ELISION AS AN INDICATOR OF AUTHORSHIP IN GREEK WRITERS

Introduction

In Greek composition when a word which would normally end with a vowel is immediately followed by another which starts with a vowel, a change is often made in the ending of the word. One frequent change is to elide a short vowel and, for example, write δ'ἄν for δὲ ἄν. Elision does not always take place where it could be expected to occur and can often be avoided by a change in word order. It is therefore, to some degree, a personal choice of the writer, a fact that suggested to the authors that it might be the basis of a test of authorship.

Many of the words which show elision do not occur often enough to contribute anything to the examination of samples of even fifty or one hundred thousand words and so are not of interest when a test applicable to samples of a few thousand words is being developed. Some other words, διά for example, though they do occur often enough in samples of a few thousand words, vary so little from one author to another that a test based upon them would be unlikely to distinguish any writer from any other.

The words most likely to be useful in a test of authorship based upon elision are the particle δέ and the conjunction ἀλλά. In a minority of cases κατά or ἐπί may be useful.

A comparable change in word ending is also to be seen in the negative

particle οὐ which before a vowel with smooth breathing becomes οὐκ, before a rough breathing οὐχ. This word-form occurs often enough in writers and varies enough from one to another to make a useful discriminator between them.

The Pattern of Argument

In this context a test of authorship is a habit which is consistent within the works of any writer but varies from writer to writer sufficiently to enable their habits to be distinguished. More precisely, a test of authorship is a habit based upon some occurrence, in this instance elision, for which the variations in the occurrence between parts of the same work and of different works by the same writer are only such that chance is a reasonable explanation of the variations, while the variations in the occurrence between works by different writers will frequently be greater than chance will normally explain. It is in making the distinction between variations explicable by chance, known as *random sampling differences,* and those too large or too prolonged to be due to chance, know as *statistically significant differences,* that statistical mathematics are used.

This pattern of argument can be illustrated from Table 1A which shows the results of counting the elided forms of the particle δέ in the first one hundred occurrences of the particle in each book of the History of Thucydides. In all 800 occurrences of the particle, 129 cases of elision were found, an average rate of occurrence of 16.125 %. The actual counts ranged from 11 in book 4 to 24 in book 6, a range large enough to suggest that perhaps Thucydides' habit in the occurrence of elision varied from one book to another.

TABLE 1

The occurrence of elision of the particle δέ in the History of Thucydides.

N° of occurrences	Book	1	2	3	4	5	6	7	8	Total
elided		18	13	13	11	12	23	24	15	129
non-elided		82	87	87	89	88	77	76	85	671

The count is of the first one hundred occurrences of the particle in each book of the Oxford Classical Text.

The statistical method of dealing with this problem is to frame a hypothesis and to test it for validity. It is assumed that Thucydides had a consistent habit in the whole of his work. The first step in testing this hypothesis is to pool all the samples to give an average rate of occurrence of elision of 16.125 instances per book. The next step is to calculate how chance will operate in a similar situation. If samples of 100 cards were drawn from a large group of cards which had 'elided-form' written on 16.125 % of the cards, this is a situation equivalent to elision in Thucydides as far as the operation of chance is concerned. In such a random experiment numbers of 'elided-form' cards near to 16 would frequently appear and numbers remote from 16 would rarely appear. Every difference that did appear between the expected figure of 16.125 and an observed figure could be tabulated and then all the differences could be measured by citing how often they would appear by the operation by chance alone. Small differences, represented by observations near to 16, would appear often, large differences, represented by observed numbers much larger or much smaller than 16, might appear in only one out of every thousand trials of the

random experiment.

The next step is to decide regarding any difference, or set of differences, whether chance would create them so often that no other explanation of their appearance is needed, or whether chance would so rarely account for them that some other explanation is required. Such an explanation might involve the abandonment of the hypothesis. The practical difficulty lies in deciding at what point chance is to be excluded as an acceptable explanation of differences between expected numbers and observed numbers. Two such points of decision, "levels of significance" they are called, are in general scientific use. One is the *5 % level of significance,* the point where the differences would be due to chance variation in only 5 % of the trials of the random experiment. The second is the *1 % level of significance.* At this level chance would account for the differences in only one trial out of one hundred of the random experiment. Differences which are so large that chance alone will explain them in less than 5 % of the trials, or less than 1 % of the trials of the random experiment, are called *statistically significant differences* and for these some explanation must be given. Differences which chance would often create, more often that 5 % or 1 % of the trials of the equivalent random experiment, are called *random* sampling differences. For these no other explanation need be given.

It is true that this method must lead to errors; in 5 % or in 1 %, of the cases a difference due to chance will be classed as inexplicable by chance. This disability is not as serious as it seems to be, for its existence is known and can be allowed for. As soon as a number of independent tests are employed, this chance effect lessens in importance. Only once in twenty times twenty trials will two independent tests combine to mislead at the 5 % level. Only once in 160,000 trials will four independent tests combine to mislead at the

5 % level.

It is quite easy to calculate how often chance would account for the set of differences which appear when the observations of Table 1 are compared with the expected number of 16.125 per book, the average for all eight books. One way of doing it is to use the χ squared test which is fully described in all text books of statistics. To calculate χ squared for Table 1, the differences between the expected number of 16.125 and each observed value are squared and then divided by the expectation (16.125) to give an element of χ squared for each sample. When this calculation has been completed the sum of the eight elements is 13.11 which is χ squared for the table.

To find how often chance would account for this set of differences we need to know one other piece of information, the number of degrees of freedom in the table. In the simplest terms the number of degrees of freedom is the number of free choices which can be made in assembling the table. As there is a fixed total and this is divided into eight parts, seven of the parts can be chosen freely but the number of the last part must always be the total less the sum of the first seven parts. For Table 1 there are seven degrees of freedom and for tables of this pattern, i.e. with two elements, the occurrence and the non-occurrence of some event, the number of degrees of freedom is one less than the number of samples.

Tables of χ squared are to be found in all sets of statistical tables and in most statistical textbooks. Entering such a table at 7 degrees of freedom we read that for the 5 % level of significance χ squared is 14.07. In the case before us, χ squared is less than this. The differences in Table 1 therefore are not statistically significant and chance variation between books

will account for the observations. The hypothesis that Thucydides' habit was consistent throughout his history can be upheld on the ground that chance variation will explain the differences found between one book and another.

To make this illustration into a test of authorship it has to be shown that what is true in this instance is generally true of writers of Greek, that the differences in elision within works and between works of the same writer are only random sampling differences but differences between writers are often statistically significant. If this can be done, then elision can be made a test of authorship but only in an exclusive sense. It can be shown that two works are not by the same author, because of the differences which appear when comparison is made, but it must not be assumed that two works which show no differences are by the same author any more than it can be assumed that all men who are six feet tall are the same man.

A GENERAL SURVEY

It is hardly practicable to show that all writers of Greek have consistent habits in the elision of words. It is practicable to examine the habit of elision in a selection of writers chosen to test the hypothesis that any consistency found in them is likely to be general. Included in the selection of works and writers must be those which cover the extreme range of the major influences which might be supposed to affect a habit. It will have to be shown that the habit of elision is consistent in both simple writers and complex stylists; that it remains consistent over long periods of time and wide ranges of subject matter, that it continues to be consistent for different literary forms. The comparison of samples in

sets, for example, of works written about the same time on different subjects or of works written on the same subject but many years apart, will show which of these influences affect the habit. Of course only changes greater than any to be explained as chance variation will be of interest.

Previous experience of tests of authorship has shown that the one factor to outweigh all others in altering habits is a change of literary form. Comparison of works in the same form are simple but extreme comparisons, between dialogues and continuous prose, can be difficult to make. Experience has also shown that the three orators, Isocrates, Lysias and Demosthenes, are in themselves a searching test for any hypothesis supposed to apply to writers of Greek. No doubt the reason why this should be so is that these men wrote speeches for others to deliver and did their best to suit the speech to the user and his circumstances. It has been found that any hypothesis valid for the orators has been generally applicable. Included in this survey are works of Thucydides, Herodotos, Isocrates, Lysias, Demosthenes, Xenophon, Diodorus Siculus, Josephus, Plutarch, Aristotle, Plato and Homer.

Tables two to thirteen contain the results of the general survey. The majority of the tables show no statistically significant difference between samples or groups of samples and so comment is restricted to those instances where there is some point of special interest.

Table four shows the occurrence of the particle δέ and the conjunction ἀλλά in all twenty one orations of Isocrates including the spurious first oration. For the elision of the particle δέ the habit can be treated as consistent; χ squared is 27.56 for 19 degrees of freedom when the 5 % level is 30.14. When the spurious work one is added to the others, χ squared

then exceeds the 5 % level of significance. If the orations are grouped then a significant difference appears between the epideictic works, 9, 10, 11 and 12 and the forensic orations numbers 16-21. For the comparison of the two groups χ squared is over 9 for one degree of freedom. This difference is in line with previous results, for example, in the occurrence of *καί* in sentences, but how much of the difference is due to the long period of time which separates the compositions and how much is due to the contrast in literary form there is not enough material to decide.

In the elision of *ἀλλά* there is no statistically significant difference within the set of twenty orations, nor in the comparison of this group with work one, nor in any grouping of orations.

Table 5 shows the occurrence of elision in the orations of Lysias. Included in the table are all the orations which have more than 50 occurrences of the particle *δέ*. There is no significant difference between any of the orations in the elision of *δέ*. The occurrences of *ἀλλὰ* and of *οὐ* are so much rarer than occurrences of *δέ* that no significant differences are to be expected and none appear. However oration 13, said to be spurious, see K.J. DOVER, *Lysias and the Corpus Lysiacum,* Berkley 1968, is the only one which has more elided occurrences of *ἀλλά* than unelided occurrences.

Table 6 shows the result of a count of the elision of *δέ* and *ἀλλά* in the first ten orations of Demosthenes. Included in the group are two, orations seven and ten, which are held to be spurious, see H.J. ROSE, *A Handbook of Greek Literature,* London 1964, p. 289 f. For the elision of *δέ*, a comparison of the eight genuine works has χ squared 2.39 for 7 degrees of freedom, p is over .90. When work 7 is compared with the sum of the eight genuine works, χ squared is 7.99 for one degree of freedom, with Yate's

correction, and p is less than .01. In a similar comparison work 10 is not distinguishable from the others, the expected number of occurrences of elision is 54.3 and the recorded number is 54.

In the writings of Demosthenes occurrences of ἀλλά are only one quarter as frequent as occurrences of δέ and, not surprisingly, no significant difference appears in any comparison.

Table 8 shows the results of a count of the elision of the particle δέ in some samples from the History of Diodorus Siculus. The very large difference between the original books and the Constantine compilation needs no calculation to confirm its significance.

Table 9 sets out the results of a count of elision in some works of Josephus. In this corpus there are two complications. After a draft of the Jewish War had been written, possibly in Aramaic, Josephus employed assistants who helped to prepare the present text in better Greek than he could command. The later work, the Antiquities, is his own composition. The second complication is that both minor works are composite, they include quotations and excerpts from other sources.

In the Antiquities no statistically significant difference appears in the comparison of samples : in the Jewish War the last sample differs from the other three; for the elision of the particle δέ, χ squared is 10.61 for three degrees of freedom. The Jewish War as a whole is significantly different from the Antiquities. *Contra Apionem* is also composite. For the elision of δέ, χ squared is 12.1 for two degrees of freedom. *Vita* is not significantly different from the Jewish War but is significantly different from the other works.

The data confirms that there is a difference between the Antiquities and the Jewish War and that the minor works are composite.

Table 11 shows the results of a count of elision in some works of Aristotle. This corpus poses an interesting and important question in the study of elision for almost all the manuscripts were hidden (Strabo 13.54) until they were edited by Andronicus of Rhodes at the end of the 1st century A.D. Recent texts, Minio-Paluello 1949, are not based on those of Andronicus. The question which arises is how far the elision of the texts represents the elision of Aristotle and how far it reflects the conventions of Andronicus and the 1st century A.D.

The elision of the conjunction ἀλλά shows no statistically significant difference between any of the samples indicating little difference between the conventions which have produced the texts. The elision of the particle δέ in *De Anima* shows no difference within the work, χ squared is 2.36 for four degrees of freedom and the proportion of elided occurrences is 35.3 %. For the *De Caelo* samples the proportion of elided occurrences is 35.2 %. The Minio-Paluello texts are of a genuine work, *De Interpretatione,* and a work which has at least been revised by another hand and may well be spurious, namely, *Categories*. The proportion of elided occurrences in the genuine work is 15.3 %, less than half the rate in the previous samples; in the *Categories* it is 3.5 %. This illustrates that editorial conventions do quite dramatically affect the incidence of elision but differences between authors can still be detected. This point is further illustrated by the data for the Minora, the first three of which are inseparable but the others are readily isolated.

The same pattern is repeated in the occurrence of the negative particle.

De Anima and *De Caelo* are indistinguishable, *De Interpretatione* dramatically different. If the expected values for occurrences of οὐ, οὐκ and οὐχ are calculated from the first two works, the predicted figures for *De Interpretatione* are 95, 63 and 30; the observed figures are 66, 98 and 30. *De Interpretatione* differs from *Categories* in the occurrence of οὐχ.

In the Minora the occurrence of the negative particle is such that the first three works are not separable. Colours does not have enough occurrences to allow a three-fold classification of the occurrences. Both Things Heard and Marvellous Things Heard are significantly different from each other and from all the other samples.

When comparing texts in different editorial traditions caution must be used in the interpretation of statistically significant differences to ensure that a difference due to editorial practise is not mistaken for a difference between authors. Where it has been argued that an editor is responsible for elision, a demonstration that this has been the case is now possible.

Table 12 shows the figures for elision in the Iliad and Odyssey. In ἀλλά and in οὐ there is no significant difference between the poems but there is a highly significant difference in the elision of δέ. A permissible explanation of this difference is the presence of anomalies in books 9 and 11 of the Iliad, see MICHAELSON, MORTON and WAKE, *A Homer Experiment,* in *Computer Calepraxis,* n° 2, August 1973, University of Edinburgh.

The results of the general survey are simply summarised. The habit of elision and of modifying the negative particle οὐ seem to be consistent habits in Greek writers. The one real exception encountered is in the

Aristotelian Corpus which has a unique complication in the manuscript history. Apart from that the only instance of a statistically significant difference within the corpus of a writer's works appeared when several orations of Isocrates were lumped together to make large samples of works written in a contrasting literary form and over a long period of time. It would appear that as the basis for a test of authorship elision is likely to prove reliable but possibly rather insensitive.

A Case of Disputed Authorship

The epistles of the Pauline Corpus in the New Testament are an instance of disputed authorship too well known to need any introduction. Table 4 sets out the data for the occurrence of elision in the epistles.

At first sight this apparently insensitive test could hardly be applied to more unpromising samples. There is a solitary occurrence of the elision of the particle δέ, in 2nd Corinthians 11.21, and this instance is an exact parallel to the two occurrences in the Gospel of Mark, also in the phrase ὃς δ'ἄν.

The conjunction ἀλλά does not occur frequently in the epistles and 39 % of the occurrences in 1st Corinthians and Galatians are of the elided form. To detect a significant difference at least 17 occurrences of ἀλλά are required and only Romans and 2nd Corinthians have as many.

In the occurrence of the negative particle when 1st Corinthians and Galatians have been tested for homogeneity, they can be added to make a single sample which has 39.1 % of occurrences of οὐ, 57.3 % of occurrences of οὐκ and 3.6 % of occurrences of οὐχ. The occurrences of οὐχ are so few that

they can be taken with occurrences of οὐ, or of οὐκ, or omitted from the count without altering any conclusion. Comparisons with the combined 1st Corinthians-Galatians sample reveal statistically significant differences for Romans, Chapters 2-7, χ squared 4.21 for one degree of freedom, and with 2nd Corinthians, Chapters 2-9, χ squared 12.0 for one degree of freedom, and also for 2nd Corinthians Chapters 10-13 for which χ squared is 3.7 for one degree of freedom. The quotations from the LXX which occur frequently in Romans, Chapters 2-7 have a higher proportion of occurrences of οὐκ than of οὐ and so would reduce the anomalous nature of these chapters rather than explain it.

The conclusion is that neither Romans nor 2nd Corinthians is homogeneous, a result entirely consistent with the earlier examinations of these epistles. MICHAELSON and MORTON, *Last Words, New Testament Studies,* 18, 1972. It also appears that the differences exhibited between the different components of the Pauline Corpus are, in comparison with other Greek texts, very large indeed.

TABLE 2

Elision in the History of Thucydides, Oxford Classical Text.

Book	ἀλλά		Number of occurrences of οὐ	οὐκ	οὐχ	total
	elided form	total				
1	5	13	20	22	9	51
2	9	14	21	19	4	44
3	7	12	20	21	3	44
4	8	12	10	24	2	36
5	5	9	26	27	4	57
6	12	22	21	18	4	43
7	9	12	16	14	9	39
8	3	15	23	19	3	45
Totals	62	109	157	164	38	359

The samples are the first 200 sentences of each book.

For the occurrence of ἀλλά χ squared is 5.96 for 7 degrees of freedom. For the negative particle there are not enough occurrences of οὐχ to allow their separate treatment in single samples.

If occurrences of οὐκ and οὐχ are added in each sample, then for the eight samples and seven degrees of freedom, χ squared is 4.55. If the samples are added in pairs and the occurrences of οὐχ kept separate, χ squared is 8.56 for 6 degrees of freedom. In no case is the difference statistically significant.

TABLE 3

Elision in the History of Herodotus, Oxford Classical Text.

Book	Number of occurrences of							
	ἀλλά		δέ		οὐ	οὐκ	οὐχ	total
	elided	total	elided	total				
1	7	10	3	100	10	14	-	24
2	7	10	4	100	11	20	-	31
3	3	9	4	100	14	16	-	30
4	2	5	8	100	14	17	-	31
5	1	7	8	100	10	5	-	15
6	2	4	2	100	12	13	-	25
7	10	18	3	100	18	23	-	41
8	4	9	7	100	10	16	-	26
9	9	11	2	100	20	11	-	31
Totals	45	83	41	900	119	135	-	254

For the occurrences of δέ the samples are the first 100 occurrences in each book. For the occurrence of ἀλλά and οὐ the samples are the first two

hundred sentences of each book.

For the occurrences of ἀλλά χ squared is 7.0; for δέ less than 9; for οὐ it is 8.0 all for eight degrees of freedom. In no case is the a statistically significant difference between samples.

TABLE 4

Elision in the orations of Isocrates, Loeb text.

Oration number	Number of occurrences of							
	ἀλλά		δέ		οὐ	οὐκ	οὐχ	total
	elided form	total	elided form	total				
1	7	27	10	100	10	1	3	14
2	15	41	24	81	8	4	2	14
3	21	54	29	92	21	13	5	39
4	8	22	45	100	42	26	15	83
5	13	24	39	100	32	26	3	61
6	8	24	32	100	21	28	10	59
7	13	28	35	100	29	18	4	41
8	13	25	34	100	34	24	9	77
9	10	19	46	136	27	18	6	51
10	6	19	42	128	19	15	5	39
11	13	28	32	82	16	14	5	35
12	13	23	31	100	36	38	16	90
13	6	15	12	39	8	12	4	24
14	11	34	34	87	20	15	9	44
15	13	22	31	100	22	20	10	52
16	7	14	49	114	14	17	3	34
17	4	12	43	99	9	18	4	31
18	18	30	52	100	22	25	7	54
19	10	20	36	93	14	14	2	30
20	7	13	12	26	3	3	4	10
21	4	9	17	43	6	12	1	19
Totals	220	503	685	1920	413	361	127	901

TABLE 5

The occurrence of elision in the orations of Lysias, Oxford Classical Text.

Oration Number	Occurrences of the particle δέ	
	Elided	Total
1	16	69
2	56	182
3	19	76
6	11	72
7	18	57
12	50	167
13	29	126
19	18	91
20	22	58
25	13	64
30	10	60
32	10	56
	270	1029

The elision of the conjunction ἀλλά. Total number of occurrences in all 35 orations - 452, elided occurrences - 209.

Oration 12 has 21 elided occurrences out of 47
Oration 13 has 11 elided occurrences out of 17.

The occurrence of crasis in the orations of Lysias.

In all 35 orations there are 345 occurrences of οὐ, 356 of οὐκ and 97 of οὐχ.

There is no significant differences between any of the orations.

TABLE 6

Elision in the first ten orations of Demosthenes, Oxford Classical Text.

Oration	ἀλλά		δέ		οὐ	οὐκ	οὐχ	Total
	elided	total	elided	total				
1	5	11	21	35	8	8	1	17
2	7	11	30	58	11	9	-	20
3	11	21	34	59	11	9	10	30
4	9	14	41	69	16	12	4	32
5	-	-	16	30	5	7	2	14
6	11	21	23	37	10	8	6	24
7	13	29	19	54	18	19	9	46
8	14	20	47	91	25	18	9	52
9	9	13	34	56	33	17	11	61
10	16	23	52	96	36	21	11	68
Totals	66	111	246	435	119	88	43	250

In the elision of ἀλλά there is no statistically significant difference between the seven genuine orations which have expected numbers of five occurrences or more. Neither orations 7 nor 10 show any statistically significant difference in comparison with the seven others.

In the occurrences of οὐ, οὐκ and οὐχ, there is no statistically significant difference in the table.

In the elision of δέ the eight genuine orations have χ squared 2.39 for

seven degrees of freedom. When oration 7 is compared with the expectation based on the eight genuine orations, χ squared is 7.99 for one degree of freedom with Yates correction applied. A similar comparison for oration 10 shows no significant difference.

TABLE 7

Elision in some works of Xenophon, Loeb Text.

Work	Number of occurrences in work of							
	δέ		ἀλλά		οὐ	οὐκ	οὐχ	Total
	elided form	total	elided form	total				
Hiero	23	100	33	53	12	8	3	23
Agesilaus	17	100	7	13	11	13	1	25
Const. Lac.	23	100	8	14	9	7	2	18
Ways and Means	14	100	9	16	12	3	1	16
Cav. Comm.	19	100	2	6	5	7	1	13
Horsemanship	16	100	6	9	16	6	1	23
Totals	112	600	65	111	65	44	9	118
Cynegeticus	9	100	4	9	11	9	3	23

For the occurrence of the particle δέ in the six genuine works χ squared is 4.74 for 5 degrees of freedom. The differences are not statistically significant. The occurrences of ἀλλά and of οὐ, οὐκ and οὐχ are too rate to support any conclusion. The samples for the occurrence of δέ are from the beginning of the text to the hundreth occurrence. For the other words the count is in all the text.

Comparison of the spurious Cynegeticus with the genuine works show no statistically significant difference.

TABLE 8

Elision of the particle δέ in the History of Diodorus Siculus.

Samples	Elided Occurrences	Total Occurrences
1.1-1.10.2	23	100
1.42.1-1.51.2	26	100
2.1.1-2.8.1	25	100
21.1.4a-21.15	4	93
22.1-22.13.3	3	100

The first three samples are from the work of Diodorus Siculus, the last two are from the fragments of the text compiled in the tenth century for Constantine 7th. There are too few occurrences of ἀλλά to support any conclusions and the number of occurrences of οὐ, οὐκ and οὐχ, are 27,24 and 3, showing no statistically significant difference between any grouping of the samples.

TABLE 9

The occurrences of crasis and elision in some works of Josephus, Loeb Text.

	No. of occurrences of							
	ἀλλά		δέ		οὐ	οὐκ	οὐχ	Total
	Elided	Total	Elided	Total				
Vita 1-82	2	10	41	100	9	7	2	18
C. Apion								
1.1-96	12	19	12	100	13	10	2	25
2.1-51	2	11	9	49	9	6	-	15
2.151-254	21	42	30	100	19	16	6	41
Jewish War								
1.1-87	-	4	54	100	5	4	2	11
5.1-103	4	7	40	100	4	7	-	11
6.1-102	6	12	46	100	7	14	-	21
7.1-122	7	14	32	100	9	8	3	20
Antiquities								
1.1-65	8	10	25	100	3	9	-	12
2.1-95	12	18	27	100	8	12	3	23
3.1-88	10	20	29	100	14	12	3	29
4.1-84	10	23	28	100	16	10	5	31

The samples are the text which includes the first one hundred occurrences of the particle δέ except for Contra Apion where the sample ends at the start of the Latin passage.

TABLE 10

The occurrence of crasis and elision in some works of Plutarch, Loeb Text.

Work	No. of occurrences of ἀλλά		δέ		οὐ	οὐκ	οὐχ	Total
	Elided	Total	Elided	Total				
Isis and Osiris 351.d-356.f	7	16	27	100	14	6	1	21
E at Delphi 384.d-390.d	8	19	35	100	10	9	3	22
Oracles at Delphi 394.e-401.e	12	36	35	100	22	15	6	43
Old Men 783.b-794.h	19	52	31	100	37	30	4	71
Totals	46	123	128	-	83	60	14	157

TABLE 11

The occurrence of crasis and elision in some works of Aristotle, Oxford Classical Text.

Work	No. of occurrences of ἀλλά		δέ		οὐ	οὐκ	οὐχ	Total
	Elided	Total	Elided	Total				
De Anima								
S1	14	23	64	198	16	8	6	30
S2	13	26	72	190	32	13	6	51
S3	15	32	64	167	30	12	6	48
S4	33	69	65	187	36	26	17	79
S5	22	48	30	93	35	20	12	67
S6	18	22	-	-	21	11	7	39
	115	220	295	835	170	90	54	314
De Caelo	18	40	152	432	8	27	2	37
De Inter.	38	66	33	215	66	98	24	188
Categ.	14	32	7	200	41	50	2	93
Melissus	5	18	11	45	7	13	3	23
Xenoph.	8	13	14	38	10	17	5	32
Gorgias	10	14	11	39	7	24	2	33
Colours	3	11	20	161	10	4	5	19
Th. Heard	5	17	20	95	16	1	4	21
Marv. Th. Heard	18	44	58	378	28	20	11	59

The samples are all of *De Anima*, which was divided into samples at points convenient for computer files, all of Books 1 and 2 *De Caelo*, all of *De Interpretatione* and all of the text of each of the Minors.

TABLE 12

The elision of the particle δέ in some works of Plato, Oxford Classical Text.

Work	Elided	Total	Sample
Apology	34	175	Whole work
Phaedo	10	50	First 200 sentences of work
Philebus	124	375	Whole work
Epinomis	53	208	Whole work
Epistle 7	63	277	Whole work

Table eleven shows the results of a count of the elision of the particle δέ in some works of Plato. In the first three samples, which have 600 occurrences of the particle, 28 % of the occurrences are elided. There is no statistically significant difference between these samples and those taken from the Epinomis and the Seventh Epistle.

TABLE 13

The occurrence of crasis and elision in Homer, Oxford Classical Text.

Form	Occurrences in the Iliad	Odyssey
δ'	3657	2784
δέ	2630	1705
ἀλλ'	225	177
ἀλλά	515	405
οὐ	566	498
οὐκ	195	172
οὐχ	32	21

TABLE 14

The occurrence of crasis and elision in the Epistles of the Pauline Corpus.

Sample	No. of occurrences of ἀλλά		δέ		οὐ	οὐκ	οὐχ	Total
	Elided	Total	Elided	Total				
Romans								
Ch. 1	1	2	-	3	3	1	1	5
Ch. 2-7	8	27	-	56	27	19	2	48
Ch. 8-14	6	36	-	68	28	28	4	60
Ch. 15	-	2	-	13	2	2	2	6
Ch. 16	-	2	-	7	1	1	-	2
All	15	69	-	147	61	51	9	121
1st Cor.								
Ch. 1-8	17	36	-	86	25	31	6	62
Ch. 9-16	8	36	-	123	38	54	1	93
All	25	72	-	209	63	85	7	155
2nd. Cor.								
Ch. 1	3	6	-	6	6	3	1	10
Ch. 2-9	21	46	-	45	25	11	4	40
Ch. 10-13	3	16	1	21	25	18	2	45
All	27	68	1	72	56	32	7	95
Gal.	6	23	-	59	12	25	-	37
Eph.	3	13	-	19	2	8	1	11
Phil.	2	15	-	27	4	4	5	13
Col.	1	3	-	5	3	4	1	8
1st Thess.	2	13	-	15	11	6	1	18
2nd. Thess.	2	5	-	11	3	3	2	8
1st Tim.	3	12	-	30	6	3	-	9
2nd Tim.	2	12	-	24	8	4	-	12
Titus	-	4	-	8	-	1	-	1
Ph.	-	2	-	6	-	-	-	-
Hebrews								
Ch. 1-12	5	15	-	67	28	26	5	59
Ch. 13	-	1	-	4	5	2	-	7

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