	0.67
1301.1	26:69,1.1	⌊ἐκαθητο εξω	0.67
1302.1	26:69,2.1	⌈Γαλιλαιου	1
1303.1	26:70,1.1	⌈παντων	1
1304.1	26:70,2.1	⊤ ομιτ	0.67
1305.1	26:71,1.1	⌊ἐξελθοντα δε	0.33
1306.1	26:71,2.1	⊤ ομιτ	0.67
1307.1	26:71,3.1	⌈τοις	1
1308.1	26:71,4.1	⊤ ομιτ	0.67
1309.1	26:72,1.1	⌈οτι	0.67
1310.1	26:73,1.1	⊡και συ	0.67
1311.1	26:73,2.1	⊤ ομιτ	1
1312.1	26:73,3.1	⌊δηλον σε ποιει	0.67
1313.1	26:75,1.1	⊤ ομιτ	0.67
1314.1	27:1,1.1	⌈ελαβον	0.67
1315.1	27:2,1.1	⊤ ομιτ	0.67
1316.2	27:2,2.2	Ποντιω	0.67
1317.1	27:3,1.1	⌈παραδιδους	1
1318.2	27:3,2.2	απεστρεψεν	0.67
1319.2	27:3,3.2	τοις	0.67
1320.1	27:4,1.1	⌈ἀθωον	1
1321.1	27:5,1.1	⊤ ομιτ	1
1322.2	27:5,2.2	εν τω ναω	0.67
1323.1	27:6,1.1	⌈κορβαναν	1
1324.1	27:9,1.1	⌈Ἱερεμιου	1
1325.1	27:10,1.1	⌈εδωκαν	1
1326.2	27:11,1.2	εστη	0.67
1327.1	27:11,2.1	⊡ο ηγεμων	1
1328.1	27:11,3.1	⊤ ομιτ	0.67
1329.2	27:16,1.2	○ ομιτ	1
1330.1	27:16,2.1	⊤ ομιτ	1

VarUnit	Reference	Autographic Reading	Prob.
1331.1	27:17,1.1	⌜ουν	0.67
1332.3	27:17,2.3	Βαραββαν	1
1333.2	27:21,1.2	° ομιτ	0.67
1334.1	27:22,1.1	⌜ποιησω	0.67
1335.1	27:22,2.1	⊤ ομιτ	0.67
1336.3	27:23,1.3	λεγει αυτοις ο ηγεμων	0.67
1337.1	27:24,1.1	⌜ἀπεναντι	0.67
1338.1	27:24,2.1	⌜οχλου	1
1339.1	27:24,3.1	⌜τουτου	0.67
1340.1	27:26,1.1	⊤ ομιτ	0.67
1341.1	27:26,2.1	⌜σταυρωθη	0.67
1342.1	27:28,1.1	⌜ἐκδυσαντες	0.67
1343.1	27:28,2.1	⊤ ομιτ	0.67
1344.2	27:29,1.2	την κεφαλην	0.67
1345.1	27:29,2.1	⌜ἐνεπαιξαν	0.67
1346.1	27:29,3.1	⌜βασιλευ	0.67
1347.1	27:31,1.1	⌜ἐξεδυσαν	1
1348.1	27:31,2.1	°και	1
1349.1	27:32,1.1	⊤ ομιτ	0.67
1350.1	27:33,1.1	⊤ ομιτ	1
1351.1	27:33,2.1	⊤ ομιτ	1
1352.1	27:33,3.1	′Λρανιου Υοπος λεγομενος	0.67
1353.1	27:34,1.1	⌜οινον	1
1354.1	27:34,2.1	⌜ἠθελησεν	0.67
1355.1	27:35,1.1	⌜βαλλοντες	0.67
1356.1	27:35,2.1	⊤ ομιτ	1
1357.1	27:38,1.1	⊤ ομιτ	1
1358.1	27:38,2.1	⊤ ομιτ	1
1359.1	27:40,1.1	′ει του θεου	1
1360.2	27:40,2.2	° ομιτ	0.67
1361.1	27:41,1.1	⌜και	0.67
1362.1	27:41,2.1	′και πρεσβυτερων	0.33
1363.1	27:42,1.1	⊤ ομιτ	0.67
1364.1	27:42,2.1	⌜πιστευσομεν	1
1365.1	27:42,3.1	′ἐπ᾽ αὐτον	0.33
1366.1	27:43,1.1	⊤ ομιτ	0.67
1367.1	27:43,2.1	′τον θεον	1
1368.3	27:43,3.3	νυν αυτον	0.67

VarUnit	Reference	Autographic Reading	Prob.
1369.1	27:44,1.1	⌜συσταυρωθεντες	0.67
1370.1	27:44,2.1	‘συν αὐτω	0.67
1371.1	27:45,1.1	‘ἐπι πασαν την γην	1
1372.1	27:46,1.1	⌜ἀνεβοησεν	1
1373.1	27:46,2.1	‘ηλι ηλι	1
1374.1	27:46,3.1	‘λεμα σαβαχθανι	0.33
1375.2	27:47,1.2	εστωτων	0.67
1376.1	27:47,2.1	◦οτι	0.67
1377.1	27:48,1.1	◻ἐξ αὐτων	1
1378.1	27:49,1.1	⌜ελεγον	0.67
1379.1	27:49,2.1	⊤ ομιτ	0.67
1380.1	27:51,1.1	‘ἀπ’ ανωθεν εως κατω εἰς δυο	0.33
1381.1	27:52,1.1	⌜ἠγερθησαν	0.67
1382.1	27:54,1.1	⌜γενομενα	0.67
1383.1	27:54,2.1	‘θεου υιος ην	0.67
1384.1	27:56,1.1	⌜Ναρια	1
1385.1	27:56,2.1	⌜Ναρια	1
1386.2	27:56,3.2	Ιωση 2 3 4 5	0.67
1387.1	27:57,1.1	⌜ἐμαθητευθη	0.67
1388.2	27:58,1.2	το σωμα	0.67
1389.1	27:59,1.1	◦ἐν	0.67
1390.1	27:60,1.1	◦αὐτο	1
1391.2	27:61,1.2	Μαρια	0.67
1392.1	27:64,1.1	◦αὐτου	1
1393.1	27:64,2.1	‘κλεψωσιν αὐτον	1
1394.1	27:65,1.1	⊤ ομιτ	0.67
1395.1	27:65,2.1	⌜κουστωδιαν	1
1396.1	27:65,3.1	⌜ἀσφαλισασθε	0.67
1397.1	27:66,1.1	‘της κουστωδιας	1
1398.1	28:1,1.1	◦δε	1
1399.2	28:1,2.2	Μαρια	1
1400.1	28:1,3.1	⌜Ναρια	1
1401.2	28:2,1.2	◦ ομιτ	0.67
1402.1	28:2,2.1	⊤ ομιτ	1
1403.1	28:3,1.1	⌜εἰδεα	0.67
1404.1	28:3,2.1	⌜ως	0.67
1405.1	28:4,1.1	⌜ἐγενηθησαν	0.67
1406.1	28:4,2.1	⌜ως	0.67

VarUnit	Reference	Autographic Reading	Prob.
1407.2	28:6,1.2	*ο κυριος*	0.67
1408.1	28:7,1.1	◻*ἀπο των νεκρων*	0.67
1409.2	28:8,1.2	*π) εξελθ—*	0.67
1410.1	28:9,1.1	⊤ *ομιτ*	1
1411.1	28:9,2.1	⊤ *ομιτ*	0.67
1412.1	28:9,3.1	⌜*υπηντησεν*	0.67
1413.1	28:10,1.1	ʻ*ἀδελφοις μου*	1
1414.1	28:10,2.1	⌜*οψονται*	0.67
1415.1	28:11,1.1	⌜*ἀπηγγειλαν*	0.67
1416.1	28:14,1.1	⌜*ἐπι*	0.67
1417.1	28:14,2.1	○*αὐτον*	1
1418.1	28:15,1.1	○*τα*	1
1419.1	28:15,2.1	⌜*διεφημισθη*	1
1420.1	28:15,3.1	○*ημερας*	0.67
1421.1	28:17,1.1	⊤ *ομιτ*	0.67
1422.1	28:18,1.1	⌜*οὐρανω*	0.67
1423.1	28:18,2.1	○*της*	0.67
1424.1	28:18,3.1	⊤ *ομιτ*	1
1425.1	28:19,1.1	⌜*ουν*	0.33
1426.1	28:19,2.1	⌜*βαπτιζοντες*	0.67
1427.1	28:20,1.1	ʻ*μεθ' υμων εἰμι*⊤	0.67
1428.1	28:20,2.1	⊤ *ομιτ*	0.67

APPENDIX G

List of Places the Lachmann-10 Text

Differs from the NA-27 Text

Ref.		NA-27 Text		Lachmann-10 Text	Prob.
1:5,1.2	Replace NA-27 →	⌜Βοες	with →	Βοοζ	[0.67]
1:5,2.2	Replace NA-27 →	⌜Βοες	with →	Βοοζ	[0.67]
1:6,1.2	At NA-27 →	⊤ ομιτ	insert →	ο βασιλευς	[0.67]
1:18,2.2	Replace NA-27 →	⌜γενεσις	with →	γεννησις	[1.00]
1:19,1.2	Replace NA-27 →	⌜δειγματισαι	with →	παραδ—	[1.00]
1:20,1.2	Replace NA-27 →	⌜Ναριαν	with →	Μαριαμ	[1.00]
1:24,1.2	Replace NA-27 →	⌜ἐγερθεις	with →	διεγ—	[1.00]
1:25,3.2	Replace NA-27 →	⌜υιον	with →	τον υ. αυτης τον πρωτοτοκον	[0.67]
2:18,1.2	At NA-27 →	⊤ ομιτ	insert →	θρηνος και	[0.67]
2:21,1.2	Replace NA-27 →	⌜εἰσηλθεν	with →	ηλθεν	[1.00]
2:22,1.2	Transpose NA-27 →	⌞⌞του πατρος αὐτου Ηρωδου⊤	to →	4 1 2 3	[1.00]
3:1,1.2	Omit NA-27 →	○δε			[0.67]
3:6,1.2	Omit NA-27 →	○ποταμω			[0.67]
4:13,1.3	Replace NA-27 →	⌜Οαζαρα	with →	—ρεθ	[0.67]
5:13,2.2	Replace NA-27 →	⌜βληθεν εξω	with →	—θηναι εξω και	[0.67]
5:22,1.2	At NA-27 →	⊤ ομιτ	insert →	εικη	[1.00]
5:25,3.2	At NA-27 →	⊤ ομιτ	insert →	π) σε παραδω	[0.67]
5:32,1.2	Replace NA-27 →	⌜πας ο ἀπολυων	with →	π) ος αν απολυση	[0.67]
5:39,1.2	Replace NA-27 →	⌜ραπιζει	with →	—σει	[1.00]
5:39,2.2	Replace NA-27 →	⌜εἰς	with →	π) επι	[1.00]
5:44,1.2	Replace NA-27 →	⌜και προσευχεσθε υπερ των	with →	π) ευλογειτε τους καταρωμενους υμας , καλως ποιειτε τοις μισουσιν υμας και προσευχεσθε υπερ των επηρεαζοντων υμας και	[1.00]
5:48,1.2	Replace NA-27 →	⌜ως	with →	ωσπερ	[0.67]
6:1,1.2	Omit NA-27 →	○δε			[1.00]
6:5,2.2	Replace NA-27 →	⌜προσευχησθε οὐκ εσεσθε	with →	—χη, ουκ εση	[1.00]
6:10,2.2	At NA-27 →	⊤ ομιτ	insert →	της	[0.67]
6:18,2.3	Replace NA-27 →	⌜τω κρυφαιω	with →	τω κρυπτω	[0.67]
6:18,3.3	Replace NA-27 →	⌜τω κρυφαιω	with →	τω κρυπτω	[0.67]
6:22,2.2	Transpose NA-27 →	⌞⌞η ο ὀφθαλμος σου απλους⊤	to →	2 3 4 5 1	[1.00]
6:28,1.4	Replace NA-27 →	⌜αὐξανουσιν οὐ κοπιωσιν οὐδε νηθουσιν	with →	αυξανει· ου κοπια ουδε νηθει	[1.00]
6:32,2.2	Replace NA-27 →	⌜ἐπιζητουσιν	with →	επιζητει	[0.67]
6:34,1.3	Replace NA-27 →	⌜εαυτης	with →	τα εαυ—	[0.67]
7:5,1.2	Transpose NA-27 →	⌞⌞ἐκ του ὀφθαλμου σου την δοκον⊤	to →	5 6 1 2 3 4	[1.00]
7:6,1.2	Replace NA-27 →	⌜καταπατησουσιν	with →	—σωσιν	[1.00]
7:10,1.2	Replace NA-27 →	⌜η και ἰχθυν αἰτησει	with →	η κ. εαν ι. —ση	[0.67]
7:21,1.2	Omit NA-27 →	○τοις			[0.67]
7:26,3.2	Transpose NA-27 →	⌞⌞αὐτου την οἰκιαν⊤	to →	2 3 1	[0.67]
8:3,1.2	At NA-27 →	⊤ ομιτ	insert →	ο Ιησους	[0.67]

Ref.		NA-27 Text		Lachmann-10 Text	Prob.
8:7,2.2	At NA-27 →	⊤ *ομιτ*	insert →	*ο Ιησους*	[1.00]
8:10,1.2	Replace NA-27 →	*⸂παρ' οὐδενι τοσαυτην πιστιν ἐν τω 'Ισραηλ*	with →	*π) ουδε εν τω Ι. τοσ. πισ.*	[1.00]
8:13,2.2	At NA-27 →	⊤ *ομιτ*	insert →	*και*	[1.00]
8:13,3.2	Omit NA-27 →	○*αὐτου*			[0.67]
8:18,1.2	Replace NA-27 →	⸢*οχλον*	with →	*πολλους οχλους*	[1.00]
8:22,2.2	Replace NA-27 →	⸢*λεγει*	with →	*ειπεν*	[0.67]
8:25,2.2	At NA-27 →	⊤ *ομιτ*	insert →	*ημας*	[0.67]
8:29,1.2	At NA-27 →	⊤ *ομιτ*	insert →	*π) Ιησου*	[0.67]
8:34,1.2	Replace NA-27 →	⸢*υπαντησιν*	with →	*συναντ—*	[0.67]
9:11,1.2	Replace NA-27 →	⸢*ελεγον*	with →	*ειπον*	[0.67]
9:30,1.2	Replace NA-27 →	⸢*ἐνεβριμηθη*	with →	*—μησατο*	[0.67]
10:2,2.2	Omit NA-27 →	○*και*			[1.00]
10:3,1.3	Replace NA-27 →	⸢*Ραδδαιος*	with →	*Λ. ο επικληθεις Θαδδ.*	[0.67]
10:19,1.2	Replace NA-27 →	⸢*παραδωσιν*	with →	*—δωσουσιν*	[0.67]
10:23,1.2	Replace NA-27 →	⸢*ετεραν*	with →	*αλλην*	[0.67]
10:28,2.2	Replace NA-27 →	⸢*φοβεισθε*	with →	*φοβηθητε*	[1.00]
10:32,1.2	Omit NA-27 →	○*τοις*			[1.00]
10:33,3.2	Omit NA-27 →	○*τοις*			[1.00]
11:19,1.2	Replace NA-27 →	⸢*των εργων*	with →	*π) τ. τεκνων*	[1.00]
12:4,1.2	Replace NA-27 →	⸢*εφαγον*	with →	*—γεν*	[1.00]
12:18,2.2	Replace NA-27 →	⸢*εἰς ον*	with →	*ἓν*	[0.33]
12:25,1.2	Replace NA-27 →	⸢*εἰδως δε*	with →	*ειδως δε ο Ιησους*	[0.67]
12:29,1.2	Replace NA-27 →	⸢*αρπασαι*	with →	*διαρπασαι*	[1.00]
12:29,2.2	Replace NA-27 →	⸢*διαρπασει*	with →	*ιαρπαση*	[0.67]
12:31,2.2	At NA-27 →	⊤ *ομιτ*	insert →	*τοις ανθρωποις*	[0.67]
12:36,1.3	Replace NA-27 →	⸢*λαλησουσιν*	with →	*εαν λαλησωσιν*	[0.67]
13:1,1.2	At NA-27 →	⊤ *ομιτ*	insert →	*δε*	[0.67]
13:2,1.2	At NA-27 →	⊤ *ομιτ*	insert →	*το*	[0.67]
13:4,1.2	Replace NA-27 →	⸢*ἐλθοντα*	with →	*ηλθεν*	[1.00]
13:4,3.2	At NA-27 →	⊤ *ομιτ*	insert →	*αι*	[1.00]
13:9,1.2	At NA-27 →	⊤ *ομιτ*	insert →	*π) ακουειν*	[0.67]
13:18,1.2	Replace NA-27 →	⸢*σπειραντος*	with →	*σπειροντος*	[1.00]
13:24,1.2	Replace NA-27 →	⸢*σπειραντι*	with →	*σπειροντι*	[0.67]
13:25,1.3	Replace NA-27 →	⸢*ἐπεσπειρεν*	with →	*εσπειρεν*	[0.67]
13:34,1.2	Replace NA-27 →	⸢*οὐδεν*	with →	*π) ουκ*	[1.00]

13:36,2.2	Replace NA-27 →	⌜διασαφησον	with →	φρασον	[1.00]
13:43,2.2	At NA-27 →	⊤ ομιτ	insert →	ακουειν	[1.00]
13:48,4.2	Replace NA-27 →	⌜αγγη	with →	αγγεια	[0.67]
Ref.		NA-27 Text		Lachmann-10 Text	Prob.
13:55,1.2	Replace NA-27 →	⌜οὐχ	with →	ουχι	[1.00]
14:4,1.6	Replace NA-27 →	⌜ο ’Ιωαννης αὐτω	with →	3 1 2	[0.67]
14:12,3.2	Replace NA-27 →	⌜αὐτον	with →	αυτο	[1.00]
14:15,1.2	At NA-27 →	⊤ ομιτ	insert →	π) αυτου	[0.67]
14:24,2.3	Replace NA-27 →	⌜σταδιους πολλους ἀπο της γης ἀπειχεν	with →	μεσον της θαλασσης ην	[0.67]
14:25,1.2	Replace NA-27 →	⌜ηλθεν	with →	απηλθεν	[0.67]
14:27,1.2	Replace NA-27 →	⌜ὁ ’Ιησους αὐτοις	with →	3 1 2	[0.67]
14:29,2.2	Replace NA-27 →	⌜και ηλθεν	with →	ελθειν	[1.00]
14:33,1.2	At NA-27 →	⊤ ομιτ	insert →	ελθοντες	[0.67]
15:33,1.2	At NA-27 →	⊤ ομιτ	insert →	αυτου	[0.67]
15:35,7.2	Replace NA-27 →	⌜τοις οχλοις	with →	π) τω οχλω	[0.67]
16:13,1.2	At NA-27 →	⊤ ομιτ	insert →	π) με	[1.00]
16:19,2.2	Replace NA-27 →	⌜κλειδας	with →	κλεις	[0.67]
16:20,4.2	At NA-27 →	⊤ ομιτ	insert →	Ιησους	[0.67]
16:26,1.2	Replace NA-27 →	⌜ὠφεληθησεται	with →	ωφελειται	[0.67]
16:28,1.2	Omit NA-27 →	∘οτι			[0.67]
17:3,2.2	Transpose NA-27 →	⌞συλλαλουντες μετ’ αὐτου⊤	to →	2 3 1	[0.67]
17:4,2.2	Replace NA-27 →	⌜ποιησω	with →	—σωμεν	[1.00]
17:7,1.3	Replace NA-27 →	⌜προσηλθεν ο ’Ιησους και αψαμενος αὐτων ειπεν	with →	π—ελθων ο Ι. ηψατο α. και ειπεν	[0.67]
17:8,1.2	Replace NA-27 →	⌜αὐτον	with →	τον	[1.00]
17:10,1.2	At NA-27 →	⊤ ομιτ	insert →	αυτου	[1.00]
17:14,1.2	Replace NA-27 →	⌜ἐλθοντων	with →	ελθοντων αυτων	[0.67]
17:20,3.2	Replace NA-27 →	⌜ὀλιγοπιστιαν	with →	απιστιαν	[0.67]
17:20,4.3	Replace NA-27 →	⌜μεταβα ενθεν	with →	μεταβηθι εντευθεν	[0.67]
17:20,5.2	At NA-27 →	⊤ ομιτ	insert →	π) [2Ἳ τουτο δε το γενος ουκ εκπορευεται ει μη εν προσευχη και νηστεια	[0.67]
17:22,1.2	Replace NA-27 →	⌜Τυστρεφομενων	with →	αναστρεφομενων	[0.67]
18:2,1.2	At NA-27 →	⊤ ομιτ	insert →	ο Ιησους	[0.67]
18:7,1.2	At NA-27 →	⊤ ομιτ	insert →	εστιν	[0.67]
18:8,2.2	Transpose NA-27 →	⌞κυλλον η χωλον⊤	to →	3 2 1	[1.00]

18:10,3.2	At NA-27 →	⊤ *ομιτ*	insert →	*[1Ἰ ηλθεν γαρ ο υιος του ανθρωπου 579. 892χ αλ χ σψη βοπτ) σωσαι το απολωλος*	[0.67]
18:18,2.2	Replace NA-27 →	⌜*οὐρανω*	with →	*τοις ουρανοις*	[0.67]
18:19,2.5	Replace NA-27 →	⌜*συμφωνησωσιν ἐξ υμων*	with →	*συμφωνησουσιν εξ υμων*	[0.67]
18:25,2.2	At NA-27 →	⊤ *ομιτ*	insert →	*αυτου*	[1.00]
18:25,3.2	Replace NA-27 →	⌜*εχει*	with →	*ειχεν*	[1.00]
18:30,1.2	At NA-27 →	⊤ *ομιτ*	insert →	*οὗ*	[0.67]
19:4,2.2	Replace NA-27 →	⌜*κτισας*	with →	*ποιησας*	[1.00]
19:16,1.2	Transpose NA-27 →	⌞*αὐτω ειπεν*⊤	to →	*2 1*	[1.00]
Ref.		NA-27 Text		Lachmann-10 Text	Prob.
19:20,2.2	At NA-27 →	⊤ *ομιτ*	insert →	*π) εκ νεοτητος μου*	[0.67]
19:28,1.2	Replace NA-27 →	⌜*καθησεσθε*	with →	*καθισεσθε*	[0.67]
20:10,2.2	Replace NA-27 →	⌜*πλειον*	with →	*πλειονα*	[0.67]
20:10,3.4	Replace NA-27 →	⌜*το ἀνα δηναριον και αὐτοι*	with →	*4 5 2 3*	[0.67]
20:13,1.2	Transpose NA-27 →	⌞*ενι αὐτων ειπεν*⊤	to →	*3 1 2*	[0.67]
20:16,1.2	At NA-27 →	⊤ *ομιτ*	insert →	*πολλοι γαρ εισιν κλητοι, ολιγοι δε εκλεκτοι*	[0.67]
20:19,1.2	Replace NA-27 →	⌜*ἐγερθησεται*	with →	*π) αναστησεται*	[1.00]
20:23,6.2	Omit NA-27 →	○*τουτο*			[0.67]
20:30,1.2	Replace NA-27 →	⌜*ἐλεησον ημας κυριε*	with →	⌃ *3 1 2*	[0.33]
20:31,2.2	Replace NA-27 →	⌜*ἐλεησον ημας κυριε*	with →	⌃ *3 1 2*	[0.67]
20:34,1.4	Replace NA-27 →	⌜*των ὀμματων αὐτων*	with →	*π) των οφθαλμων αυτων*	[0.67]
21:1,3.2	Replace NA-27 →	⌞*εἰς*	with →	*π) προς*	[1.00]
21:5,1.2	Omit NA-27 →	○*ἐπι*			[0.67]
21:12,1.2	At NA-27 →	⊤ *ομιτ*	insert →	*ο*	[1.00]
21:12,2.2	At NA-27 →	⊤ *ομιτ*	insert →	*του θεου*	[0.67]
21:13,1.2	Replace NA-27 →	⌜*ποιειτε*	with →	*π) εποιησατε*	[0.67]
21:18,2.2	Replace NA-27 →	⌞*ἐπαναγων*	with →	⌃ *επαναγαγων*	[0.33]
21:25,1.2	Omit NA-27 →	○*το*			[0.67]
21:25,2.2	Replace NA-27 →	⌜*ἐν*	with →	*παρ*	[0.67]
21:26,1.2	Replace NA-27 →	⌜*ως προφητην εχουσιν τον Ἰωαννην*	with →	*3 4 5 1 2*	[0.67]
21:32,1.2	Transpose NA-27 →	⌞*Ἰωαννης προς υμας*⊤	to →	*2 3 1*	[0.67]
21:32,2.2	Replace NA-27 →	⌜*οὐδε*	with →	*ου*	[0.67]
21:46,2.2	Replace NA-27 →	⌞*εἰς*	with →	*ως*	[0.67]
22:7,1.2	Replace NA-27 →	⌜*ο δε βασιλευς*	with →	*και ακουσας ο βασιλευς εκεινος*	[0.67]

22:10,1.2	Replace NA-27 →	⌜ους	with →	οσους	[0.67]
22:13,1.2	Transpose NA-27 →	ˢο βασιλευς ειπεν⊤	to →	3 1 2	[0.67]
22:25,1.2	Replace NA-27 →	⌜γημας	with →	γαμησας	[0.67]
22:27,1.2	At NA-27 →	⊤ ομιτ	insert →	π) και	[0.67]
22:30,3.2	Replace NA-27 →	⌜τω οὐρανω	with →	2	[0.67]
22:35,2.2	At NA-27 →	⊤ ομιτ	insert →	και λεγων	[0.67]
23:7,1.2	At NA-27 →	⊤ ομιτ	insert →	ραββι	[0.67]
23:8,2.2	Replace NA-27 →	⌜διδασκαλος	with →	καθηγητης	[1.00]
23:9,2.2	Transpose NA-27 →	ˢυμων ο πατηρ⊤	to →	2 3 1	[0.67]
23:9,3.2	Replace NA-27 →	⌜οὐρανιος	with →	εν τοις ουρανοις	[0.67]
23:21,1.2	Replace NA-27 →	⌜κατοικουντι	with →	κατοικησαντι	[0.67]
23:26,1.2	At NA-27 →	⊤ ομιτ	insert →	και της παροψιδος	[0.67]
23:26,2.2	Replace NA-27 →	⌜αὐτου	with →	αυτων	[0.67]
24:3,1.2	At NA-27 →	⊤ ομιτ	insert →	της	[0.67]
Ref.		NA-27 Text		Lachmann-10 Text	Prob.
24:31,1.2	At NA-27 →	⊤ ομιτ	insert →	φωνης	[0.67]
24:31,3.2	Omit NA-27 →	ᵒτων			[1.00]
24:33,1.2	Transpose NA-27 →	ˢπαντα ταυτα⊤	to →	2 1	[1.00]
24:37,2.2	At NA-27 →	⊤ ομιτ	insert →	και	[0.67]
24:38,1.2	Replace NA-27 →	⌜ως	with →	ωσπερ	[0.67]
24:48,2.2	Replace NA-27 →	⌜μου ο κυριος	with →	ο κυριος μου ελθειν	[0.67]
25:1,2.2	Replace NA-27 →	⌜υπαντησιν	with →	απαντ—	[0.67]
25:4,2.2	Replace NA-27 →	⌜εαυτων	with →	αυτων	[1.00]
25:7,1.2	Replace NA-27 →	⌜εαυτων	with →	αυτων	[0.67]
25:15,1.2	Replace NA-27 →	⌜ εὐθεως	with →	ευθεως. πορευθεις δε	[1.00]
25:15,3.2	At NA-27 →	⊤ ομιτ	insert →	ταλαντα	[0.67]
25:17,1.2	At NA-27 →	⊤ ομιτ	insert →	και	[1.00]
25:18,1.2	Replace NA-27 →	⌜γην	with →	εν τη γη	[0.67]
25:22,2.2	At NA-27 →	⊤ ομιτ	insert →	λαβων	[0.67]
25:27,2.2	Replace NA-27 →	⌜τα ἀργυρια	with →	π) το αργυριον	[1.00]
26:28,2.2	At NA-27 →	⊤ ομιτ	insert →	π) καινης	[0.67]
26:31,1.2	Replace NA-27 →	⌜διασκορπισθησονται	with →	—πισθησεται	[0.67]
26:39,1.2	Replace NA-27 →	⌜προελθων	with →	προσελθων	[1.00]
26:42,3.2	Replace NA-27 →	⌜τουτο	with →	τουτο το ποτηριον	[0.67]

26:44,3.2	Omit NA-27 →	◦παλιν			[0.67]
26:45,1.2	At NA-27 →	⊤ ομιτ	insert →	αυτου	[0.67]
26:53,2.2	Transpose NA-27 →	⸗αρτι ⌜πλειω ⊤ δωδεκα ⌜λεγιωνας ἀγγελων	to →	π. δυναμαι	[0.67]
26:55,1.2	At NA-27 →	⊤ ομιτ	insert →	π) προς υμας	[0.67]
26:60,1.2	At NA-27 →	⊤ ομιτ	insert →	·και	[0.67]
26:60,3.2	At NA-27 →	⊤ ομιτ	insert →	υχ ευρον	[0.67]
26:60,4.2	At NA-27 →	⊤ ομιτ	insert →	ψευδομαρτυρες	[0.67]
26:61,1.3	Replace NA-27 →	⌜οἰκοδομησαι	with →	οικοδ. αυτον	[0.67]
26:63,1.2	At NA-27 →	⊤ ομιτ	insert →	αποκριθεις	[0.67]
27:2,2.2	At NA-27 →	⊤ ομιτ	insert →	Ποντιω	[0.67]
27:3,2.2	Replace NA-27 →	⌜εστρεψεν	with →	απεστρεψεν	[0.67]
27:3,3.2	At NA-27 →	⊤ ομιτ	insert →	τοις	[0.67]
27:5,2.2	Replace NA-27 →	⌜εἰς τον ναον	with →	εν τω ναω	[0.67]
27:11,1.2	Replace NA-27 →	⌜ἐσταθη	with →	εστη	[0.67]
27:16,1.2	Omit NA-27 →	◦᾽Ιησουν			[1.00]
27:17,2.3	Replace NA-27 →	⌜᾽Ιησουν τον Βαραββαν	with →	Βαραββαν	[1.00]
27:21,1.2	Omit NA-27 →	◦τον			[0.67]
27:23,1.3	Replace NA-27 →	⌜ο δε εφη	with →	λεγει αυτοις ο ηγεμων	[0.67]
27:29,1.2	Replace NA-27 →	⌜της κεφαλης	with →	την κεφαλην	[0.67]
Ref.		NA-27 Text		Lachmann-10 Text	Prob.
27:40,2.2	Omit NA-27 →	◦και			[0.67]
27:43,3.3	Replace NA-27 →	⌜νυν	with →	νυν αυτον	[0.67]
27:47,1.2	Replace NA-27 →	⌜εστηκοτων	with →	εστωτων	[0.67]
27:56,3.2	Replace NA-27 →	⌜᾽Ιωσηφ μητηρ και η μητηρ	with →	Ιωση 2 3 4 5	[0.67]
27:58,1.2	At NA-27 →	⊤ ομιτ	insert →	το σωμα	[0.67]
27:61,1.2	Replace NA-27 →	⌜Ναριαμ	with →	Μαρια	[0.67]
28:1,2.2	Replace NA-27 →	⌜Ναριαμ	with →	Μαρια	[1.00]
28:2,1.2	Omit NA-27 →	◦και			[0.67]
28:6,1.2	At NA-27 →	⊤ ομιτ	insert →	ο κυριος	[0.67]
28:8,1.2	Replace NA-27 →	⌜ἀπελθουσαι	with →	π) εξελθ—	[0.67]

GLOSSARY OF TERMS

Boldfaced words in the following definitions refer to other terms defined in this glossary.

Affinity: the degree to which two **witnesses** to a text have the same readings. Affinity consists of two components: **Quantative Affinity** and **Genetic Affinity**.

Autograph: The original document written by the hand of its author or by his secretary to whom he dictated its text.

Autographic Text: The words originally written in an original document.

Commonness: A measure of the degree to which **witnesses** to a given text share the same value of a genetic characteristic of the text. See Commonness of Place of Variation and Commonness of Reading.

Commonness of Place of Variation: The degree to which two **witnesses** to a given text have the same **places of variation** regardless of the **readings** at those places—that is, they share a common portion of the text. The Commonness of Place of Variation of A with B = the number of **places of variation** where both A and B have a **reading**, where A and B are **witnesses** to the same text. This measure is important for dealing with fragmentary **witnesses**. Two **witnesses** that both have a complete text have 100% Commonness of Place of Variation.

Commonness of Readings: A measure of the degree to which two **witnesses** to a text have the same **readings**. It is calculated as follows: The Commonness of Readings of A with B = the number of **places of variation** where both A and B have the same **reading**, where A and B are **witnesses** to the same text.

Completeness: A measure of how much of a text a particular **witness** contains. It is calculated as follows: The Completeness of A = (the number of **places of variation** A has of the text) ÷ (the total number of **places of variation** in the text), where A is a **witness** to the text. This measure is important for dealing with fragmentary **witnesses**.

Content: A list of the **places of variation** a **witness** contains, expressed in terms of references (chapter and verse)—that is, that portion of the text the **witness** contains.

Deferred Ambiguity: The principle of deferred ambiguity states that when consensus fails to recover a reading of an exemplar being reconstructed, the sister of that exemplar will have the inherited reading in the next prior generation.

Exemplar: A **witness** from which other **witnesses** have been copied. The software creates exemplars in the process of reconstructing the genealogical history of a text.

Fragment: A **witness** that is missing part of its text due to damage or deterioration.

Genetic Affinity: see **Quantitative Affinity**.

Genetic Dominance: A **reading** has genetic dominance as long as it is inherited by the **descendants** of the exemplar in which it first occurs. It loses genetic dominance at any place in the genetic history of the exemplar in which it occurs where an alternate reading replaces it.

Heredity: That characteristic of a **reading** correctly copied into a daughter **witness** of the **exemplar** in which the reading is found.

Inheritable Variant: A variant initiated by one of the ancestor exemplars of a witness.

Inheritance: That characteristic of a **reading** correctly copied from the parent **exemplar** of the **witness** in which the reading is found.

Inheritance Persistence: The inheritance persistence of a witness is the ratio of the number inheritable variants to the number of actually inherited ones.

Lectionary: A **manuscript** edited and arranged in sections assigned for reading in the Church at specified times in the liturgical calendar—something like a hymnbook.

Majuscule: A **manuscript** written in all capital letters.

Manuscript: A handwritten copy of a text made from an earlier copy (**exemplar**). The term is sometimes used as a synonym of ***witness***.

Minimal Reading: The reading of a witness that occurs least often in the working database.

Minuscule: A **manuscript** written in lower case characters.

Papyri: Manuscripts copied on paper made from papyrus. They are usually rather early, but mostly fragmentary.

Parent Exemplar: The **manuscript** from which another **manuscript** was directly copied.

Place of Variation: A place in a text where the **witnesses** to the text have different **readings**. In the data base, each place of variation is assigned a sequential index number in order to distinguish them from one another; each one also has assigned to it the chapter and verse where it occurs in the text.

Primary Parent: The **parent exemplar** of a **witness** from which it derives most of its readings, and its place in the tree diagram that maps the genealogical history of the text. A witness has only one primary parent exemplar.

Quantitative Affinity: A measure of the degree to which **witnesses** to a given text are genetically related. The mutual quantitative affinity between two witnesses is the inverse ratio of the number of places the two witnesses have the same readings to the number of places their readings are different.

Reading: At each **place of variation** in a text, the **witnesses** have different words. The words contained in a given witness at a particular **place of variation** constitute the *reading* of that witness at that place. The reading may be a word, phrase, sentence, verse, etc., or nothing at all (an omission).

Recension: A recension is understood to be a **witness** derived from multiple sources and having a significant number of variations from its **primary parent exemplar**. A recension was a deliberate alteration of a text tradition for the purpose of correction or improvement. A recension occurred when a Christian community noted that their Bibles (**manuscripts**) had different **readings**, and there was an attempt to recover the readings of the **autograph**. This likely took place under the authority of the leadership of the community and was carried out by competent scribes. It is possible that in some recensions some of the corrections were made to strengthen the doctrines of the community.

Secondary Descendant: A descendant of a **secondary parent** functioning as a source of mixture for the given descendant.

Secondary Parent: A **parent exemplar** of a witness other than the **Primary Parent Exemplar**. Secondary parents are the sources of mixture for their **secondary descendants**.

Siblings: Sisters, first generation descendants (copies) of the same **exemplar**.

Sibling Gene: The collection of **minimal readings** a **witness** has that occur only in it and its **sibling** sisters. These are the readings where the text of the parent exemplar of the siblings differs from the text of its genealogical ancestors**.**

Stemma: A tree diagram of the genealogical relationships of the witnesses to the text of an ancient literary composition.

Stematics: Stematics is the method used for recovering the original text of the ancient Greek and Latin classics, also known as the family-tree method.

Uncial: A **manuscript** written in all capital letters.

Variant Heredity: The characteristic of variant readings that provides a measure of the likelihood that a given reading in a particular witness A has been inherited from another witness B in an earlier generation. It is quantified as the **genetic distance** between witness A containing the given reading and another witness B in an earlier generation containing the same reading. The witness B having the least genetic distance from witness A is the closest near relative of A with respect to the given reading. A reading has no variant heredity until after it is first initiated somewhere in the genealogical history of the text.

Variant Reading: See *Reading*.

Variation Unit: See *Place of Variation*.

Version: A translation of a document into a language other than that of the original document itself.

Virtual Exemplar: An **exemplar** created by the software to account for same-generation mixture. These exemplars do not contribute to the primary structure of the tree diagram.

Witness: A **manuscript** of a document in its original language, or a translation of that document into another language, or a quotation of the text of a **manuscript** or translation.

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