Dionysius, following his teacher Origen (185-253), denied the common authorship of Revelation and the Gospel of John, on the basis of the distinctive style of Revelation. More recently, statistics has been employed in the study of style by Mendenhall and others, leading to the conclusion that Marlowe wrote Shakespeare’s plays, and that of the seven Epistles which critical scholarship credits to Paul, only three or four are really his. The study of style has thus been with us for a long time, though not all findings have been persuasive. I here introduce a quantitative measure, BIRD or Brooks Index of Rhetorical Difference, which seems to give appropriate results when the situation is plausibly known, and may thus be of interest when applied, as a discovery procedure, to less certain questions.

I note as a caution that the use of style to determine authorship is intrinsically perilous. Individual style varies, and one author’s stylistic range may overlap that of another author. And much depends on what an author has in mind. One of Madison’s Federalist papers differs from the rest, not because he did not write it, but because Madison had in mind several earlier essays on statecraft, and had unconsciously absorbed their style. This phenomenon turns out to be more common than one might have expected.

Style has many aspects, but there is wide agreement on the contrast between content, which is carried by substantive words, and style, which is carried by function words: words which do not carry message, but articulate message. Function words are thus a promising index of style. Among function words, we should prefer the most common, since the less common are more likely to be involved with special idioms. We do not want too many test words, since that will take us into regions of less frequency, nor too few, since they would be liable to random static. It’s been found in practice that 14 words are a good compromise between these dangers. Using these words as indicators, we can frame a measure of the degree to which two texts agree with each other stylistically. We call it the Difference test, or D for short.

What exactly does it measure? Its test words are connectives, and we may call the aspect of style which it measures connectivity. It’s been found that D values of 0·5 or less are significantly close, implying an author writing consecutively or one author aware of the work of another. D values of 1·0 or more are significantly different; they imply a different author or the same author writing under atypical conditions. In between is the gray area, compatible with both hypotheses, but not strong enough to confirm either.

As with any lab result, interpretation rests with the human investigator. The advantage of something like the D test is that it gives the human investigator something objective to think about. Anyone who does the counts and the calculations will get the same D value. That is to say, the test itself is replicable. Discussion begins when we ask, not what the D value is, but what it means.
MENCIUS

MC 1A7, whether genuine or spurious, is certainly by a single author. To study its structure and progress, we may divide it into sections, and the D values for any two sections should be compatible with single authorship. And they are (Handout 1); no two sections have a D number above 1.0. The test thus agrees with our assumption. But it gives us something else: from 1A7d onward, consecutive sections are highly self-similar. Reading now for content, we note that the argument establishes, in several stages, the key point that what the King wants is to conquer the world. That position once gained, “Mencius” then proceeds to show how wrong the King’s policies are. That is, there is a point in this argument after which the argument becomes easy. The writer from that point on, so to speak, has himself in mind, rather than the preliminary points which he had to establish, and the denials which he had to get out of the way.

MWODZ

Of the many Mician ethical tracts, only one, MZ 17, can plausibly be attributed to the school founder, Mwò Dí. It argues (a) that morality condemns murder, (b) that the state fosters the form of mass murder called war, and thus (c) that those leading the state are confused about ethics. Once the first two points are gained, the third follows easily, and we see (Handout 2) that the last two segments strongly resemble each other. Again the Mencian pattern: close similarity toward the end. I suggest that what we have here is a recurring pattern in the argument genre. The point in an argument at which strong self-similarity begins I will call the forensic crux. Law students learn how to present a case: first the evidence and the precedents, and then the argument proper. The forensic crux marks the start of that second phase.

Not all argument, not even Mician argument against war, has that form. In MZ 18, a later revision of MZ 17 (Handout 3), we find that all the sections are stylistically on the same plane. MZ 18 is a series of parallel arguments from history; there is no developing persuasion. This difference of procedure suggests that MZ 18 comes from a later generation than the shorter, but legally more sophisticated, MZ 17.

GUNGSUN LUNGDZ

Graham in 1955 proposed that of the six chapters of the preserved work of the sophist Gungsün Lúngdž, only the second and third had a claim to be genuine; the rest were in various ways inept and derivative. In Handout 4, the crosstable for the six, we see what he means: those two treatises are very similar in style. And we also see something to which Graham did not point: of the three spurious tracts, two strongly resemble each other. The indicated possibility, subject to further examination, is that we have only two, not three, authors of the spurious material. Who they are we do not know, but this additional information may at least help in searching for the milieu from which these other tracts came.
SHR JI

The Shř Ji was conceived and partly written by the Hàn court librarian Sžmă Tán, and later completed by his son Sžmă Chye and others. Since there is no sign of interpolation, SJ 127 is certainly by one author, though we don’t know which author. It consists of a narrative introduction, a long conversation between two officials and a diviner, and a narrative conclusion. Handout 5 shows that the two last sections, the end of the conversation and the narrative close, are strongly similar. This does not imply a forensic crux. Instead, the conversation ends by stating the principle of relinquishing office, to avoid its danger. The final narrative tells how the officials ignored this advice, and died in office. SJ 127 is not an argument, since it does not progress in that way to its conclusion; it’s a platform for the delivery of its final sermon. And knowing that it is a sermon, we can now identify the author. It was Sžmă Tán, a deep student of Dâuism, whose own philosophy of life this was (it’s extensively exemplified in other Shř Ji biographies). It was not his Confucian-trained son Sžmă Chye, who held a very different view of public service.

REVELATION

Passing on to the New Testament, I take up Origen’s idea that Revelation, which in ancient times was attributed to the same author as the Gospel of John, differs from it stylistically. If we check Revelation against all the other books of the New Testament, we find (Handout 6) that it tests high against the Gospel (D = 1.81, prohibitive as to common authorship), and against everything else. Origen’s judgement is handsomely confirmed. With its distinctively Semitized Greek, Revelation occupies a corner of the NT all to itself. Who wrote it we do not know, but it will be futile to search for the author among those responsible for the rest of the NT. The text’s own suggestion, John of Patmos, might do, but we should not make the mistake of identifying him with any of the other New Testament Johns.

EPHESIANS

It’s widely agreed among critical scholars that Colossians and Ephesians have a close relationship, the latter being something like a revision of the former. As seen by the BIRD test. Colossians and Ephesians have the very low D value of 0.37, but neither of them is close to anything else in the canon. (The crosstable for these texts among the rest of the DeuteroPauline writings is at Handout 7). The modern critical consensus is thus strongly confirmed.
At about this point, someone will say, It’s not news that Colossians resembles Ephesians, and that Revelation, with its highly Semitized language and its tortured Greek, is unique in the canon. Why are we spending time on this? The answer is that no statistical procedure is worth anything until it’s been calibrated: tested on known material. We are here in the process of testing it on known material. We are finding that, though the BIRD test knows no Hebrew, and nothing about Greek except its cumulative frequency curve, it gets in seconds the same result as has been reached by persons who have spent years mastering those languages, and reflecting on those texts. Replication by an independent lab result is the standard criterion for a valid procedure, in any science. We are here trying to establish the BIRD test as a valid procedure in what may yet become the humanistic sciences.

**HEBREWS**

The “Epistle to the Hebrews” is a theological tract, disguised as a letter of Paul by the addition of some closing personalia. It’s outlined in Handout 8. Here, as in Mencius 1A7 and Mwodz 17, we have an argument which, from a certain point on, is highly consecutive. Perhaps we have found a forensic crux? If so, the points necessary to its conclusion should be those made in the preceding sections. Since some of those are notably counterintuitive (Jesus not only as the sacrificed Lamb of God, but as the High Priest who does the sacrificing), it’s not surprising if some preliminary effort is called for. Once the author feels on firm ground, having restructured Christian theology with his concept of the New Covenant, he coasts home in sections e through i. Note the Pauline tone of the last three sections, g, h, and i: the home stretch. They evoke the ideals of faith, hope, and charity, which are just those stressed in 1 Corinthians 13, the “love” chapter. As Walker and others have shown, that chapter is an interpolation in 1 Corinthians. So the author of Hebrews is certainly not Paul; he is more likely a Paulinist writing in the years after Paul. He knows Paul’s letters, *but in their edited form*. From other evidence, a case can be made that this was Apollos of Alexandria, a colleague, but as Paul’s letters show, to some extent a rival, of Paul himself.
ILIAD 10 and DOLON

Moving on to an earlier age, and an earlier state of the Greek language, we may note the ancient claim, reported by Eustathius, that Iliad 10, the exploit of Dolon, was not originally part of the Iliad at all. That idea gets support from the fact that the Doloneia is isolated from the rest of the Iliad; nothing later refers to it, and it can be removed without loss to narrative continuity elsewhere. It we inquire as to the degree of similarity between Iliad 10 and its neighbors (Handout 9), we find that Iliad 9 and 10 have a very high D number (1:14), a level which would usually be thought prohibitive of same authorship. The Doloneia resembles Iliad 9 exactly as much as Colossians resembles the Gospel of Mark (D = 1:14).

Now, Iliad 9, the Embassy to Achilles, has also been thought to be a late addition to the Iliad, since some later passages seem to behave as though no such embassy had ever taken place. Does it help if we take Iliad 9 out of the lineup, and instead test 10 against its new neighbor, Iliad 8? Or if we take both of them out, and test Iliad 8 against Iliad 11? The numbers are at least not as high as with Iliad 10 included, so to that extent its inclusion does seem to be problematic. I will return to this problem in a moment, but for now, the ancient idea that the Doloneia was not original seems to have modest stylistic support.

ILIAD 9 and PHOINIX

Apart from the Doloneia, undoubtedly the most vexing problem in the Iliad is the dual verbs in Iliad 9. These describe the progress and reception of, not two, but three, envoys sent by Agamemnon to beg Achilles to relent and fight again. The cause of this anomaly has often been thought to lie in the inclusion of the envoy Phoinix. As the leader of one of Achilles’ Myrmidon groups, he really has no business at Agamemnon’s conference in the first place; indeed, when the speeches are over, he stays with Achilles. The theory is that Phoinix was added to a narrative which originally lacked him, but without updating those dual verbs. Now, if Phoinix’ speech, and the speech of Achilles which replies to it, are extraneous to the story, there might be support for this in the D crosstable. See Handout 10.

It turns out that the opening narrative and the conference which follows show a strong degree of narrative continuity. The speech of Odysseus and Achilles’ reply ALSO show a strong continuity, different though they are in content, with Odysseus offering gifts, and Achilles raging that he will accept no gifts. Further, the short speech of Aias and its reply ALSO show a strong degree of continuity. These speeches and their responses function like sound and echo. What does NOT show strong continuity is the speech of Phoinix and ITS reply. This detail sets Phoinix apart from the envoys who speak before and after him: whoever wrote that speech did not give it the same relation to its reply. The theory that Phoinix is an addition to Iliad 9 is to that extent, that modest extent, confirmed.
THE SPEECH OF ODYSSEUS

As a comparison with the speeches examined earlier, we might ask, what is the structure of the speech of Odysseus in Iliad 9, taken by itself? Does it show anything like the final spurt of connectivity that we have sometimes seen elsewhere? The outline and crosstable are in Handout 11. Literary inspection shows that the argument is not so much consecutive as point-to-point; a series of separate appeals. The crosstable shows the same thing: the segments are authorially compatible, but not strongly consecutive. The case is like that of Mwdòž 18, back in Handout 3. The Odysseus speech is a series of appeals of different type, not a logical progression in which one segment develops the preceding segment.

This does not mean that the Iliad itself reflects a society without law. That notorious beauty bit, the Shield of Achilles, proves as much. The polis is definitely out there, and law was known to whoever wrote that passage, but forensic rhetoric has not penetrated to the Iliadic way of imagining speeches.

THE ILIAD

The string of low D values with which some speeches conclude does not tell us that somebody else wrote the preceding sections; it tells us that the author is performing in an unusually self-consistent way. The D test is a sign of connectivity; it is not an indication of authorship. There exists, however, a theory of the authorship of the Iliad which can be evaluated by the D test. That theory holds that the Iliad was improvised in one consecutive stream by one poet, and then was transcribed as our present Iliad. That theory, which focuses the poet on the moment of improvisation, can explain some funny stuff. Like Melanippos, who is killed not once, but three times (8:276, 15:576, and 16:695). On the continuous improvisation theory, such details merely show that the poet is not worried about distant material; he is entirely focused on the point of production. The three deaths of Melanippos, far from being a flaw, merely prove how oral this poet was, and preserve his title as the greatest poet who ever lived.

This theory is amenable to testing because if it’s true, then whatever may happen elsewhere in the poem, consecutive segments ought to be closely similar. That is, along the diagonal of the Iliad crosstable we should find an unbroken series of low D numbers between each book and the next, as the oral poet’s moment of improvisation moves through the poem in the act of creating it. But what we actually get in Handout 12 is a series of indifferent D numbers. The only low D value is between Iliad 20 and 21, and that is not a juncture between books, it is a single unbroken narrative of the showdown between Achilles and Hector. So when the Iliad does give a truly consecutive account, the D test duly reports it. But the Iliad as a whole does not come across as a consecutive production. Then the theory in question is massively unsupported by the evidence, and must be given up. To quote the caption on the handout, something different will be needed, and the mix of similar and dissimilar must be otherwise explained.
SUMMARY

What, then, is the D test, and what’s it good for? Some of its results will be meaningless, since any statistical or medical test, such as a mammogram, can yield false positives. But when the results are meaningful, they can call attention to interrelationships or principles of organization in texts, perhaps especially in speeches. This is nothing which literary sensibility could not have seen on its own. In that sense, the D test tells us nothing we did not know, or could not have known. But literary sensibility is not evenly distributed among Heaven’s children, and thus many features of texts go unnoticed, or become the subject of argument. The D test puts this aspect of literary study on an objective basis: it gives us facts about the text. Anybody who does the counts and makes the calculations will get the same results. What we make of those results is up to us as interpreters. But the good news is that the facts are really there. We are not interpreting, or arguing about, a figment of someone else’s imagination.

Whether that degree of precision, and that property of replicability, may be valuable for literary study, only the future of literary study can tell us.

Thank you.