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 **A COMPUTER AID FOR**

 **TEXTUAL CRITICISM**

 JAMES D. PRICE

 *Several basic principles of NT textual criticism have been em-*

*ployed in designing a computer program that groups manuscripts*

*into probable genealogical relationships, constructs a resulting gene-*

*alogical tree diagram, and identifies the statistically most likely*

*reading of a text. The program has been initially applied to the books*

*of Philippians, 1 Timothy, and Jude using the variants listed in*

*UBSGNT2. The results indicate that the program has potential as an*

*aid to NT textual criticism.*

 \* \* \*

 INTRODUCTION

THE use of computers in biblical studies is viewed by many with

considerable skepticism. Computer studies in literary criticism

have led some scholars to reject Pauline authorship of certain epistles,l

and others to reject the traditional authorship of portions of some OT

books.2 These studies are based on debatable presuppositions and

methodology, the criticism of which is beyond the scope of this work.

Such use of computers to provide mathematical proof or disproof of

authorship led Bonifatius Fischer to question whether this was "char-

latanry or scholarship.”3

 However, after discussing many limitations of the use of com-

puters in biblical studies, Fischer wrote favorably of their use in the

field of textual criticism:

 1 A. Q. Morton and J. McLeman, *Christianity and the Computer* (London: Hodder

and Stoughton, 1964); and *Paul, The Man and the Myth* (New York: Harper and Row,

1966); for further examples see J. R. Moore, "Computer Analysis and the Pauline

Corpus," *BSac* 130 (1973) 41-49.

 2 Y. T. Radday and D. Wickmann, "Unity of Zechariah Examined in the Light of

Statistical Linguistics," *ZAW* 87 (1975) 30-55.

 3 B. Fischer, "The Use of Computers in New Testament Studies, with Special

Reference to Textual Criticism," *JTS* 21 (1970) 297-308.

116 GRACE THEOLOGICAL JOURNAL

 After so much pessimism we come at last to a field where the

computer is of great importance to the student of the New Testament,

indeed where it opens up a new dimension and makes possible what

 hitherto the scholar had not even dared to dream of: that is, in textual

criticism.4

PROPER THEORY AND METHODOLOGY

Fischer further discussed the importance of proper theory and

methodology in creating a computer program as an aid for textual

criticism, and the vanity of expecting a computer to reconstruct the

exact history of a text and its manuscript copies. However, he con-

cluded that the manuscript relationships that could be discovered

through the use of a computer would be of great value to the textual

critic in reconstructing the transmissional history of a text. He visual-

ized two stages in the process--a mathematical stage and an evalua-

tive stage:

 Two stages must be distinguished. In the first the relations between

the manuscripts and the texts are defined on the basis of all their

readings, irrespective of whether these readings are true or false: this

stage is a purely mathematical process which can be done by a

computer--indeed in so complicated a case as the New Testament it

should be done by a computer. Then follows the second stage, the

proper task of the textual critic, the judgment of the truth or falsity of

the readings, the recension of the original text and perhaps also of its

more important subsequent forms, and the reconstruction of the his-

tory of its transmission. This is a task that only a man can perform: it

is beyond the capacities of a computer. But it rests on the firm basis

that the computer supplies.5

COMPUTERS AND THEORIES OF TEXTUAL CRITICISM

Several studies have been made of various theories that might be

suitable for computer application to NT textual criticism. G. P. Zarri

studied the *stemmata codicum* theories of Don H. Quentin.6 After

expressing skepticism about expecting quick solutions, he concluded

that Quentin's theories may help to clear up some difficult problems.

John G. Griffith experimented with the method of R. R. Sokal,

known as numerical taxonomy,7 which Sokal used in arranging bio-

logical classes into family trees. Griffith adapted the methodology to

4 Ibid., 304.

5 Ibid., 306.

6 G. P. Zarri, "Algorithms, Stemmata Codicum and the Theories of Don H.

Quentin," in *The Computer and Literary Studies* (Edinburgh: Edinburgh University,

1973) 225-37.

7 I. G. Griffith, "Numerical Taxonomy and Some Primary Manuscripts of the

Gospels," *JTS* 20 (1969) 389-406.

PRICE: A COMPUTER AID FOR TEXTUAL CRITICISM 117

textual criticism and experienced some success in classifying a number

of the biblical manuscripts into near-neighbor clusters that approxi-

mate 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.”8

W. Ott experimented with a matrix containing percentages of

agreement among the manuscripts.9 The percentage of agreement was

a test of close relationship--the closer the agreement, the closer the

relationship. The method succeeded in revealing some group relation-

ships among manuscripts.

Extensive research has been conducted at the Claremont Gradu-

ate 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 manu-

script is then classified into one of these groups by means of its level

of agreement with the profile of the group. This sampling method is

being used to prepare a new comprehensive apparatus for the NT.

Most of the work has been done manually, but recently W. L.

Richards used a computer to assist the classification of manuscripts

for the Johannine epistles.10

Kurt Aland and his associates at the Munster Institute have

developed the Munster Fragment Identification Program which em-

ploys a computer to piece together papyrus fragments, to collate the

readings of many manuscripts,11 and to define manuscript groups and

large manuscript complexes.12

8 Ibid., 405.

9 W. Ott, "Computer Applications in Textual Criticism," in *The Computer and*

*Literary Studies* (Edinburgh: Edinburgh University, 1973), 199-223.

10 W. L. Richards, *The Classification of the Greek Manuscripts of the Johannine*

*Epistles* (SBLDS 35; Missoula, MT: Scholars Press, 1977);E. J. Epp, "The Claremont

Profile-Method for Grouping New Testament Minuscule Manuscripts," in *Studies in*

*the History and Text of the New Testament*, eds. B. L. Daniels and M. J. Suggs, vol.

29 of Studies and Documents (Salt Lake City: University of Utah, 1967) 27-38; E. C.

Colwell et al., "The International Greek New Testament Project: A Status Report,"

JBL 87 (1968) 187-97; P. McReynolds, "The Value and Limitations of the Claremont

Profile Method," in *Society of Biblical Literature, 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: Eerdmans, 1982); W. L. Richards, "A Critique of a New Testament

Text-Critical Methodology-The Claremont Profile Method," *JBL* 96 (1977) 555-56.

11 E. J. Epp, "A Continuing Interlude in New Testament Textual Criticism," *HTR*

73 (1980) 133-34.

12 Ibid., 142.

118 GRACE THEOLOGICAL JOURNAL

Although these methods have mapped general genealogical rela-

tionships among manuscripts, none has succeeded in producing spe-

cific genealogical tree diagrams of manuscript history. It is widely

held that the task is too complex, the manuscripts are of mixed

parentage, and the genealogical history of biblical texts is beyond

recovery .

A NEW COMPUTER METHOD

For several years I have experimented with computer techniques

for reconstructing the genealogical history of a NT text by using the

variant readings and dates of the extant manuscripts. The research

has resulted in a computer program that groups manuscripts into

probable genealogical relationships, constructs a resulting genealogical

tree diagram of an approximate textual history, and identifies the

most likely readings of the original text based upon this reconstruc-

tion. For numerous test problems, the program has yielded results

similar to those that have been obtained through conventional means.

The problems approximate the complexity and difficulty of the

biblical text. The program provides good solutions when the textual

evidence is statistically adequate; it provides a good approximation

when the evidence is sparse. If the manuscript shows signs of mixed

parentage, it indicates so; if they appear to have no genealogical

relationships, it indicates so; and if they exhibit the relationships

defined by Zane Hodges's textual model,13 it indicates so.

The program is designed as a research aid for the textual scholar.

At key points in the computing process, the program displays the

results of its decisions, the statistical validity of the decisions, the

source of the data, and the specific rules employed to reach the

decision. In case the decision is statistically weak, or otherwise ques-

tionable, the scholar may interact with the program to improve its

performance by human insight. Experience has revealed that this

interaction is needed, but not often. As Fischer predicted, the results

of the computer analysis must be evaluated, edited, and optimized;

but the final result is indeed a probable reconstruction of the gene-

alogical history of the text.

13 Hodges's textual model is understood to view all manuscripts as primary wit-

nesses to the text of the original autograph, and to view them as exhibiting essentially

no genealogical relationships among themselves. That is, at any place in the text where

a variant reading occurs, the majority of manuscripts contain the reading of the

autograph, and the non-original readings are genealogically random (see Z. C. Hodges,

"Modern Textual Criticism and the Majority Text: A Response," *JETS* 21 [1978] 143-

56). However, in his later work Hodges acknowledges the existence and importance of

genealogical relationships and advocates the necessity of studying the genealogical

history of every book in the NT (see Z. C. Hodges and A. L. Farstad, *The Greek New*

*Testament According to the Majority Text* [Nashville: Thomas Nelson, 1982]).

PRICE: A COMPUTER AID FOR TEXTUAL CRITICISM 119

BASIC PRINCIPLES

As a result of my experimental research, several basic principles

have been developed for reconstructing the genealogical history of a

text. Most of the principles are self-evident upon examination.

*Each Book Is Independent*

Because the early history of each biblical book was different,

each book should be studied independently. Failure to do this could

result in unnecessary confusion.

*Each Manuscript Is a Copy or a Recension*

Each manuscript is a copy of its exemplar (usually containing all

of the variants of the exemplar) or a recension. Recensions are

determined by evidence of two or more parents. Therefore, a manu-

script bears witness to a set of variants, not simply to individual

variants. Viewing the data of the manuscripts as sets of variants

reduces confusion. The manuscripts are regarded as having a type of

genetic profile that bears witness to its genealogical descent. This

agrees in principle with the Claremont view, and disagrees with Aland

who seems to regard each variant as having an independent gene-

alogical history.

*Fathers and Versions Used*

The quotations of a church father are evidence for the Greek text

used by him. Where the evidence is sufficiently complete, the set of

variants supported by a church father may be treated as a Greek

manuscript.14 The same is true for the ancient versions. It may be

assumed that each version was translated from a single Greek manu-

script containing the variants supported by the version. The scholar

must take this into account when interacting with the decisions of the

program, recognizing the uncertainties associated with patristic quota-

tions and translations.

*Primary Witness Takes Priority*

A manuscript bears primary witness to the readings of its imme-

diate parent exemplar, and secondary witness to more remote ances-

tors and relatives. The computing procedure should make use of

primary witnesses throughout, and should use the primary witness of

each manuscript to define its place in the genealogical tree.

14 It is recognized that some church fathers quoted from more than one ancient

text. Although the procedure is complicated, the program usually can differentiate

multiple ancient texts of this kind.

120 GRACE THEOLOGICAL JOURNAL

*Similarity Defines Siblings*

A small group of manuscripts more like one another than those

outside the group may be assumed to be immediate sibling descen-

dants of a common parent exemplar. Such a group exhibits a high

percentage of agreement and has one or more readings unique to

itself. Siblings bear primary witness to the readings of their parent

exemplar and may be used to identify the parent. A large set of

manuscripts that are genealogical descendants of a common original

text may be expected to have numerous small groups of siblings (or

near siblings) of this type. When a set of manuscripts fails to exhibit

this condition, the manuscripts are of hopelessly mixed parentage or

not genealogically related.

*How Exemplars Are Identified*

Sibling descendants bear primary witness to the readings of their

immediate parent exemplar. Within a sibling group, majority vote

usually identifies the parent readings. When majority vote fails for a

given variant, then near relatives--such as uncles or cousins15--

usually share the parent reading and may resolve the uncertainty.

When this fails, any unique reading may be eliminated; it will lack

confirmation by any witness outside the group. When all these fail to

determine the most likely reading, the scholar may resolve the uncer-

tainty by internal evidence. In any case, the scholar may overrule the

computer's decision on the basis of evidence not available to the

computer.

*Exemplars More Authoritative*

Once a parent exemplar is identified it replaces the witness of its

descendants, being the authority that accounts for their existence. If

an exemplar so identified is extant, it is allowed to bear further

witness to its own immediate parent. If the exemplar so identified is

not extant, the program creates the exemplar and allows It to bear

witness in place of its descendants; its existence is justified by the

witness of its descendants, although some uncertainty may be intro-

duced for readings with weak support.

*Iteration Required*

An ordered iteration of these principles produces a tree diagram

of the genealogical relationships among the manuscripts traced back

15 A near relative is a manuscript outside the sibling group, but more like the group

than any other manuscript in the data base.

PRICE: A COMPUTER AID FOR TEXTUAL CRITICISM 121

to one common ancestor. The resultant tree diagram represents an

approximation of the genealogical history of the text. The tree dia-

gram must be studied, optimized, and interpreted by textual scholars.

The final result is a reconstruction of the history of the text and a list

of the most likely readings of the autograph, together with the statis-

tical probability for each reading.

INITIAL RESULTS

To date, the program has been applied to three small books of

the NT,16 making use of the textual data available in the UBSGNT2.17

Figures 1, 2, and 3 are slightly simplified diagrams of the preliminary

reconstruction of the textual history of the books.18 The results have

been what would be expected, indicating the validity of the program's

logic.

*Simple Descent Confirmed*

Most manuscripts were found to exhibit simple descent from

only one parent exemplar. A few were found to descend from two

parents, a still smaller number from three or more; few if any were of

hopelessly mixed parentage. Table 1 summarizes the manuscript

parentage for the three books. Genealogical descent was found to

be consistent with historic chronology--late manuscripts exhibited

descent from earlier ones (occasionally a late manuscript exhibited

descent from a very early one);19 early manuscripts fit into the early

branches of the tree diagram, and late manuscripts fit into late

branches. Although the computer program makes use of the date of

the manuscripts, it has no logical mechanism that predetermines

chronological consistency in the genealogical tree diagram. This

chronological consistency would not be expected if the genealogical

groupings found by the computer had no correspondence with the

16 Philippians, I Timothy, and Jude.

17 The UBS text was selected because it lists more manuscripts in its apparatus than

others. This advantage was offset somewhat by the smaller number of variants. Better

results are expected from a more complete set of data.

18 A complete textual commentary on these books based on the computer analysis

of the data in the UBSGNT will be produced at a later date.

19 For example in Philippians, MSS 81 and 1241 appear to descend from an early

form of the Alexandrian text; group 330, 451,1962,2127, and 2492 appears to descend

from another early form of the Alexandrian text; group Dc, 326, and 1877 appears to

descend from an early form of the Antiochan text; and MS Y appears to descend from

an early form of the Western text. In 1 Timothy, group 81, 1739, and 1881 appears to

descend from an early form of the Alexandrian text; and group Y, 104,330,451, 1877,

and 2492 appears to descend from an early form of the Antiochan text. In Jude, group

A, 81, and 1739 appears to descend from a very early form of the Alexandrian text.

122 GRACE THEOLOGICAL JOURNAL



PRICE: A COMPUTER AID FOR TEXTUAL CRITICISM 123

124 GRACE THEOLOGICAL JOURNAL



PRICE: A COMPUTER AID FOR TEXTUAL CRITICISM 125

 TABLE 1

 Summary of Parentage\*

Book 1 Parent 2 Parents 3 or More Total

Philippians 51 MSS 12 MSS 7 MSS 70 MSS

I Timothy 61 MSS 4 MSS 1 MSS 66 MSS

Jude 34 MSS 15 MSS 0 MSS 49 MSS

Total 146 MSS 31 MSS 8 MSS 185 MSS

% of total 78.9% 16.7% 4.4% 100.0%

\*Data include only extant MSS, not created exemplars.

TABLE 2

Summary of Text Degradation\*Number of variants introduced by a MS

Book 0 1 2 3 More Total

Philippians 25 34 18 12 8 97

I Timothy 42 34 11 1 1 89

Jude 38 30 6 2 0 76

Total 105 98 35 15 9 262

% of total 40.1% 37.4% 13.3% 5.7% 3.5% 100.0%

\*Data include extant MSS and created exemplars.

history of the text. If the genealogical groupings were unrelated to

history, one would expect the distribution of the manuscripts in the

genealogical tree to be chronologically random rather than ordered.

Therefore, the existence of chronological consistency in the gene-

alogical tree diagrams produced by the computer suggests the validity

of the program's logic.

*Simple Degradation Confirmed*

Most variants were found to be introduced simply, that is, only

once, and only one or two at a time. When a variant appeared again

in another branch it was generally due to multiple parentage. When

several variants arose in the same manuscript, it was usually due to a

recension, an infrequent occurrence. Table 2 summarizes the text

degradation as indicated by the number of variants introduced by the

manuscripts. (A variant is understood here to mean a reading differ-

ing from that of the immediate parent exemplar.)

126 GRACE THEOLOGICAL JOURNAL

*Text-types Confirmed*

The reconstructed genealogical history confirmed four basic

ancient text-types more like one another than like their own remote

descendants: the Alexandrian,20 the Western,21 the Antiochan,22 and a

fourth that may correspond with the Caesarean.23 Nothing in the logic

of the program could have predetermined this reconstruction. Each

text-type exhibits an early form with several subsequent branches.24

The Antiochan text exhibits an early form that is related to the Syriac

(though not in Jude) with several subsequent branches. The Byzan-

tine text is located in one of the later branches. Nothing in the logic

of the program could have predetermined this late secondary descent

of the Byzantine text.

*Ancient Versions*

The ancient versions exhibit genealogical descent from Greek

texts usually current in the locality of the version. The Vulgate was

consistently from an early form of the Western text. There were

several independent Old Latin versions, usually made from early

forms of the Western text. A few Old Latin versions were non-

Western; itd was consistently Caesarean; itar was Caesarean in

1 Timothy; and itt was Alexandrian in Jude. The Armenian version

was consistently Caesarean. The Coptic and Ethiopic versions were

consistently Alexandrian, except that the Boharic Coptic version was

Western in Jude. On the other hand, the Syriac version appears to be

Caesarean in Philippians, Antiochan in 1 Timothy, and Alexandrian

in Jude. The Gothic version is Caesarean in 1 Timothy and Western

in Philippians.

*The Church Fathers*

Not many church fathers offered sufficient evidence to identify

their underlying Greek texts. Of those whose texts could be identified,

20 The Alexandrian text-type consistently included א\*, אc, A, B, (C\*), C2, 81,

Origen, Clement, Coptic (Sa), and Ethiopic. Ms אc was usually close to the earliest

form.

21 The Western text-type consistently included the Vg, itc, itdem, itdiv, itf, itg, itx, and

itz. A few Greek MSS were classified in Western branches, but not consistently. The Vg

was usually close to the earliest form.

22 The Antiochan text-type consistently included Dc, K, 181,629, 1877, 1984, 1985,

Byz, Lect, Theodoret, and John of Damascus. Dc and 181 were usually close to the

early form of the Byzantine branch, whereas witnesses to the earliest form varied from

book to book.

23 The Caesarean text-type consistently included the Armenian, itd, and ite; other

witnesses varied from book to book.

24 The Western text appears to have mixed parentage for I Timothy.

PRICE: A COMPUTER AID FOR TEXTUAL CRITICISM 127

TABLE 3

Number of Statistically Probable Readings

Philippians 1 Timothy Jude Total

No. of variants 16 11 6 33

Alexandrian 14 (87.5%) 10 (90.9%) 6 (100.0%) 30 (90.9%)

Western 12 (75.0%) 9 (81.8%) 5 (83.3%) 26 (78.8%)

Caesarean 12 (75.0%) 9 (81.8%) 5 (83.3%) 26 (78.8%)

Antiochan 13 (81.2%) 10 (90.9%) 4 (66.6%) 27 (81.8%)

several consistently agreed with a local text, and some differed from

book to book. Origen and Clement were consistently Alexandrian;

Theodoret and John of Damascus were consistently Antiochan.

Several had sufficient data to be used for only one of the three books

studied. But it appears that the church fathers usually made use of a

form of the text current in their locality.

*Evidence of Recensions*

If it is assumed that the earliest form of each ancient text-type

was the result of a local recension, then this study suggests that the

recensions were fairly successful in standardizing the text in each

area. For the books covered in this study, the Alexandrian text-type

is the most consistent, with statistically probable readings for 100% of

the variants in Jude, 90.9% in 1 Timothy, and 87.5% in Philippians

(for an overall average of 90.9%). The Antiochan text-type for the

three books yielded statistically probable readings for 81.8% of the

variants, whereas the percentage for the Western and Caesarean text-

types was 78.8% (see table 3).

In addition, the study suggests that a few subsequent recensions

were made, some of more consequence than others. One interesting

occurrence of recensions appears to be associated with the rise of the

versions. There seems to have been a recension made in preparation

for the translation of some of the versions. For example, in Philip-

pians and 1 Timothy, the Ethiopic and Coptic versions appear to

have been made from recent recensions.25 In Philippians, the Gothic

25 In 1 Timothy, the Coptic and Ethiopic were made from a mild recension of the

earliest form of the Alexandrian text of which אc was a direct descendant. In Philip-

pians, the Ethiopic and Boharic Coptic were made from texts close to the one used by

Eusebius, of which MS 33 is a late copy. In fact, MS B3 appears to be a major recension

of the same text, with six variants introduced by mixed parentage; B3 evidently was the

recension made for translating the Sahidic Coptic, with B\* as a copy of B3, differing in

only one reading. This does not seem to be the case in other of the Pauline epistles.

128 GRACE THEOLOGICAL JOURNAL

version appears to have been made from a recension known to

Chrysostom.26

In Philippians and 1 Timothy, the Old Latin version itg appears

to be translated from a recension; MS Gc is near the text of this

recension in Philippians27 and related to it in a more complex way in

1 Timothy. A similar recensional background must account for the

Old Latin itd and ite, its copy.28

In all three books, the Armenian version, although clearly a

descendant of the Caesarean text, exhibits evidence of being trans-

lated from a recension. Something similar must be true for the text

behind the Syriac versions. In Philippians, the text is derived from

the Caesarean; in 1 Timothy it is derived from the early Antiochan;

and in Jude it is derived from the Alexandrian.

*Recovering the Original Text*

If it can be assumed that the earliest form of each ancient text-

type was an independent witness to the original text, then their

mutual agreement would provide convincing identification of original

readings.29 For each of the three books studied, the procedure recon-

structed four ancient text-types more like one another than like their

own remote descendants. For the thirty-three readings identified by

the program to be most probably original in the three books studied,

sixteen readings (48.5%) had the full support of all four ancient text-

types; seven readings (21.2%) had the support of three against one;

six readings (18.2%) had the support of two ancient text-types against

one each supporting different readings; only four (12.1%) had the

support of two ancient text-types against two supporting another.

That is, 87.9% of the readings had good statistical support; only

12.1 % had uncertainties that statistical analysis could not resolve.

The readings of the reconstructed original text frequently were

those selected by the editors of UBSGNT2; but a number of them

26 The exemplar for the Gothic version was a descendant of an early form of the

Western text, but it was of mixed parentage and introduced five variants. The text of

Chrysostom differed from this recension in only two readings.

27 Ms Gc is a descendant of an early form of the Western text; but it was of mixed

parentage and introduced seven variants; the text of its differs from Gc in only three

readings. MS G\* is a copy of Gc.

28 In I Timothy MS D appears to be a recension bringing together two early forms

of the Caesarean text; D seems to be the Greek text from which itd was translated.

However, D does not appear to be the text of itd in Philippians, but rather the early

form of the Caesarean text itself was the text of itd.

29 This conclusion is limited by the uncertainties associated with reconstructing the

text-types. Although the logic of the program employs primary witnesses and chooses

readings with the greatest statistical probability, some degree of uncertainty accumu-

lates in the reconstruction process. More needs to be known about how uncertainties

accumulate.

PRICE: A COMPUTER AID FOR TEXTUAL CRITICISM 129

were different.30 More study and experience with the program are

needed before its use may produce decisions more reliable than

theirs.31

CONCLUSIONS

This computer program has provided some thought-provoking

observations. Contrary to current opinion, it appears that the manu-

scripts of the Greek NT may really have simple genealogical relation-

ships, and that the text may have experienced simple degradation. It

appears that some reconstruction may be made of an approximate

transmissional history of the text, using the computer program as a

research tool in the hands of a textual scholar.

The present study was made using a limited number of manu-

scripts32 and a limited number of variants.33 However, the manuscripts

generally are regarded as the best representatives of the larger corpus.34

With such a good representative sample to work with, it is reasonable

to expect that the larger corpus of data will exhibit similar character-

istics without much greater complexity. A recent computer study of

the text of Romans with Richard Young has been completed. The

data consists of 64 manuscripts and 91 variants. The larger number of

variants made the solution a little more complex, but the results and

conclusions were essentially the same.35 This provides confidence that

the results are not accounted for merely on the basis of overly simple

problems. The computer is capable of handling much larger problems.

It is expected that further study and research with the computer

program will provide valuable insight into the history and text of the

Greek NT.

30 For Jude, five out of six readings were in agreement with the critical editors; for

Philippians it was eight out of sixteen; and for 1 Timothy, six out of eleven.

31 See my forthcoming article, "A Textual Commentary on the Book of Philippians,"

32 Philippians, seventy MSS; 1 Timothy, sixty-six MSS; Jude, forty-nine MSS.

33 Philippians, sixteen variants; 1 Timothy, eleven variants; Jude, six variants.

34 Some scholars doubt that the manuscripts in the UBSGNT2 represent a good

sample of the textual history. Our own study supports that conclusion for the book of

Revelation.

35 A textual commentary on Romans based on this study will be produced at a

later date.

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