Grace Theological Journal 8.2 (1987) 253-90

A COMPUTER-AIDED TEXTUAL COMMENTARY ON THE BOOK OF PHILIPPIANS

JAMES D. PRICE

A genealogical tree diagram of the textual history of Philippians may be constructed on the basis of a computer program used to analyze the variant readings. The resultant diagram suggests the development of four ancient text-types for Philippians and an early but gradual degradation of the text. Comparing the probabilities of the readings—based on the analysis of Philippians generated by the program—with the choices of the editors of UBSGNT[3] reveals that seven of the readings in UBSGNT[3] may not be correct. Although the results are tentative and more research on genealogical theory is needed, the performance of the program seems to justify further work in the field of computer-aided textual criticism.

* * *

INTRODUCTION

AN experimental computer program was recently developed that attempts to discover genealogical relationships among manuscripts, to construct a theoretical tree diagram of an approximate genealogical history of the text, and to identify the most likely readings of the original text based upon this reconstruction.[1] The program attempts to provide textual scholars with an objective method for evaluating external genealogical probabilities. The method requires less subjectivity on the part of the scholar and may eventually provide greater confidence in the final results. The program has been used on a select set of variants from Philippians; this article is a report of the results.

The results reported are tentative; no claim is made that they represent final conclusions. The purpose of this article is to demonstrate the potential of computer aids for textual criticism and to

[1]The program is described in an article by this writer, "A Computer Aid for Textual Criticism," *GTJ* 8 (1987) 115–30.

suggest possible ways to interpret the results. The genealogical theory upon which the program is based is still under development. Use of the program will bring about refinements in the theory and its implementation.

TEXTUAL APPARATUS

Ideally the best body of textual data would be a large number of manuscript witnesses distributed throughout the history of the text, a full list of significant alternate readings, together with a list of the manuscripts supporting these readings—that is, a complete textual apparatus. However, for purposes of testing the program, a complete apparatus was not deemed necessary. A choice then had to be made between the apparatus in the Nestle-Aland twenty-sixth edition and that in the UBSGNT[3]. The Nestle-Aland apparatus lists a greater number of variation units (about seventy for Philippians), but the number of manuscript witnesses is limited and incomplete. The UBS apparatus lists a limited number of significant variation units (sixteen for Philippians), but a larger number of manuscript witnesses (seventy-three for Philippians) with a complete list of manuscripts supporting each reading.

Experiment reveals that, with this kind of trade-off, the greater number of manuscript witnesses is more important for tracing genealogical descent than the number of variation units, especially when the variation units are significant.[2] Therefore, the UBS apparatus was selected for use, with all its limitations. No additional textual research was conducted to supplement the data. Initially, the textual apparatus of UBSGNT[2] was used to provide the data for this study; but the final results were collated with and corrected by UBSGNT[3] so that they are consistent with that text.

Table 1 lists the alternate readings of Philippians treated in UBSGNT[2]. Throughout this article, readings are referred to by a decimal number such as 5.3. The number to the left of the decimal

[2]Theoretically it is not the number of variation units that is significant, but the number of alternate readings (56 for the UBSGNT text of Philippians). The number of alternate readings limits the maximum number of possible nodes in the genealogical tree. The number of manuscript witnesses in the textual apparatus limits the maximum number of possible branches in the tree. Ideally, the two numbers should be balanced. If there is a large number of alternate readings, the complexity of the tree is limited by the number of manuscripts. If there is a large number of manuscripts, the complexity is limited by the number of alternate readings. Initial experiments with Romans have verified these observations. The UBSGNT apparatus for Romans has 91 variation units (327 alternate readings), and 64 manuscripts. Yet the complexity of the genealogical tree was approximately the same as the one for Philippians, except that each node had more variants in it. It is expected that an expanded apparatus will add complexity to the tree, but not significantly alter its basic structure.

refers to the variation unit, and the number to the right refers to the particular alternative in that unit. So the designation 5.3 refers to variation unit 5, alternate reading 3 (τοῦτο οὖν as listed in Table 1). The computer program works with these numerical indexes rather than with the linguistic data itself.

Alternate readings listed in UBSGNT[3] that are supported only by seriously deficient witnesses are not included in Table 1; these readings contribute nothing of value to the reconstruction of genealogical history because they are incapable of exhibiting grouping patterns. The data of Table 1 differ from UBSGNT[3] only at variation unit 13. UBSGNT[3] rightly rejects reading 13.1 as original and omits the reading altogether in its list; therefore 13.2 on Table 1 corresponds with 13.1 in UBSGNT[3], and so forth.

MANUSCRIPT WITNESSES

Table 2 lists the manuscript witnesses used in the study. The first column lists the manuscript designation as used in UBSGNT[3]. The set of sixteen columns lists the alternate readings contained in each manuscript. Column 1 is for variation unit 1; column 16 is for variation unit 16. The number in each column specifies the alternate reading number for the associated variation unit. Thus manuscript ℵ* has alternate readings 1.1, 2.3, 3.2, etc. A zero designates a missing reading.[3] The last column lists the approximate date of the manuscripts. Seriously deficient witnesses were not included in the data.

Certain assumptions were made in assembling the manuscript data. In regard to corrected manuscripts, it was assumed that corrections were made from an exemplar other than the parent exemplar of the original hand and that the corrector exemplar agreed with the original hand except where corrections were made. Thus, for example, D* and D^c were treated as two separate manuscripts; the readings of B[3] were assumed to agree with B* unless otherwise noted in UBSGNT[3].[4]

The quotations of a church father were assumed to have been taken from a single manuscript. Where multiple readings by a church father were recorded in the same place of variation, it was assumed that more than one manuscript was involved. In this case, the set of readings that best matched a known grouping pattern was assumed to

[3]A reading could be missing due to a hiatus in the manuscript or to the failure of UBSGNT to cite it. Fascicles of manuscripts were not checked in these cases.

[4]It is recognized that this assumption may be inaccurate in some cases. However, the UBSGNT apparatus makes no distinction between possible corrector scribes or corrector exemplars for a given siglum. Research beyond the scope of the present project is required to resolve this uncertainty. The results suggest that the uncertainty is minimal for this present set of data.

TABLE 1

Alternate Readings of Philippians

Reference	*Variation Unit*	*Reading Number*	*Alternate Reading*
1:11	1	1	καὶ ἔπαινον θεοῦ
	1	2	καὶ ἔπαινον χριστοῦ
	1	3	καὶ ἔπαινόν μοι
	1	4	θεοῦ καὶ ἔπαινον ἐμοί
	1	5	καὶ ἔπαινον αὐτοῦ
1:14	2	1	λόγον λαλεῖν
	2	2	λόγον κυρίου λαλεῖν
	2	3	λόγον τοῦ θεοῦ λαλεῖν
	2	4	λόγον λαλεῖν τοῦ θεοῦ
2:2	3	1	ἕν
	3	2	αὐτό
2:4	4	1	ἕκαστοι
	4	2	ἕκαστος
	4	3	omit
2:5	5	1	τοῦτο
	5	2	τοῦτο γάρ
	5	3	τοῦτο οὖν
	5	4	καὶ τοῦτο
2:12	6	1	ὡς
	6	2	omit
2:26	7	1	ὑμᾶς
	7	2	ὑμᾶς ἰδεῖν
	7	3	πρὸς ὑμᾶς (after gap)
2:30	8	1	χριστοῦ
	8	2	τοῦ χριστοῦ
	8	3	(1) or (2)
	8	4	κυρίου
	8	5	τοῦ θεοῦ
	8	6	omit
3:3	9	1	θεοῦ
	9	2	θεῷ
	9	3	omit
3:12	10	1	ἔλαβον ἢ ἤδη τετελείωμαι
	10	2	ἔλαβον ἢ ἤδη δεδικαίωμαι ἢ ἤδη τετελείωμαι
	10	3	ἔλαβον ἢ ἤδη τετελείωμαι ἢ ἤδη δεδικαίωμαι
3:13	11	1	οὐ
	11	2	οὔπω
3:16	12	1	τῷ αὐτῷ στοιχεῖν
	12	2	τὸ αὐτὸ φρονεῖν
	12	3	τὸ αὐτὸ φρονεῖν, τῷ αὐτῷ στοιχεῖν
	12	4	τὸ αὐτὸ φρονεῖν, τῷ αὐτῷ κανόνι στοιχεῖν
	12	5	τῷ αὐτῷ στοιχεῖν κανόνι, τὸ αὐτὸ φρονεῖν
3:21	13	1	αὐτῷ
	13	2	αυτω
	13	3	αὐτῷ
	13	4	ἑαυτῷ

TABLE 1 (*cont.*)

Reference	*Variation Unit*	*Reading Number*	*Alternate Reading*
4:3	14	1	τῶν λοιπῶν συνεργῶν μου
	14	2	τῶν συνεργῶν μου και τῶν λοιπῶν
4:16	15	1	εἰς τὴν χρείαν μοι
	15	2	εἰς τὴν χρείαν μου
	15	3	τὴν χρείαν μοι
	15	4	τὴν χρείαν μου
	15	5	μοι εἰς τὴν χρείαν μου
	15	6	in unum mihi
	15	7	in necessitatem meam vel usibus meis
4:23	16	1	ὑμῶν.
	16	2	ὑμῶν. ἀμήν

TABLE 2

List of Variants by Manuscript

Manuscript Name	*Variation Unit*																*Date*
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	
ℵ*	1	3	2	1	1	1	2	4	1	1	2	1	2	2	1	2	350
ℵ^c	1	3	1	1	2	1	1	4	2	1	2	5	4	1	1	2	250?
A	1	3	2	1	1	1	2	4	1	1	2	1	2	1	3	2	450
B*	1	3	1	1	1	2	1	1	1	1	1	1	2	1	1	1	350
B^3	1	3	1	1	1	2	1	1	1	1	1	1	3	1	1	1	300?
C	0	0	2	0	1	1	2	6	1	0	0	0	0	0	0	0	450
D*	2	4	1	1	2	1	2	2	2	2	2	3	2	1	4	2	550
D^c	1	1	1	1	2	1	2	2	1	1	1	4	4	1	2	2	450?
G*	3	2	1	3	2	1	1	1	1	3	1	3	2	1	1	1	850
G^c	3	2	1	3	2	1	1	1	1	2	1	3	2	1	1	1	800?
I	1	0	2	0	0	0	2	0	0	0	0	1	0	1	0	0	450
K	1	1	1	2	2	1	1	2	1	1	1	5	3	1	1	2	850
P	1	3	1	1	2	1	1	4	2	1	2	5	2	1	2	2	850
Ψ	1	3	2	1	1	1	1	4	2	1	1	5	4	1	1	2	800
p^{46}	4	1	1	1	2	1	3	1	3	2	1	1	0	1	3	2	200
33	1	3	2	1	1	2	2	4	1	1	2	1	3	1	1	2	950
81	1	3	2	1	1	1	2	4	1	1	2	4	1	1	3	2	1044
88	1	3	1	2	2	1	2	1	2	1	1	5	3	1	1	2	1150
104	1	3	1	1	2	1	2	4	1	1	2	4	4	1	3	2	1087
181	1	1	1	2	2	1	1	2	1	1	1	5	4	1	1	2	550
326	1	3	1	2	2	1	2	2	1	1	1	5	4	1	3	2	1150
330	1	3	1	2	3	1	2	4	1	1	2	4	3	1	3	2	1150
436	1	3	1	2	2	1	2	1	2	1	2	4	4	1	3	2	1050
451	1	3	1	2	3	1	2	4	1	1	2	4	3	1	3	2	1050
614	1	1	1	2	2	1	1	2	1	1	2	5	3	1	2	2	1250
629	1	3	1	2	2	1	1	2	1	1	2	4	3	1	2	2	1350
630	1	1	1	2	2	1	1	2	1	1	1	5	4	1	2	2	1350

TABLE 2 (*cont.*)

Manuscript	*Variation Unit*																
Name	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*Date*
1241	1	3	2	1	1	2	2	4	1	1	2	4	4	1	3	2	1150
1739	1	1	1	1	2	1	1	1	1	1	1	1	3	1	1	2	950
1877	1	3	1	2	2	1	2	2	1	1	1	5	3	1	1	2	1350
1881	1	1	1	1	2	1	1	1	1	1	1	2	3	1	1	1	1350
1962	2	3	2	1	2	1	2	4	2	1	2	5	3	1	2	2	1050
1984	1	1	1	2	2	1	2	2	2	1	2	5	3	1	2	2	1350
1985	1	1	1	2	1	1	2	5	1	1	2	5	3	1	2	2	1561
2127	1	3	1	1	2	1	2	4	2	1	2	4	3	1	1	2	1150
2492	1	3	1	2	3	1	2	4	1	1	2	4	3	1	3	2	1250
2495	1	1	1	2	1	1	2	2	1	1	1	5	3	1	1	2	1400
Byz-A	1	1	1	2	2	1	1	2	1	1	1	5	3	1	1	2	(600)
Byz-B	1	1	1	2	2	1	1	2	1	1	1	5	4	1	1	2	(600)
Lectionaries	1	1	1	2	1	1	1	2	1	0	0	0	3	1	1	2	(1100)
vg	1	3	2	3	2	1	1	3	2	1	1	4	4	1	1	2	400
it^{ar}	4	3	2	3	2	1	1	3	2	2	2	3	4	1	2	2	850
it^{c}	1	3	2	3	2	1	1	3	2	1	1	4	4	1	1	2	1200
it^{d}	1	4	1	2	2	1	2	3	2	2	1	3	3	1	1	2	450
it^{dem}	1	3	2	3	2	1	1	3	2	1	1	4	4	1	1	2	1250
it^{div*}	1	3	2	3	2	1	1	3	2	1	1	4	4	1	1	2	1250
it^{div-c}	1	3	2	3	2	2	1	3	2	1	1	4	4	1	1	2	1250?
it^{e}	1	4	1	2	2	1	2	3	2	2	1	3	3	1	1	2	850
it^{f}	1	3	2	3	2	1	1	3	2	2	1	4	4	1	1	1	850
it^{g}	3	2	1	3	2	1	1	3	1	2	1	3	3	1	7	1	850
it^{m}	0	0	1	3	2	0	0	0	2	0	0	0	0	0	0	0	500
it^{x}	1	3	2	3	2	1	1	3	2	1	1	4	4	1	1	2	850
it^{z*}	5	3	2	3	2	1	1	3	2	1	1	4	4	1	6	2	750
it^{zc}	5	3	2	3	2	2	1	3	2	1	1	4	4	1	1	2	650?
syr^{p}	1	3	1	2	4	2	2	3	2	1	1	5	3	1	5	2	500
syr^{h}	1	1	1	2	2	1	2	4	2	1	1	5	3	1	3	2	500
cop^{sa}	1	3	0	3	1	2	1	3	1	1	1	1	3	1	5	1	400
cop^{bo}	1	3	0	2	1	2	2	4	1	1	2	1	3	1	5	2	400
arm	1	3	1	2	1	2	2	4	2	1	1	4	4	1	4	2	400
goth	0	3	2	2	2	0	1	3	2	1	2	4	0	1	3	0	350
eth^{ro}	0	3	1	3	1	2	2	4	2	0	2	1	0	0	3	2	550
eth^{pp}	0	3	1	3	1	2	2	4	2	0	2	5	0	0	3	2	550
Ambrosiaster	3	3	1	3	2	2	1	3	2	2	2	3	0	0	4	1	350
Augustine	0	0	1	1	1	0	0	0	1	0	0	1	0	0	4	0	430
Chrysostom	0	¼	0	2	2	2	1	2	2	0	½	5	¼	0	0	1	400
Clement	0	3	1	0	0	0	0	0	0	1	2	0	0	0	0	0	200
Eusebius	0	0	0	0	0	0	0	0	1	1	0	0	3	1	0	0	339
Euthalius	0	3	2	1	1	0	2	4	1	0	2	4	3	0	0	1	335
Hilary	0	0	1	0	2	0	0	0	0	1	0	1	4	0	0	0	350
John-Dam.	0	1	0	2	2	0	2	2	1	0	2	5	4	0	0	2	750
Origen	0	0	0	0	1	0	0	1	½	1	1	0	0	1	0	0	250
Theodoret	0	1	0	2	2	0	1	2	½	0	2	5	4	0	0	2	450
Victor-Rome	0	0	1	1	2	0	1	3	2	1	1	3	3	0	0	1	362

belong to one manuscript of the church father, and the remaining readings were assigned to another manuscript of the father.

Each of the various manuscripts of ancient versions was assumed to be a faithful translation of a single Greek manuscript. Obvious translational blunders were attributed to the versions themselves, as well as known linguistic inadequacies such as Latinisms, etc. Some sigla of the versions in the UBSGNT (such as the Vulgate) represent the composite readings of a group of many genealogically related manuscripts; these too were assumed to represent the readings of the exemplar from which the translation was rendered. This assumption is not a serious flaw in the methodology. If adequate representative manuscripts of a given version were available in the textual apparatus, the computer program would group these manuscripts together and identify their composite readings as those of the parent exemplar, and then create an exemplar to represent the composite witness of the given group of manuscripts. So nothing is lost except details of the textual transmission of the version itself, a matter of secondary interest.

The composite witness of the Byzantine tradition was represented as two manuscripts (Byz-A and Byz-B) in agreement except for variation unit 13 where part of the Byzantine tradition (Byz-A) reads 13.3 and the other part of the Byzantine tradition (Byz-B) reads 13.4. As with the discussion of versions above, this assumption is not detrimental to the reconstruction of the genealogical history, because the computer program regularly lets an exemplar represent the witness of all its descendants. If more representatives of the Byzantine tradition had been available in the UBSGNT apparatus, they would have formed additional branches under either Byz-A or Byz-B as manuscripts 1739 and 1881 did, or at least closely related branches as manuscripts 630 and 2495 did.

The composite witness of the lectionary tradition also is represented as one manuscript (Lect), except in those cases where individual lectionary manuscripts were included in the apparatus. The above reasoning also applies to this case.

The date of each manuscript witness was taken from that supplied in the front matter of the UBSGNT text. In some cases no date was given, so dates were assigned. In the case of correctors, it was assumed that the corrector scribe used a manuscript regarded as more authoritative than the manuscript he was correcting; therefore, a date fifty years earlier than the date of the corrected manuscript was arbitrarily assigned to the corrector manuscript. Therefore, the date represents that of the corrector manuscript, not of the scribal activity; the date of the manuscript is the important detail, not the date of the scribe.

The results indicate that this assumption was reasonable. The corrector manuscripts generally appear on the resultant tree diagram earlier than the corresponding corrected manuscripts. The initially assigned dates do not determine that result; the genealogical grouping of the manuscripts is the primary determination.

GENEALOGICAL TREE DIAGRAM

On the basis of the manuscript alignments in the sixteen places of variation noted in UBSGNT[2], the computer program defined a preliminary genealogical tree diagram. This diagram was manually reworked and revised to produce an optimum configuration defining the genealogical relationships among the seventy-three manuscripts listed in the apparatus. Figure 1 is the resultant tree diagram.[5] Greek manuscripts are represented by circles, church fathers by squares, and ancient versions by triangles. Each manuscript, father, or version is identified by name, designation, or number. Exemplars that were created by the computer program have been assigned names that identify their role in the reconstructed history (i.e., Alex-A, Alex-B, and so on). Solid arrows mark direct genealogical descent; that is, an exemplar is connected with its immediate (first-generation) descendants by means of a solid arrow. A descendant manuscript shares all the variants of its ancestors. A dotted arrow marks partial descent or correction.

In subsequent figures, the tree diagrams define how the text degraded. Each manuscript is named and dated. Random alternate readings introduced by a given manuscript are listed inside the associated circle, square, or triangle; these are the readings in which the manuscript differs from its parent exemplar. Such readings are transmitted to subsequent descendants. Some alternate readings introduced by a manuscript have been regarded as corrections; these are indicated by dotted arrows with the correcting reading number listed alongside the arrow, or by an incomplete arrow originating from a dangling reading number if the source of the correction is uncertain. A given manuscript contains the alternate readings listed in its own circle, square, or triangle, plus all the readings in the circles, squares, or triangles of all its ancestors; all readings not so defined for a given manuscript are the readings of the original autograph as reconstructed by the computer program. A correction that restores what is deemed to be an original reading is marked with an asterisk, such as 13.2*.

[5]The diagram is more complex than the simplified version in my earlier article, "A Computer Aid for Textual Criticism," 122. Optimizing the configuration resulted in a few changes in the final form.

Figure 1 defines the genealogical history of the text of Philippians as reconstructed by the computer program. The ancestry of each extant witness used in the study is traced back through preceding generations to the reconstructed original autograph. The next section interprets the tree diagram in terms of genealogical history.

TEXTUAL HISTORY

The structure of the genealogical tree diagram defines an approximate history of the text of Philippians (figure 1).[6] The following material is a historical interpretation of the genealogical tree diagram produced by the computer program. It illustrates the potential value of the computer-aided genealogical method, but the interpretation is limited by the uncertainties inherent in the method itself and the limited number of variation units in the available data. These limitations should be understood in the following discussion without constant repetition. The use of the indicative mood does not imply certainty, but simply reflects the suggestions derived from the computer program within the above limitations.

According to the genealogical tree diagram, four ancient text-types developed: the Alexandrian, the Antiochan, the Caesarean,[7] and the Western (figure 2).[8] In each text-type there is evidence of very early degradation and mixture followed by some degree of correction and stabilization.

The Alexandrian Text-Type

The Alexandrian text-type (figure 3) is witnessed by manuscripts ℵ*, ℵ^{c}, A, B*, B^{3}, C, D*, G*, G^{c}, I, P, p^{46}, 33, 81, 104, 330, 451, 1241, 1962, 2127, and 2492; by the texts of the church fathers Augustine, Clement, Eusebius, Euthalius, Hilary, and Origen (all incomplete); and by the Ethiopic versions eth^{ro} and eth^{pp}, by the Coptic versions cop^{bo} and cop^{sa}, and by the Latin version it^{g}.

[6]Obviously the exact history of the text cannot be reconstructed. The configuration of the diagram is derived from the data of the 73 manuscripts and the 16 variation units used in the study. These data are sufficient to give an approximate reconstruction of the history.

[7]The name "Caesarean" is used with caution since no Caesarean text-type has been previously identified for the Pauline epistles. However, preliminary computer research with 1 Timothy, Jude, and Romans confirms a similar text-type involving the Armenian version for each book. This suggests the possible identity of the text-type as Caesarean.

[8]Figure 2 represents only the first few generations of the textual history. For simplification, the later generations have been omitted in order to more clearly illustrate the reconstructed history. Subsequent figures include the complete details for the individual text-types.

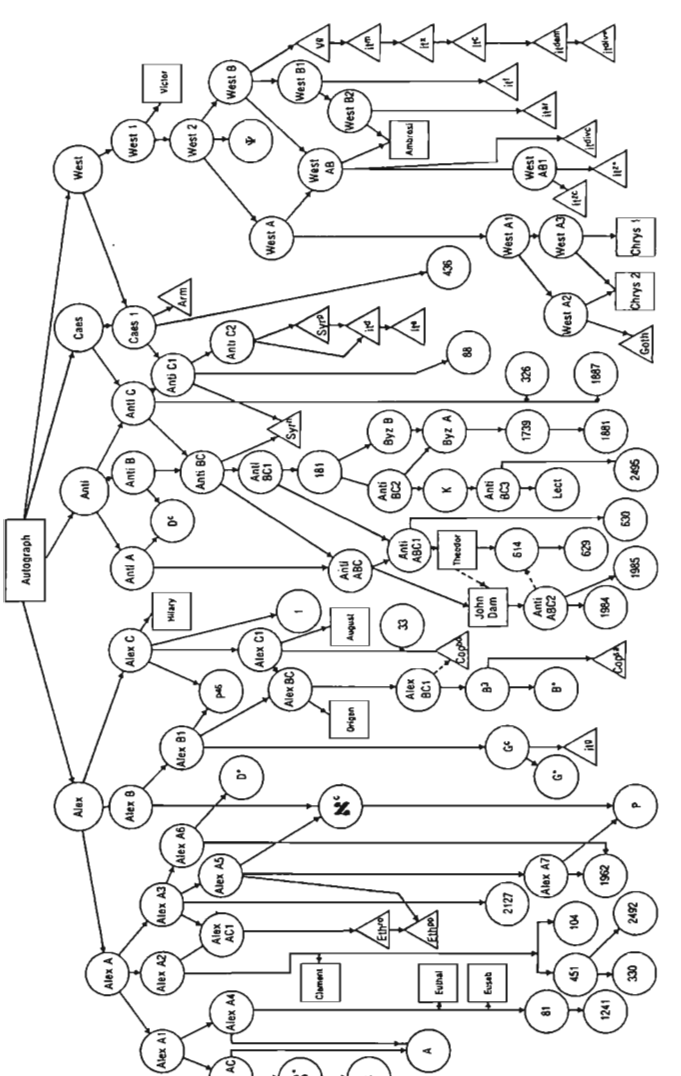

FIGURE 1. Genealogical Tree Diagram for the Book of Philippians

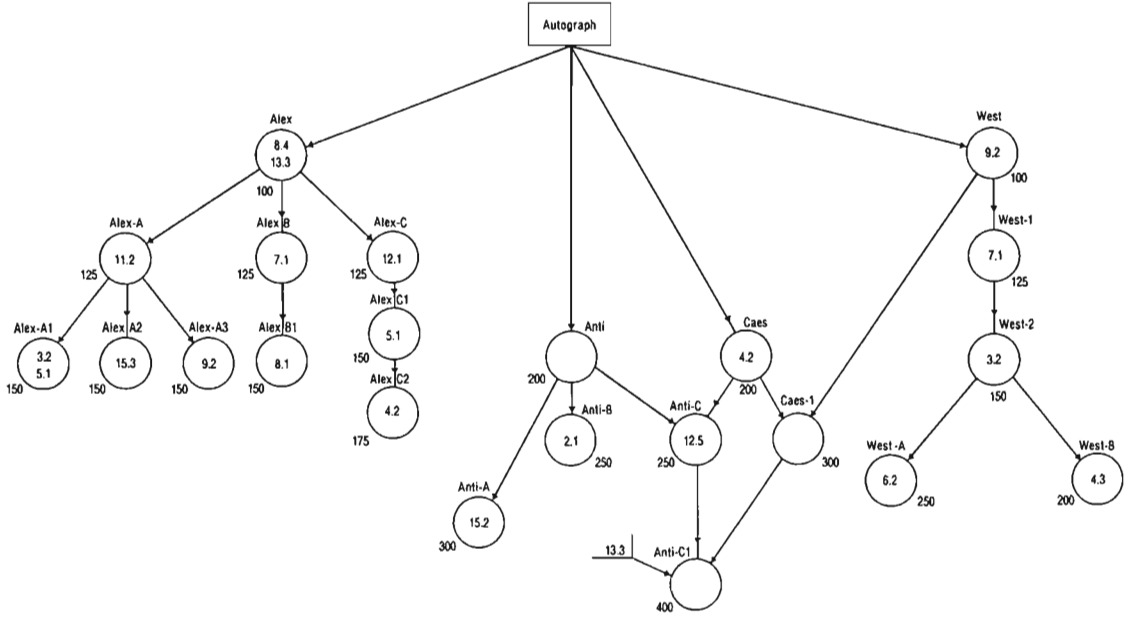

FIGURE 2. Genealogical Tree Diagram of The Early Generations of the Book of Philippians

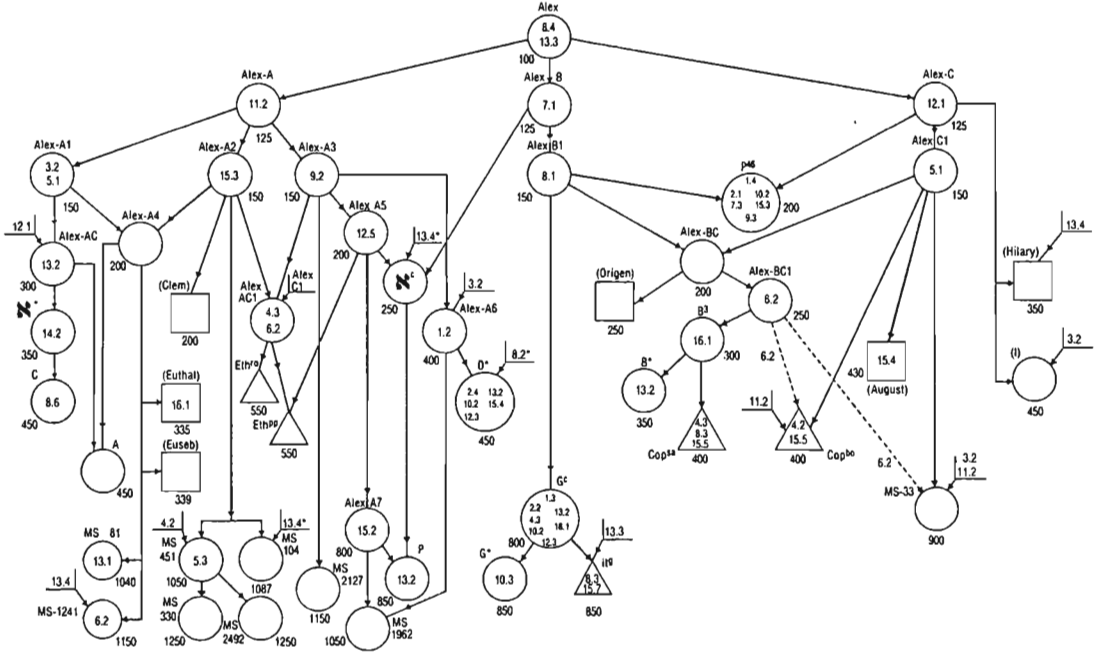

FIGURE 3. Genealogical Tree Diagram of the Alexandrian Text-type of the Book of Philippians

The proto-Alexandrian text introduced variants 8.4 and 13.3, and seems to have been in Egypt by the end of the first century.[9] About the first quarter of the second century three new variants had been introduced independently (11.2, 7.1, 12.1) starting three main branches of the Alexandrian text-type: Alex-A (11.2), Alex-B (7.1), and Alex-C (12.1).

In the Alex-A branch, about the middle of the second century, three sub-branches originated introducing four independent alternate readings: Alex-A1 (3.2, 5.1), Alex-A2 (15.3) and Alex-A3 (9.2). Sub-branch Alex-A1 has one unique descendant, Alex-AC that accounts for manuscripts ℵ*, C, and A.[10] Sub-branch Alex-A2 is witnessed by Clement (incomplete) and by manuscripts 104, 330, 451, and 2492. Sub-branch Alex-A3 is witnessed by manuscripts 1962, 2127, and D*. Manuscript D* seems to have been a careless recension made to accompany the independent Old Latin version, it^{d}, made from a Greek text of Antiochan descent (discussed later). A mixture of Alex-A2, Alex-A3, and Alex-C1 (with two new variants) seems to be the primary source of a recension (Alex-AC1) made to accommodate both Ethiopic versions, eth^{ro} and eth^{pp}. A few minor branches independently introduce later variants: Alex-A5 (12.5), Alex-A6 (1.2), and Alex-A7 (15.2).

The Alex-B branch has no unique descendants, but a mixture of Alex-B and Alex-A5 accounts for manuscripts $ℵ^{c}$ and P (plus Alex-A8). About the end of the second quarter of the second century a new branch (Alex-B1) originated introducing variant 8.1; this text is witnessed by manuscripts G^{c}, G*, and the Old Latin version it^{g}. Manuscript G^{c} appears to be a careless recension made to accommodate the independent Latin version it^{g} made from it.

The Alex-C branch is witnessed by manuscript I (incomplete), and by the texts of Augustine and Hilary (both incomplete). By the end of the second quarter of the second century a new branch (Alex-C1) originated, introducing variant 5.1;[11] this text is witnessed by manuscript 33 (with some corrections). Papyrus p^{46} appears to be a mixture of Alex-C and Alex-B1, but its numerous random variants suggest that the scribe was careless.

[9]Dating of the early generations is only approximate, being based on the arbitrary rule of making a created exemplar fifty years older than its oldest descendant. Since Clement (c. 200) and p^{46} (c. 200) are both identified by the program as third-generation descendants, a date of A.D. 100 for the proto-Alexandrian text-type is not unreasonable.

[10]Manuscript C is not complete, having only 7 of the 16 readings, so its exact location in the diagram is uncertain; this is true of all seriously incomplete witnesses. Manuscript A exhibits mixture with branch Alex-A4.

[11]Variant 5.1 was also introduced at Alex-A1 at about the same time. There seems to have been some mixture of Alex-C with Alex-AC, and of Alex-C1 with Alex-A1.

A mixture of branches Alex-B1 and Alex-C1 occurred about the third quarter of the second century, producing branch Alex-BC. This mixed branch is witnessed by the text of Origen (incomplete). About the middle of the third century a new branch (Alex-BC1) originated from Alex-BC, introducing variant 6.2; this is witnessed by manuscripts B^3 and B*, and by the Coptic Sahidic version (cop^{sa}). Manuscript B^3 contains the Greek text used for the version cop^{sa}. The Greek text behind the Coptic Boharic version (cop^{bo}) is a mixture of branches Alex-BC1 and Alex-C1.

The Antiochan Text-type

The Antiochan text-type (figure 4) is witnessed by manuscripts D^c, K, 88, 181, 326, 614, 629, 630, 1739, 1877, 1881, 1984, 1985, and 2495; by the composite witness of the two Byzantine traditions (Byz-A and Byz-B) and the composite witness of the Lectionaries (Lect); by the texts of the church fathers, John of Damascus and Theodoret; and by texts behind the Syriac versions syr^h and syr^p, and the Old Latin versions it^d and it^e.

The proto-Antiochan text near the end of the second century appears to have been identical with the original autograph.[12] Sometime in the next hundred years three main branches of the Antiochan text-type originated: Anti-A (introducing variant 15.2), Anti-B (introducing 2.1), and Anti-C (introducing 12.5, plus 4.2 apparently borrowed from the proto-Caesarean text).

The Anti-A branch, which developed sometime before the middle of the fourth century, has no unique descendants. It exhibits its existence through various subsequent mixtures.

The Anti-B branch has no unique descendants, but manuscript D^c is a perfect[13] mixture of Anti-A and Anti-B. This branch also exhibits its existence through subsequent mixtures.

The Anti-C branch, which appeared about the middle of the third century, introduced variant 12.5, and it seems to be a mixture of proto-Antiochan and proto-Caesarean (4.2). This branch is witnessed by two late manuscripts, 326 and 1877, and by the text behind it^d, it^e, and syr^p.

[12]The date is only approximate because the earliest extant witnesses to this text-type are D^c (c. 450), it^d (c. 450), and Theodoret (c. 450), each several generations removed. Proto-Antiochan is assumed to be identical with the original autograph because its three main branches contain all the readings of the probable autograph except for their own unique variants. That is, they mutually agree on the readings of the probable autograph by a ratio of at least two to one.

[13]Perfect mixture occurs when a manuscript contains all the variants of two or more parent exemplars. In this case, manuscript D^c contains the variant 15.2 from Anti-A and variant 2.1 from Anti-B; all the other readings agree with the probable autograph.

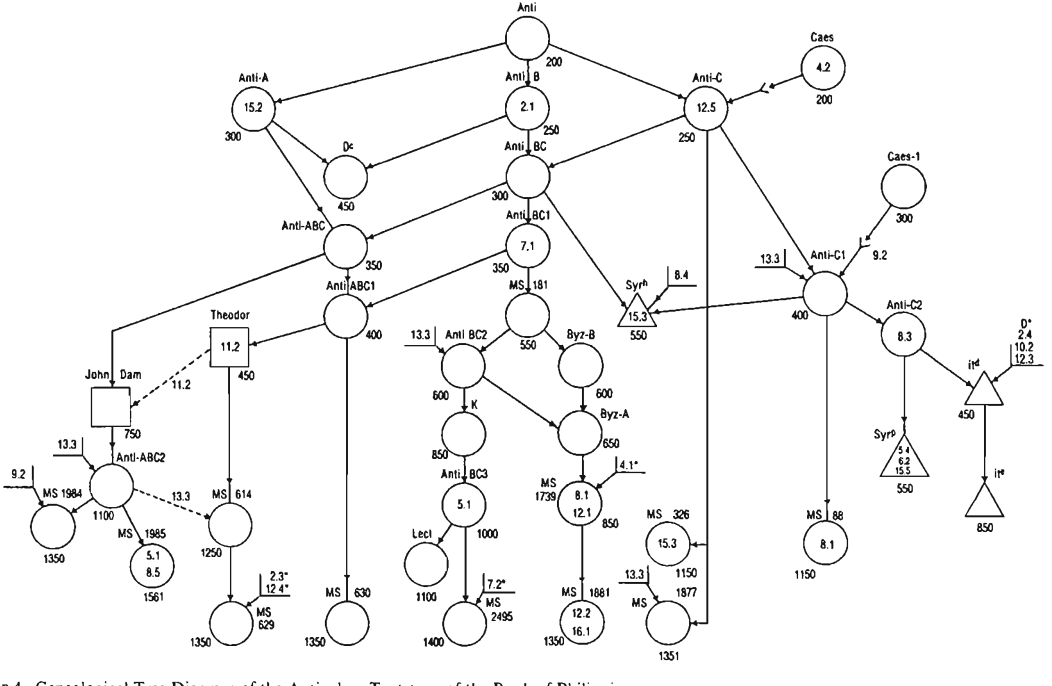

FIGURE 4. Genealogical Tree Diagram of the Antiochan Text-type of the Book of Philippians

Around the beginning of the fourth century Anti-B and Anti-C were mixed, producing the ancestral line (Anti-BC) for the Byzantine tradition. By the middle of the fourth century a text developed (Anti-ABC) that was a mixture of all three, Anti-A, Anti-B, and Anti-C. This text is witnessed by manuscripts 1984 and 1985, and by the text of John of Damascus.

Sometime during the fifth century another mixture took place between Anti-C and the Caesarean text, producing branch Anti-C1 that introduced the Caesarean variant 9.2 and a correction (13.3) from some unknown source (possibly Alex-A7); this text is witnessed by manuscript 88. The text of Anti-C1 became the primary source from which the Old Latin version it^{d} was made, except for three corrections derived from its companion Greek manuscript D*; the Old Latin it^{e} is a later faithful copy of it^{d}. The text of Anti-C1 also was used for the Syriac Peshitta version (syr^{p}) except for three variants that were probably the fault of the translator. A mixture of Anti-BC and Anti-C1 was the primary text from which the Syriac Harclean version (syr^{h}) was made, except for one random variant (15.3).

Sometime during the fourth century, variant 7.1 was introduced into the Anti-BC text producing Anti-BC1.[14] This branch is witnessed by manuscript 181 and the subsequent Byzantine tradition (Byz-A, Byz-B, lectionaries, and manuscripts K, 1739, 1881, and 2495), which exhibits further mixture and correction. This text (Anti-BC1) also was mixed with Anti-ABC about the end of the fourth century, producing branch Anti-ABC1; this branch is witnessed by manuscripts 614, 629, and 630, and by the text of Theodoret.

The Caesarean Text-type

The Caesarean text-type (figure 5) exhibits itself vaguely, since it appears that mixture took place quite early; only two witnesses seem to be Caesarean: manuscript 436 and the Greek text behind the Armenian version (arm). The distinguishing characteristics are the common variants 4.2 and 9.2, with no Antiochan or Western group characteristics.

The proto-Caesarean text originated about the end of the second century with the variant 4.2.[15] Shortly afterward this early text was mixed with a branch of the Antiochan text to produce the text of

[14]Variant 7.1 may be the result of careless omission, or a correction made under the influence of the Western text or of Alex-B.

[15]See previous comments in n. 7. The date is only approximate since the earliest extant witness is the Armenian version (c. 400). However, the evidence of mixture with Anti-C (c. 250) suggests the possible date of A.D. 200.

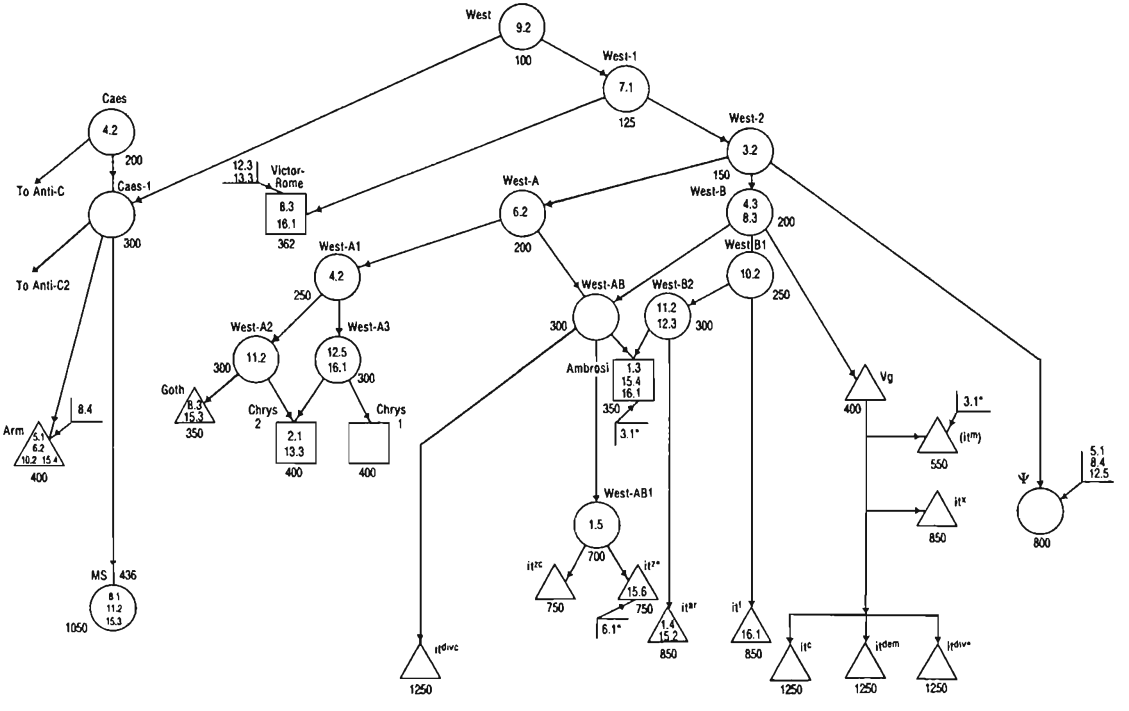

FIGURE 5. Genealogical Tree Diagram of the Caesarean and Western Text-types of the Book of Philippians

Anti-C. Sometime within the next hundred years Proto-Caesarean was mixed with Proto-Western, picking up variant 9.2 and producing the subsequent Caesarean text (Caes).

The Western Text-type

The Western text-type (figure 5) is witnessed by manuscript Ψ, by the texts of Ambrosiaster, Chrysostom, and Victor of Rome, and by texts behind the Gothic version (goth) and the Latin versions (vg, it^{ar}, it^{c}, it^{dem}, it^{div*}, it^{divc}, it^{f}, it^{m}, it^{x}, it^{z*}, it^{zc}).

The proto-Western text originated about the end of the first century with variant 9.2 common to all its descendants.[16] This early text seems to have mixed with Proto-Caesarean and subsequently found its way into one branch of the Antiochan text. Sometime in the first quarter of the second century, a new branch originated (West-1) introducing variant 7.1; this branch is witnessed by the text of Victor of Rome (except for two corrections and two random variants). Shortly afterward a second branch (West-2) originated with variant 3.2; this branch is witnessed by manuscript Ψ (except for three Alexandrian corrections).

Sometime in the first half of the third century the text of West-2 developed two variants independently (6.2, 4.3), producing branches West-A (6.2) and West-B (4.3).[17] The text of West-A underwent further degradation through West-A1, West-A2, and West-A3 to produce the Gothic version and the texts of Chrysostom.

The text of West-B was the source used by Jerome to produce the Latin Vulgate (vg) from which numerous faithful copies were made (it^{c}, it^{dem}, it^{div*}, it^{m}, and it^{*}). About the middle of the third century a variant (10.2) was introduced into West-B, producing West-B1; this text is witnessed by it^{f} (with one additional variant). Shortly afterward, two more variants (11.2, 12.3) were introduced into West-B1, producing West-B2; this text is witnessed by it^{ar} (with two additional variants).

About the end of the third century there was a mixture of texts West-A and West-B, producing West-AB; this text is witnessed by it^{divc}, it^{zc}, and it^{z*} (with one unique variant). The text of Ambrosiaster is a mixture of West-AB and West-B2 (except for three variants).

This reconstructed history of the text may be regarded as a good approximation because it meets the basic expectations of such a

[16]The date is only approximate since the earliest extant witnesses are the Gothic version (c. 350), Victor of Rome (c. 362), and Ambrosiaster (c. 350), each several generations removed.

[17]Variant 8.3 is a phenomenon of translation, not a variant of the Greek text. The versions where this variant is specified could not distinguish between reading 8.1 and 8.2. The witness of Chrysostom verifies that the Western text had the original reading 8.2.

history: succeeding generations exhibit chronological consistency; variants introduced by a parent exemplar explain the presence of the same variant in all descendant generations of the given branch; there is reasonable simplicity and orderliness in the structure of the diagram.

The next section classifies each extant witness used in this study, identifying its role in the reconstructed history. Although there is some redundancy with the preceding history, the classification of each witness is valuable for helping to locate a witness on the diagrams and to evaluate the contribution of its witness.

MANUSCRIPT CLASSIFICATION

This section lists the classification of each manuscript (or equivalent) used in this study as far as the sixteen variation units used in the study can determine. Each is classified by its immediate genealogical ancestry (its most likely exemplar) and by any deviations from its ancestor.

- ℵ* a faithful copy of Alex-AC except for one variant (14.2) unique to this manuscript, probably due to scribal carelessness
- ℵ^c a faithful collation of Alex-A5 and Alex-B containing all the variants of both with one correction restoring an original reading (13.4)
- A a faithful collation of Alex-AC and Alex-A4 containing all variants of both
- B* a copy of B^3 with one random variant (13.2), a careless omission of diacritical marks on the reading of B^3 (13.3)
- B^3 a faithful copy of Alex-BC1 except for one random variant (16.1), a careless omission.
- C an incomplete manuscript that appears to be a copy of ℵ* except for one unique variant (8.6), a careless omission
- D* a careless copy (or revision) of Alex-A6 introducing five random variants (2.4, 10.2, 12.3, 13.2, 15.4) and one correction, 8.2, restoring an original reading
- D^c a faithful collation of Anti-A and Anti-B containing all the variants of both
- G* a copy of Alexandrian manuscript G^c with one unique variant (10.3), a careless metathesis
- G^c a careless recension of Alex-B1 introducing seven random variants (1.3, 2.2, 4.3, 10.2, 13.2, 16.1) (This recension was made to be the exemplar for the independent Old Latin version it^g. This manuscript has some Western readings, but they match no observed

Western group patterns; thus its classification as Alexandrian.)

I an incomplete manuscript that appears to be a copy of Alex-C with one correction (3.2), probably from Alex-A1 or a descendant

K a faithful copy of Anti-BC2

P a collation of $\aleph^c$ and Alex-A7 containing all the variants of both with one random variant (13.2), a careless omission of diacritical marks

Ψ a late copy of West-2 with three Alexandrian corrections (5.1, 8.4, 12.5) not closely related genealogically

p^{46} a careless collation of Alex-B1 and Alex-C, introducing three unique variants (1.4, 7.3, 9.3) and three random variants (2.1, 10.2, 15.3), all due to carelessness

33 a copy of Alex-C1 with three corrections (3.2, 6.2, 11.2) possibly due to scribal emendations

81 a copy of Alex-A4 with one unique variant (13.1), a careless scribal error

88 a copy of Anti-C1 with one random variant (8.1), a case of careless omission

104 a faithful copy of Alex-A2 with one correction (13.4) restoring an original reading

181 a faithful copy of Anti-BC1

326 a copy of Anti-C with one variant (15.3), possibly accidental omission

330 a faithful copy of Alexandrian manuscript 451

436 a copy of the Caesarean text with three Alexandrian corrections (8.1, 11.2, 15.3), or possibly cases of scribal carelessness

451 a copy of Alex-A2 with one unique variant (5.3), a careless addition, and one correction (4.2) conforming a plural to a singular earlier in the verse

614 a copy of the Antiochan text of Theodoret with one correction (13.3), probably from Anti-ABC2 or a descendant

629 a copy of Antiochan manuscript 614 with two corrections restoring original readings (2.3, 12.4)

630 a faithful copy of Anti-ABC1

1241 a copy of Alex-A4 with one correction (13.4), restoring an original reading

1739 a copy of the Byzantine tradition (Byz-A) with one correction (4.1) restoring an original reading, and two random variants (8.1 and 12.1), cases of careless omission (The common ancestor of manuscripts 1739

and 1881 must have had a defect at variation unit 12.)

1877 a copy of Anti-C with one correction, 13.3, from an undetermined source

1881 a copy of Byzantine manuscript 1739 with one unique variant (12.2) and one random variant (16.1), a careless omission

1962 a collation of Alex-A6 and Alex-A7

1984 a copy of Anti-ABC2 with one Western correction (9.2)

1985 a copy of Anti-ABC2 with one unique variant (8.5) and one random variant (5.1), a careless omission

2127 a faithful copy of Alex-A3

2492 a faithful copy of Alexandrian manuscript 451

2495 a copy of Anti-BC3 with one correction, restoring original reading 7.2

Byz-A a collation of Anti-BC2 and Byz-B containing all variants of both

Byz-B a faithful copy of Anti-BC1 or manuscript 181

Lect the lectionary tradition, a faithful copy of Anti-BC3

vg the Latin vg, a faithful translation of West-B (The Latin versions could not distinguish between 8.1 and 8.2.)

it^{ar} a Latin translation of West-B2 with two random variants (1.4, 15.2) probably due to translator emendations

it^{c} a faithful copy of the vg

it^{d} an independent Old Latin translation from Anti-C2 with three corrections (2.4, 10.2, 12.3) from its companion Greek text D*

it^{dem} a faithful copy of the vg

it^{div*} a faithful copy of the vg

it^{divc} a faithful Latin translation of West-AB

it^{e} a faithful copy of Antiochan Old Latin it^{d}

it^{f} a faithful Latin translation of West-B1 with one random variant (16.1), a careless omission

it^{g} an independent Old Latin translation from Alexandrian G^{c} with one unique variant (15.7) and one correction (13.3) properly supplying the diacritical marks missing in its Greek source G^{c}

it^{m} an incomplete copy of the vg

it^{x} a faithful copy of the vg

it^{z*} a Latin translation of West-AB1 with one unique variant (15.6), a translator's blunder, and one correction (6.1) restoring an original reading

it^{zc} a faithful Latin translation of West-AB1

syr^{h}	a Syriac translation of a collation of Anti-BC and Anti-C1 with one correction (8.4) from an undetermined source and one random variant (15.3), a careless omission
syr^{p}	a Syriac translation of Anti-C2 with one unique variant (5.4) and two random variants (6.2, 15.5), an omission and a case of overtranslation
cop^{bo}	the Coptic Boharic version translated from Alex-C1 with two random variants (4.2, 15.5), a case of carelessness and overtranslation, and with one correction (6.2), possibly from Alex-BC1
cop^{sa}	the Coptic Sahidic version translated from the text of B^{3} except for the translational ambiguity (8.3), with two random variants (4.3, 15.5), a case of omission and overtranslation
arm	the Armenian version translated from the Caesarean text (Caes-1) with four random variants (5.1, 6.2, 10.2, 15.4), all the result of carelessness, and one correction (8.4)
goth	the Gothic version translated from West-A2 except for the translational ambiguity (8.3) and one random variant (15.3), accidental omission
eth^{pp}	the Ethiopic version (Pell Platt and Praetorius) translated from a collation of Alex-AC1 and Alex-A5
eth^{ro}	the Ethiopic version (Rome) faithfully translated from Alex-AC1
Ambrosiaster	the text of the Western church father, a collation of West-AB and West B2 with three random variants (1.3, 15.4, 16.1) due to carelessness and one correction (3.1) restoring an original reading
Augustine	the text of the North African church father, incomplete, but possibly a copy of Alex-C1 with one random variant (15.4)
Chrysostom	the text of the Western church father, a copy of West-A3 (This text verifies that the Western text had the original reading 8.2. Chrysostom also had a text that was a collation of West-A2 and West-A3, with two random variants [2.1 and 13.3].)
Clement	the text of the Alexandrian church father, incomplete, but possibly a copy of Alex-A2
Eusebius	the text of the Caesarean church father, incomplete, but evidently a copy of the Alexandrian text Alex-A4
Euthalius	the text of the Alexandrian church father, incomplete, but possibly a copy of Alex-A4

Hilary	the text of the Western church father, incomplete, but possibly a copy of Alex-C with one correction (13.4)
John of Damascus	the text of the Eastern church father, a copy of Anti-ABC with one correction (11.2), possibly from the text of Theodoret
Origen	the text of the North African church father, incomplete, but probably a copy of Alex-BC (Along with the expected 9.1, Origen had a text reading 9.2.)
Theodoret	the text of the Eastern church father, a copy of Anti-ABC1 with one random variant (11.2) (Along with the expected 9.1, Theodoret also had a text reading 9.2.)
Victor of Rome	the text of the Western church father, a copy of West-1 with two corrections (12.3, 13.3) from unknown sources, and two random variants (8.3, 16.1)

TEXTUAL COMMENTARY

This section evaluates each variant reading, giving an estimated genealogical probability of its being the reading of the original autograph (external evidence), and the possible cause of its origination if not the original reading (internal evidence). The probability is estimated on the basis of agreement among ancient independent witnesses as determined by the computer program within the bounds of its limitations. The estimate considers all second-generation witnesses to be of equal weight (Alex-A, Alex-B, Alex-C, Anti-A, Anti-B, Anti-C, Caes, West-A, West-B;[18] a total of nine for this problem). This gives the Alexandrian and Antiochan texts a weight of three, the Western text a weight of two, and the Caesarean text, one.

In estimating probability, a reading would be given a weight of one for each second-generation branch that wholly supports it. Thus a reading that is supported wholly by seven second-generation branches would have an estimated probability of $\frac{7}{9} = 0.77$. If a reading is partially supported by a second-generation branch, a weighting proportionately less than one would be assigned for that branch based on an estimated proportion of its support. For example, in a given second-generation branch, if a reading is supported by two out of three third-generation branches, the reading would be assigned a weighting of $\frac{2}{3} = 0.67$ for the given branch. Thus a reading that is supported wholly by five second-generation branches and partially (say 0.67) by another second-generation branch would have an estimated probability of $\frac{5.67}{9} = 0.63$. An estimated probability of 1.0

[18]In the case of the Western text, West-A and West-B are fourth-generation witnesses, but they represent the first major branching of the Western text.

means that all ancient witnesses wholly support the reading and there is no doubt that it is the reading of the autograph; a probability of 0.0 means that the reading is not supported by any ancient witnesses and there is no possibility of its being the reading of the autograph.

This method provides an objective means for estimating genealogical probabilities. Although some uncertainty is involved and some subjective judgment is required, the results provide a more objective means of determining cumulative genealogical weight than current methods.

Readings Evaluated

This section evaluates each variant, listing its estimated probability of being the original reading and the evidence supporting the reading. The decision is compared with the choice of five modern English versions (*KJV*, *NKJV*, *NIV*, *NASB*, and *RSV*), and with the choice of ten critical commentators or textual editors (H. Alford, F. F. Bruce, J. Eadie, G. F. Hawthorne, J. B. Lightfoot, H. A. W. Meyer, J. J. Muller, A. T. Robertson, M. R. Vincent, and Westcott and Hort). Also mentioned are the choices of K. Lachmann and C. von Tischendorf when cited in one of the above commentators. (Subsequent references to commentators include only these.) The choice of UBSGNT[3] is listed together with its estimated degree of certainty in parentheses. In every case, Nestle-Aland (*Novum Testamentum Graece*, 26th ed.) agrees with the choice of UBSGNT[3] and is not mentioned separately.[19]

Philippians 1:11

1.1. καὶ ἔπαινον θεοῦ (probability 0.96). Supported by all Alexandrian (except two fourth-generation branches Alex-A6 and G^c, both of which are closely related to recensions), by all Antiochan and Caesarean, and by all Western (except one late negligible branch, West-AB1). The evidence is strong and distributed with only very weak alternatives. So UBSGNT[3] (B), all versions, and commentators.

1.2. καὶ ἔπαινον χριστοῦ (probability 0.02). Supported by only one fourth-generation branch (Alex-A6, witnessed by D* and 1962). This is likely due to a scribal error $\overline{\text{XY}}$ for $\overline{\Theta\text{Y}}$ (Metzger).[20]

1.3. καὶ ἔπαινόν μοι (probability 0.02). Supported by one fourth-generation Alexandrian branch (G^c and its descendants G* and it^g),

[19]B. M. Metzger (*Textual Commentary on the Greek New Testament* [London: United Bible Society, 1971]) treats five additional variant readings in Philippians. These were not included in this study because he did not give a complete list of manuscripts supporting each reading.

[20]References in this section are made to Metzger, *Textual Commentary*, 611–18.

and by Ambrosiaster in the West. These are apparently two independent scribal blunders; the reading has no parallel in Paul (Metzger).

1.4. θεοῦ καὶ ἔπαινον ἐμοί (probability 0.0). Supported only by p^{46} and it^{ar} (virtually). A possible conflation, one of several unique readings in p^{46}.

1.5. καὶ ἔπαινον αὐτοῦ (probability 0.0). Supported only by one late branch, West-ABI (it^{z*} and it^{zc}). Possibly a simplification of the redundancy of χριστοῦ (Metzger).

Philippians 1:14

2.3. λόγον τοῦ θεοῦ λαλεῖν (probability 0.89). Supported by all Alexandrian (except p^{46}, D*, and G^c with its descendants), by two second-generation branches of Antiochan (Anti-A and Anti-C), by Caesarean and all Western. Contrary to UBSGNT[3], the evidence is strong and distributed with only one weak alternative. Supported by *NASB*, *NIV*, *RSV*, Bruce, Lachmann, Lightfoot, Muller, Tischendorf, Vincent, and Westcott-Hort.

2.1. λόγον λαλεῖν (probability 0.11). Supported only by one second-generation branch (Anti-B)[21] and p^{46}. Best understood as a careless omission. The support is weak and local. This reading is the choice of *KJV*, *NKJV*, Alford, Eadie, Hawthorne, and Meyer, as well as UBSGNT[3](D). However, Metzger admitted that 2.3 has the better weight and distribution, but rejected it as an apparent scribal expansion, allowing subjective judgment to overrule strong external evidence.

2.2. λόγον κυριοῦ λαλεῖν (probability 0.0). Supported only by one fourth-generation Alexandrian branch (G^c and its descendants). Probably a confusion of $\overline{\text{KY}}$ for $\overline{\text{ΘY}}$, because G^c contains several other careless blunders.

2.4. λόγον λαλεῖν τοῦ θεοῦ (probability 0.0.). Supported only by D* and its Old Latin companion it^d (with its descendant it^e). Probably careless metathesis; D* contains several other careless blunders.

Philippians 2:2

3.1. ἕν (probability 0.80). Supported by all Alexandrian (except Alex-A1, Alex-A6, 1 and 33), by all Antiochan and Caesarean, and by Proto-West and West-1. The evidence is strong and distributed. Supported by all versions, all commentators and UBSGNT[3](B).

[21]It is noted that Anti-B practically dominates the main portion of the Antiochan text. If a weight of 3.0 were given to reading 2.1 on this basis, its probability would still be only 0.33, not enough to outweigh the strong support of reading 2.3, which would still have a probability of 0.67, with a ratio of two to one.

3.2. αὐτό (probability 0.20). Supported by one third-generation Alexandrian branch (Alex-A1), one fourth-generation Alexandrian branch (Alex-A6), and by most of the Western text except the earliest witnesses (Proto-West and West-1). These probably are the result of independent instances of scribal assimilation of the preceding αὐτό (Metzger).

Philippians 2:4

4.1. ἕκαστοι (probability 0.45). Supported by all Alexandrian (except three fourth-generation branches, Alex-C2, Alex-AC1, and G^c with its descendants) and by two of three second-generation Antiochan branches (Anti-A and Anti-B), although they contribute little to the main Antiochan tradition for this variation unit. The evidence is moderate with some distribution. So UBSGNT^3(B), supported by all commentators. The choice of the versions is unclear.

4.2. ἕκαστος (probability 0.31). Supported by one fourth-generation Alexandrian branch (cop^{bo}), by one second-generation Antiochan branch (Anti-C), by Caesarean, and by one fifth-generation Western branch (West-A1). But this is probably due to an early scribal error in Proto-Caesarean also committed independently in West-A1 and cop^{bo}, conforming to the singular at the first part of the verse, particularly because the plural form is very rare and so is unexpected. However the witness of Anti-C may be given more weight since this reading is abundant in the Antiochan text. This reading is supported by the *KJV*.

4.3. omit (probability 0.24). Supported by one fourth-generation Alexandrian branch (Alex-AC1), by G^c (with its descendants) and cop^{sa}, and by West-B and West-AB. The word was probably omitted as superfluous (Metzger). This reading seems to be supported by all the versions except *KJV*, but this may be due to translational smoothing.

Philippians 2:5

5.2. τοῦτο γάρ (probability 0.80). Supported by all Alexandrian (except Alex-C1 and Alex-A4), by all Antiochan (except Anti-BC3 and 1985), by part of Caesarean, and all Western (except Ψ). The early witness is strong and distributed, contrary to UBSGNT^3. Supported by Eadie and Meyer.

5.1. τοῦτο (probability 0.20). Supported only by a few unrelated branches—by two third-generation Alexandrian branches (Alex-A1 and Alex-C1), by one fourth-generation Antiochan branch (Anti-BC1, the Byzantine tradition), by part of Caesarean (arm), and by Ψ and

1985. These are best understood as careless omissions, possibly because the logical connection implied by γάρ is difficult to understand. Metzger found no good reason for the omission of γάρ, but the weak external evidence does not justify accepting it as original. In spite of the evidence, this reading is supported by all the versions, most of the commentators, and by UBSGNT^3(C).

5.3. τοῦτο οὖν (probability 0.0). Supported only by 451 and its own two descendants, all late. Obviously a scribal innovation.

5.4. καὶ τοῦτο (probability 0.0). Supported only by the Syriac version syr^p. Obviously a translator's innovation not supported by any Greek authority.

Philippians 2:12

6.1. ὡς (probability 0.76). Supported by all Alexandrian (except Alex-AC1 and Alex-BC1), by all Antiochan (except syr^p), by part of Caesarean, and by West-B. The evidence is strong and distributed, so UBSGNT^3(B). Supported by all the versions (except *NIV*) and all the commentators.

6.2. omit (probability 0.24). Supported by only two fourth-generation Alexandrian branches (Alex-AC1 and Alex-BC1), by part of Caesarean (arm), and by West-A. The copyists may have omitted the word as superfluous or may have done so accidentally (Metzger). Supported by *NIV*, but this may be due to translational smoothing.

Philippians 2:26

7.2. ὑμᾶς ἰδεῖν (probability 0.56). Supported by two of three second-generation Alexandrian branches (Alex-A and Alex-C), by all Antiochan (except Anti-BC1, the Byzantine tradition), and by Caesarean. Contrary to UBSGNT^3, the evidence is moderate and distributed. Metzger regarded the insertion of ἰδεῖν to be more likely than its omission. But the probability favors ἰδεῖν as original, and 1:8 would set the pattern for its omission. The reading is supported by Bruce and Meyer, and is included in brackets by Lachmann and by Westcott and Hort.

7.1. ὑμᾶς (probability 0.44). Supported by one second-generation Alexandrian branch (Alex-B), by one fourth-generation Antiochan branch (Anti-BC1, the Byzantine tradition), and by all Western. This may be the result of three separate cases of careless omission. The evidence is mild with some distribution. Although the probability is somewhat less for this reading, it is supported by most commentators, by all the versions, and by UBSGNT^3(C). Metzger regarded the external evidence to be evenly balanced.

7.3. πρὸς ὑμᾶς (after gap) (probability 0.0). Supported only by p^{46}. Another evidence of the carelessness of the copyist.

Philippians 2:30

8.2. τοῦ Χριστοῦ (probability 0.55). Supported by all Antiochan and all Western. Although most witnesses of the Western text are versions that cannot distinguish between 8.1 and 8.2, the evidence of Chrysostom verifies that the Western text had 8.2. Contrary to UBSGNT[3], the evidence is stronger and more distributed than the other readings. Supported by Eadie.

8.1. Χριστοῦ (probability 0.17). Supported by only one third-generation Alexandrian branch (Alex-B1), by part of Caesarean (late manuscript 436), and by two late Antiochan manuscripts of negligible weight (1739, 1881). This can be regarded as a few isolated cases of careless omission of a somewhat superfluous article. This reading is supported by Hawthorne, Muller, Vincent and by UBSGNT[3](C). The versions do not distinguish between 8.1 and 8.2, but do support one or the other. The combined probability (0.72) of the two readings assures that at least Χριστοῦ is original.

8.4. Κυρίου (probability 0.28). Supported by all Alexandrian except one third-generation branch (Alex-B1), by part of Caesarean (arm), and by Ψ (of negligible weight). The reading may have been substituted for Χριστοῦ by copyists who remembered a similar expression from I Cor 15:58 and 16:10 (Metzger). Supported by Westcott and Hort.

8.5. Τοῦ θεοῦ (probability 0.0). A unique reading of 1985 unknown to any of its near relatives. May have originated from the confusion of $\overline{\text{XY}}$ for $\overline{\Theta\text{Y}}$ (Metzger) or from accidental theological substitution, as perhaps Chrysostom did in his commentary.

8.6. omit (probability 0.0). A unique reading of C, a careless omission not known to its near relatives. In spite of the unlikelihood of this reading, it is preferred by Alford, Lightfoot, Meyer, and Tischendorf.

Philippians 3:3

9.1. Θεοῦ (probability 0.63). Supported by all Alexandrian except one third-generation branch (Alex-A3), and by all Antiochan. The evidence is strong with some distribution. Supported by *NASB, NIV*, by all the commentators, and by UBSGNT[3] (C).

9.2. θεῷ (probability 0.37). Supported by one third-generation Alexandrian branch (Alex-A3), by Caesarean and all Western. Appears to be an emendation to provide an object for λατρεύοντες as in

Rom. 1:9 and 2 Tim 1:3 (Metzger). Supported by *KJV*, *NKJV*, and *RSV*.

9.3. omit (probability 0.0). Supported only by p^{46}. A careless omission unknown to its near relatives. Further evidence of the carelessness of p^{46}.

Philippians 3:12

10.1. ἔλαβον ἢ ἤδη τετελείωμαι (probability 0.87). Supported by all Alexandrian except one fourth-generation branch (G^c with its descendants) and two fifth-generation branches (D* and p^{46}), by all Antiochan, by part of Caesarean (436), and by all Western except one fifth-generation branch (West-B1). The evidence is strong and distributed. Supported by all versions, all commentators, and by UBSGNT[3] (B).

10.2. ἔλαβον ἢ ἤδη δεδικαίωμαι ἢ ἤδη τετελείωμαι (probability 0.13). Supported by the three fourth- or fifth-generation Alexandrian branches mentioned above, all of which exhibit evidence of carelessness, and part of Caesarean (arm). See Metzger's explanation.

10.3. ἔλαβον ἢ ἤδη τετελείωμαι ἢ ἤδη δεδικαίωμαι (probability 0.0). The unique reading of one manuscript (G*), the careless metathesis of the text of its exemplar (G^c).

Philippians 3:13

11.1. οὐ (probability 0.78). Supported by two of three second-generation Alexandrian branches (Alex-B and Alex-C), by all Antiochan, part of Caesarean (arm), and by all of Western except two minor branches (West-A1 and West-B2). The evidence is strong and distributed. Supported by *KJV, NKJV, RSV*, by six of the commentators, and by UBSGNT[3] (C).

11.2. οὔπω (probability 0.22). Supported by one second-generation Alexandrian (Alex-A), by part of Caesarean, and by two minor Western branches (West-A2 and West-B2). An emendation by copyists eager to strengthen Paul's protestations (Metzger). In spite of the weak support, this reading was preferred by *NASB*, *NIV*, Muller, Tischendorf, and Vincent; and Westcott and Hort included it in brackets.

Philippians 3:16

12.4. τὸ αὐτὸ φρονεῖν, τῷ αὐτῷ κανόνι στοιχεῖν (probability 0.52). Supported by the bulk of two second-generation Alexandrian branches (Alex-A and Alex-B), by two second-generation Antiochan branches (Anti-A and Anti-B with limited weight), by Caesarean, and

the bulk of Western. The evidence is strong and distributed, UBSGNT[3] notwithstanding. Readings 12.3 and 12.5 bear witness of this one in altered form. Their combined probabilities (0.90) assure the originality of this reading against the alternatives. Metzger regards τὸ αὐτὸ φρονεῖν to be a gloss (cf. 12.5); but in this reading, which has the stronger probability, it cannot be a gloss; 12.5 is more likely explained as metathesis on this reading.

12.5. τῷ αὐτῷ στοιχεῖν κανόνι, τὸ αὐτὸ φρονεῖν (probability 0.30). Supported by one fourth-generation Alexandrian branch (Alex-A5), by one second-generation Antiochan branch with heavy weight (Anti-C), and by one minor Western branch (West-A3). Only moderate strength with limited distribution. Probably arose from careless metathesis of 12.4, the evident original reading from which this one descended.

12.3. τὸ αὐτὸ φρονεῖν, τῷ αὐτῷ στοιχεῖν (probability 0.08). Supported only by two minor Alexandrian branches (D* and G[c]) both evidencing carelessness, and by one minor Western branch (West-B2) with Victor of Rome. Probably arose by careless omission of κανόνι from 12.4, the evident original reading.

12.1. τῷ ἀυτῷ στοιχεῖν (probability 0.10). Supported only by one second-generation Alexandrian branch (Alex-C), and one fourth-generation branch (Alex-AC). Probably arose because of homoeoteleuton, limited to one branch. It lacks strength or distribution. In spite of the weak external evidence, this reading is preferred by *NASB*, *NIV*, *RSV*, most of the commentators, and by UBSGNT[3](B). But this reading can be explained by one scribal error in only one exemplar (Alex-C).

12.2. τὸ αὐτὸ φρονεῖν (probability 0.0). The unique reading of one late manuscript (1881) unknown to its near relatives. Probably arose because of homoeoteleuton from 12.5, the reading of most of its ancestors.

Philippians 3:21

13.4. ἑαυτῷ (probability 0.55). Supported by several minor Alexandrian branches, by the bulk of all three second-generation Antiochan branches (except a few minor ones—Anti-ABC2, Anti-BC2, Anti-C1, 1877), by Caesarean, and by all Western (except two church fathers). The evidence is moderately strong and distributed, contrary to Metzger who evaluated the authorities as inferior. The reading appears to be supported by *KJV*, *NKJV*, *NASB*, and *RSV*, although they may have translated 13.3 (αυτῷ) as a reflexive.

13.3. αὐτῷ (probability 0.39). Supported by the bulk of the Alexandrian text (except those minor branches supporting 13.2 and

13.4), by minor Antiochan branches (Anti-ABC-2, Anti-BC2, Anti-C1, and 1877), and by two Western church fathers (Chrysostom and Victor of Rome). This is the preference of UBSGNT^3(B), but the evidence is weak, and though distributed, it appears in minor branches outside the Alexandrian text. This probably arose through several independent emendations of copyists following the prevailing Hellenistic usage in which the unaspirated form came to function as a reflexive in addition to its normal usage (Metzger). The reading is supported by *NIV* and by most of the commentators.

13.2. αυτω (probability 0.06). Supported by a few minor Alexandrian branches (Alex-AC, D*, G^c, and B*). Arose because of careless omission of diacritical marks from 13.3, the prominent Alexandrian reading. These probably support the reading 13.3 against 13.4. The evidence is weak and localized.

13.1. αὐτῷ (probability 0.0). The unique reading of one late manuscript (81) unknown to any of its near relatives. Accepted as the probable reading by UBSGNT^2, it was rightly rejected by UBSGNT^3. Expected by the generally accepted conventions of Greek orthography (Metzger), this must have arisen because of a copyist's correction of the Hellenistic usage (13.3) in North Africa. Supported only by Westcott and Hort.

Philippians 4:3

14.1. τῶν λοιπῶν συνεργῶν μου (probability 1.0). Supported by all witnesses except ℵ*. The reading is supported by all versions and commentators. In spite of the overwhelming evidence for this reading, UBSGNT^3 gave it a degree of certainty of only "B," probably because of respect for ℵ*, the only clear witness against it.

14.2. τῶν συνεργῶν μου καὶ τῶν λοιπῶν (probability 0.0). The unique reading of ℵ* unknown to any of its near relatives.[22] Due to scribal inadvertence (Metzger). This variation unit contributed nothing to the reconstruction of textual history. Unique readings of this kind need not be included in the data base, nor, for that matter, in the critical apparatus.

Philippians 4:16

15.1. εἰς τὴν χρείαν μοι (probability 0.65). Supported by all Alexandrian (except one third-generation branch, Alex-A2, and one fifth-generation branch, Alex-A7), by two of three second-generation Antiochan branches (Anti-B and Anti-C), and by all Western (except

[22]Papyrus p^{16} seems to support this reading, but it is so fragmentary that its genealogical relationship to the other Alexandrian manuscripts cannot be determined.

the Gothic version, the Latin it^{ar}, it^{z}, and Ambrosiaster). The evidence is moderately strong and distributed. This reading is preferred by UBSGNT^{3}(C) and by Alford, Eadie, Hawthorne, Westcott-Hort and Lightfoot; most others did not discuss this variation unit.

15.2. εἰς τὴν χρείαν μου (probability 0.13). Supported in Antiochan by one second-generation branch (Anti-A) and in Alexandrian by one fifth-generation branch (Alex-A7). Probably two independent scribal emendations of the less usual dative μοι (Metzger). This reading seems to be supported by *KJV*, *NKJV*, and *NASB*.

15.3. τὴν χρείαν μοι (probability 0.17). Supported by one third-generation Alexandrian branch (Alex-A2), by part of Caesarean, and by one minor Western branch (West-A1). Probably three independent cases of accidental omission of εἰς after δίς, or deliberate omission in order to provide a direct object for the verb ἐπέμψατε (Metzger). This reading seems to be supported by *NIV* and *RSV*, although the appearance may be due to translational smoothing.

15.4. τὴν χρείαν μου (probability 0.05). Supported only by D*, arm, Augustine, and Ambrosiaster. Probably four independent cases of combined omission and emendation as in 15.2 and 15.3.

15.5. μοι εἰς τὴν χρείαν μου (probability 0.0). Supported by two versions, cop and syr^{p}, but by no Greek authority. Apparently the result of overtranslation (Metzger) in an authority common to both, not shown in the genealogical diagram.

15.6. in unum mihi (probability 0.0). A unique reading of one version, it^{z}, unknown to its near relatives, or the Greek.

15.7. in necessitatem meam vel usibus meis (probability 0.0). A unique reading of one version, it^{g}, unknown to its near relatives, or the Greek.

Philippians 4:23

16.2. ὑμῶν. ἀμήν (probability 0.89). Supported by all Alexandrian except three minor branches G^{c}, B^{3}, and Euthalius, by all Antiochan and Caesarean, and by all Western except two minor branches (West-A3 and it^{f}). The evidence is strong and distributed. The reading is supported by *KJV* and *NKJV*, by Bruce, Hawthorne, and Muller, and it is listed in brackets by Alford, Lachmann, and Lightfoot. Metzger regarded ἀμήν to be a liturgical addition, but it is hard to explain a liturgical correction on a second-century papyrus (p^{46}).

16.1. ὑμῶν. (probability 0.11). Supported only by three minor Alexandrian branches (G^{e}, B^{3}, and Euthalius), and by two minor Western branches (West-A3 and it^{f}). Probably due to omission by careless copyists. In each case the reading is unknown to near relatives. In spite of its weak support, this reading was preferred by

TABLE 3

Comparison of Probabilities

Variation Unit	*Probability of Variant* 1	2	3	4	5	6	*Ratio of Two Highest*
1	0.96	0.02	0.02	0.00	0.00	—	48.00
2	0.11	0.00	0.89	0.00	—	—	8.09
3	0.80	0.20	—	—	—	—	4.00
4	0.45	0.31	0.24	—	—	—	1.45
5	0.20	0.80	0.00	0.00	—	—	4.00
6	0.76	0.24	—	—	—	—	3.16
7	0.44	0.56	0.00	···	—	—	1.27
8	0.17	0.55	0.00	0.28	0.00	0.00	1.96
9	0.63	0.37	0.00	—	—	—	1.70
10	0.87	0.13	0.00	—	—	—	6.67
11	0.78	0.22	—	—	—	—	3.54
12	0.10	0.00	0.08	0.52	0.30	—	1.73
13	0.00	0.06	0.39	0.55	—	···	1.41
14	1.00	0.00	—	—	—	—	inf.
15	0.65	0.13	0.17	0.05	0.00	0.00	3.82
16	0.11	0.89	—	···	—	···	8.09

NASB, *NIV*, *RSV*, by Eadie, Tischendorf, Vincent, Westcott and Hort, and by UBSGNT^3(B).

Results Compared

Table 3 compares the genealogical probabilities of the variant readings involved in this study. The last column gives the ratio of the two highest probabilities. Where the ratio is greater than about 2.0, there is some confidence that the reading with the highest probability is the original one. For ratios less than 2.0, internal evidence is needed to confirm the probabilities.

The following nine readings seem to be original on the basis of the genealogical probabilities: 1.1, 2.3, 3.1, 5.2, 6.1, 10.1, 11.1, 14.1, and 16.2. Reading 4.1 (ἕκαστοι) has the probability advantage over 4.2 (ἕκαστος); this is supported by the internal evidence. Scribes would be more inclined to conform the inflexional number to the preceding singular than to make an inflexional change to the rare plural form.

Reading 7.2 (ὑμᾶς ἰδεῖν) has the probability advantage over 7.1 (ὑμᾶς). Metzger rightly regarded the insertion of ἰδεῖν to be more likely than its omission; it appears to add an interpretive restraint to a more general statement. However, it is hard to explain the distribution of such a sophisticated insertion. In this case, the internal

probability is difficult to evaluate. Nevertheless, the superior strength of the genealogical support for 7.2 favors keeping ἰδεῖν.

Reading 8.2 (τοῦ Χριστοῦ) has the probability advantage over 8.4 (κυρίου) with a ratio just under 2.0. The latter reading is likely to have arisen through memory substitution. Its lack of support outside the Alexandrian branch agrees with the internal probabilities that 8.4 is not original. (Arm and Ψ, the only outside support, appear to have experienced Alexandrian correction.)

Reading 9.1 (θεοῦ) has the probability advantage over 9.2 (θεῷ). The latter appears to be an emendation based on an apparent need for an object for the verb λατρεύοντες. The internal probability agrees with the external probability of the superiority of 9.1.

Reading 12.4 (τὸ αὐτὸ φρονεῖν, τῷ κανόνι στοιχεῖν) has the probability advantage over 12.5 (τῷ αὐτῷ στοιχεῖν κανόνι, τὸ ἀυτὸ φρονεῖν). The latter can be explained as careless metathesis. Although the distribution of the reading is difficult to explain, there is sufficient agreement between the internal and external probabilities to support the superiority of 12.4.

Reading 13.4 (ἑαυτῷ) has the probability advantage over 13.3 (αὐτῷ). The latter may be regarded as an emendation to accommodate Hellenistic usage. There is sufficient agreement of the internal and external probabilities to support the superiority of 13.4.

Of the six readings for which the statistical-advantage ratio is less than 2.0, five are supported by internal evidence, and thus more likely to be original than their nearest competitors. Only with variant 7.2 is the internal evidence uncertain.

Of the sixteen readings selected as most likely to be original, nine agree with the choice of UBSGNT^3 (1.1, 3.1, 4.1, 6.1, 9.1, 10.1, 11.1, 14.1, 15.1); these readings also were the choice of all (or most) of the commentators. Of the seven that disagree with the choice of UBSGNT^3, five are the choice of some commentators (2.3, 5.2, 7.2, 8.2, 16.2); only two seem to have been rejected by all commentators (12.4, 13.4). Of these two, one (12.4) is an excellent example of the advantage of the genealogical method over the eclectic method; the genealogical method was able to explain the reading preferred by UBSGNT^3 and the commentators (12.1) as having originated by one scribal error in only one exemplar. The second (13.4) is an example of how the genealogical method may demonstrate the superior distribution of a reading supported by evidence regarded as inferior by Metzger and the commentators.

Of the nine readings rated by UBSGNT^3 with a certainty degree of "B," six were accepted here as original, and only three were rejected (12.1, 13.3, 16.1). The first two (12.1, 13.3) were discussed above. The third reading (16.1) was rejected because of its obvious lateness and lack of distribution; the accepted reading (16.2) was the choice of six of the commentators. It appears that Metzger and the

others allowed subjective reasons to overrule the strong external evidence in this case.

Of the six readings rated by UBSGNT[3] with a certainty degree of "C," three were rejected (5.1, 7.1, 8.1). The first (5.1) was rejected because the genealogical method exposed it as a few cases of late, sporadic, careless omission; whereas the accepted reading (5.2; with which two commentators agreed) exhibited early, wide distribution. The second (7.1) was rejected because the genealogical method discovered a weaker distribution for the reading which can be explained as three separate cases of careless omission; whereas the accepted reading (7.2) exhibited stronger distribution which cannot be explained as wide-scale additions; and the accepted reading is the choice of four commentators. The third (8.1) was rejected because the genealogical method exposed its lateness and lack of distribution, explaining it as a few isolated cases of careless omission of a somewhat superfluous article; whereas the accepted reading (8.2), supported by Eadie, exhibited much better distribution which cannot be explained as wide-scale additions.

The one reading rated by UBSGNT[3] with a certainty degree of "D" (2.1) was rejected as not original. The genealogical method exposed the reading as weak and local, explaining it as two isolated cases of careless omission; whereas the accepted reading (2.3; with which seven commentators agreed) exhibited strong, distributed support.

Degradation of the text[23]

Of the 118 manuscripts involved in this study (73 extant and 45 created by the program), 97 exhibit simple descent from one exemplar; 20 exhibit descent from two exemplars; and only 1 exhibits descent from 3 exemplars. There were 27 that exhibited corrections from unidentified sources. This suggests that the text degraded in a simple fashion with only 18% experiencing mixture.

Of the 21 manuscripts exhibiting mixture, 8 are dated 200 to 300, 8 more are dated 350 to 500, and only 5 occurred after 500. This suggests that most of the mixture occurred in the third to sixth centuries, with none necessarily occurring in the first two centuries. These mixed texts may represent simple recensional attempts to recover a more authoritative text.

Of the 118 manuscripts, 27% were faithful copies of their parent exemplar; another 46% introduced only one random variant or correction; another 13% introduced two random variants or corrections; only 8% introduced three random variants or corrections; and

[23]The reader is reminded that the following observations are still an interpretation of the results of the computer analysis and are subject to all the limitations previously mentioned.

only 6% introduced more than three. This suggests that the degradation was gradual. The fact that only 27 manuscripts appear to have made corrections suggest that the degradation was cumulative with little self-correction. Those manuscripts introducing a large number of variants were probably complex recensions.

Versions and Fathers

The ancient versions were usually made from a form of the then current local text. The Coptic and Ethiopic versions were made from forms of the Alexandrian text; the Syriac versions were made from forms of the Antiochan text (with Caesarean mixture); the Armenian version was made from the Caesarean text (with Western mixture); and the Gothic and Latin versions were made from forms of the Western text. The only exception seems to be some of the Old Latin versions: the Old Latin it^{d} seems to have been translated from a form of the Antiochan text (Anti-C2); and the Old Latin it^{g} seems to have been translated from a form of the Alexandrian text (G^{c}).

The church fathers usually quoted from a form of their current local text. North African fathers Augustine, Clement, Euthalius, and Origen quoted from forms of the Alexandrian text. Eastern fathers John of Damascus and Theodoret quoted from forms of the Antiochan text. Western fathers Ambrosiaster, Chrysostom, and Victor of Rome quoted from forms of the Western text. The only exceptions were Western father Hilary who seems to have quoted from a form of the Alexandrian text, and Caesarean father Eusebius who seems to have quoted from a form of the Alexandrian.

Recensions

Several manuscripts in the study appear to be recensions that were made for a specific purpose. These are characterized by multiple parentage or a high percentage of random variants introduced in the manuscripts.

Manuscript G^{c} appears to be a recension of the Alexandrian text (Alex-B). It introduces seven random variants, some of which are unique. These seven variants match no known grouping pattern in Philippians; but its three Alexandrian readings (7.1, 8.1, 13.3) match the grouping pattern of Alex-B1, thus its classification as Alexandrian. The recension evidently was made to provide a Greek text from which to translate the independent Old Latin version it^{g}.

Alex-AC1, a collation of Alex-A2, Alex-A3, and Alex-C1, is the only manuscript with triple parentage. It appears to be a recension made to provide a Greek text from which to translate the Ethiopic versions.

Manuscript D* appears to be a recension of the Alexandrian text (Alex-A6). It introduces five random variants, some of which are unique, and one correction. These five variants match no known grouping pattern in Philippians; but its four Alexandrian readings (1.2, 9.2, 11.2, 13.3) match the grouping pattern of Alex-A6, thus its classification as Alexandrian. The recension was made to be a parallel text with the Old Latin version it^d, contributing three corrections to that version. For some strange reason, however, it^d was actually translated from an Antiochan text (Anti-C2), apart from the three corrections taken from D*.

The Syriac version, syr^h, was made from a recension made by collating Anti-BC and Anti-C1, with two new variants. The Armenian version was made from an apparent recension of the Caesarean (Caes-1) that introduced four random variants and one correction.

Text-Types Compared

Contrary to expectation, the Alexandrian text-type exhibited greater degradation at an earlier date than the others, and the Alexandrian manuscripts contained more variants on the average than those of its other traditions. Of the 31 manuscripts in the Alexandrian tradition there was a total of 228 variants introduced, making an average of 7.35 variants per extant manuscript. The Antiochan tradition had 23 manuscripts with 108 variants averaging 4.70 per manuscript. The Caesarean tradition had an average of 6.0 per manuscript, whereas the Western tradition averaged 6.82 per manuscript.[24]

This study suggests that for Philippians the Antiochan tradition degraded the least in the early centuries, and that Antiochan manuscripts are the most reliable. For example, the manuscripts traditionally regarded as most reliable were more distant from the autograph than the Byzantine tradition. Manuscript ℵ* differed from the probable autograph by 8 variants, B* differed by 9, and p^{46} by 10, whereas Byz-B differed from the probable autograph by only 4 variants, and Byz-A by 5. This is explained on the basis of greater degradation and mixture in the genealogical history of the Alexandrian manuscripts.

Representative Manuscripts

A set of 9 manuscripts was isolated from the 73 used in this study. These 9 serve as good representatives of the early form of the

[24]This comparison of necessity overlooks the fact that some sigla treated as a single manuscript really represent composite groups of manuscripts, so for example Byz and Lect in the Antiochan branch, vg in the Western branch, eth and cop in the Alexandrian branch, and arm in the Caesarean branch.

four ancient text-types. From the Alexandrian tradition manuscripts $\aleph^c$, 33, and 104 approximately represent the witness of Alex-A, Alex-B, and Alex-C. From the Antiochan tradition manuscripts D^c, 181, and 326 approximately represent the witness of Anti-A, Anti-B, and Anti-C. Manuscript 436 represents the Caesarean tradition, and vg and it^{divc} approximately represent the Western tradition.

The mutual consent of these 9 manuscripts agrees with the readings of the autograph as determined by the genealogical witness of the entire set of 73. This suggests that these manuscripts may serve as an initial test of originality for variation units not included in this study. Wherever these 9 manuscripts grant a strong probability advantage to a given reading, it may be expected to be original. Wherever the advantage is weak or nonexistent, further study would be required.[25]

CONCLUSION

The computer program produced a preliminary genealogical history for Philippians. It was possible to revise the computer generated tree diagram to produce an optimum configuration defining the genealogical relationships among the manuscripts. The resultant tree diagram exhibited consistency with chronology and the expectations of textual degradation. This reinforced the probability that the tree diagram is a good approximation of the actual history of the text.

The reconstructed history confirmed four ancient text-types and demonstrated that the degradation of the text was gradual and simple. The genealogical history provides an objective means of estimating external probabilities and for evaluating the distribution of readings. In most cases, if not all, internal evidence seems to agree with the genealogical probabilities regarding the identity of original readings. Of the sixteen readings selected as original by this method, nine agree with the choice of the UBSGNT[3], and seven disagree. In the latter cases, the objectivity of the method provides reason for greater confidence in the results. It appears that the computer program provided significant help in reconstructing an approximate genealogical history for the text of Philippians and that the resultant history offers some confidence in the recovered original text.

Obviously, more research must be done on genealogical theory, and a more complete textual apparatus must be compiled before significant confidence can be placed in computer-aided textual criticism. However, the results of this project seem to justify such further research. It is hoped that the comments and criticisms of interested scholars will enhance future research on this project.

[25]To the best degree possible on the basis of the evidence supplied by Metzger in his *Textual Commentary*, these 9 manuscripts seem to support the readings selected by him in the five additional variation units he listed for Philippians.