## *The Plays of Christopher Marlowe* by Hartmut Ilsemann

Christopher Marlowe's relatively short career as a dramatist in the period from 1586 to 1593 has always been the subject of much discussion and speculation, not only because of his moral reputation, but also because of his untimely death in 1593. He is generally regarded as the author of the two parts of *Tamburlaine* as well as *The Tragical History of Doctor Faustus, The Jew of Malta* and *Edward II. Dido, Queen of Carthage* is counted among his works, either in part or in toto. A fragment with the title *The Massacre at Paris* also carries his name which has also been associated with poems and with translations of Ovid. *Hero and Leander* was left unfinished and Chapman completed the narrative verses. Renaissance drama owes him some extraordinary characters and many examples of excellent blank verse. However, this very general estimation is only one side of the coin. Thomas Dabbs has shown how this literary figure was rediscovered and historicised during the nineteenth century. According to Dabbs and other scholars little was said or even known about Marlowe until then.[1]

Well into the eighteenth century English Renaissance drama was associated with names like Beaumont, Fletcher, Jonson and Shakespeare. As late as 1744 Dodsley published a comprehensive collection of old English plays, after he had bought 700 early editions from Thomas Osborne (Gray's Inn).[2] It was the first attempt at preparing a history of English plays by arranging the plays in

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[1] Thomas Dabbs. *Reforming Marlowe: The Nineteenth-Century Canonization of a Renaissance Dramatist*. (London, Toronto: Associated University Presses, 1991), S. 13

[2] Robert Dodsley. *Select Collection of Old Plays* (12 vols.), 1744

chronological order. Even though *Edward II* was part of the collection, Dodsley's esteem of Marlowe was low and the writer was not even mentioned in the preface, in contrast to his contemporaries Lyly, Heywood and Lodge (Dabbs, p. 27). Heywood's prologue in *The Jew of Malta* is mentioned, but not Marlowe as author of the play. When the second edition of the *Old Plays* came out in 1780, the editor, Isaac Reed, added *The Jew of Malta*, but in the introduction that lauded the achievements of the early English dramatists there is no mention of Marlowe. Dabbs reports that the brief biographical notes preceding each play repeat the incriminations from Thomas Beard's *The Theatre of God's Judgement* (1597), according to which Marlowe was a violent rogue who was given to atheism and sexual excess (p. 28). Moreover, he was stabbed to death in obscure circumstances. It was only towards the end of the century that people like Reed, Edmond Malone, George Steevens and David Garrick started to collect Marlowe's quartos for their private libraries (Dabbs, p. 29). For a long time an author's reputation had been significant for readers, but in the nineteenth century people began to cherish dramaturgical aspects and Marlowe gained a place next to Shakespeare, Jonson, Beaumont and Fletcher. Up to 1850 three editions of Marlowe's works are recorded. In 1820 W. Oxberry published the two parts of *Tamburlaine,* and Hazlitt's lectures *Chiefly on the Dramatic Literature of the Age of Elizabeth* praised Marlowe, as Lisa Hopkins confirms in *The Cambridge Companion to Christopher Marlowe.*[3]

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[3] Lisa Hopkins in *The Cambridge Companion to Christopher Marlowe,* ed. Patrick Cheney (Cambridge: Univ. Press, 2004) S. 288

In 1825 Hurst and Robinson published *Old English Drama*. This edition contained *Dido, Queen of Carthage*, and John Payne Collier made known that he had discovered a manuscript page of *The Massacre at Paris*. A year later the complete works of Marlowe were published by Robinson. Dabbs's compilation of editorial concerns shows "the lasting influence of certain modes of critical thinking that came into being during the nineteenth century" (Dabbs, p.13). Before this time, the way literary history was perceived by men of letters depended on what had been passed down from one generation to the next, including the attribution of plays to their authors.

There is not much external evidence that relates plays to Marlowe. *Dido, Queen of Carthage* gives Nashe as co-author on the title page of the 1594 quarto. *Doctor Faustus* entered the Stationer's Register in 1589 under the name of Marlowe, but all the other plays were without the author's name as long as Marlowe lived. Perhaps it is the first part of *Tamburlaine,* written between 1584 and 1586 that started his career and is best linked with his name because of the immediate success it had. For this reason it makes sense to take *Tamburlaine* as a starting point for the stylistic analyses of Marlowe's plays with *R Stylo*, a suite of stylometric tools which incorporates a combination of powerful procedures and functions. With Rolling Delta the delta values of the text in question are compared to those of suitable reference texts. The lowest value indicates the smallest difference in style. Introduced by Burrows in 2002[4] examines a window of a certain size, determines the delta values and then moves to the next window according to a chosen step size. As

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[4] J. Burrows. 'Delta': A measure of stylistic difference and a guide to likely authorship. *Literary and Linguistic Computing* , 17(3):267–287, 2002. [p3,9]

it goes through the complete text step by step the lowest values create a curve that belongs to one or several reference texts and in this way gives the author of, or collaborators in the text. Whereas previous stylometric approaches have relied heavily on the relative frequency of function words, the Rolling Delta function of *R Stylo* also allows for character bi- and trigrams which yield better results due to larger populations.

## *Tamburlaine the Great*, parts 1 and 2

The following chart relates the reference texts in the top left corner to *Tamburlaine 1* using a window size of 5000 words and counting
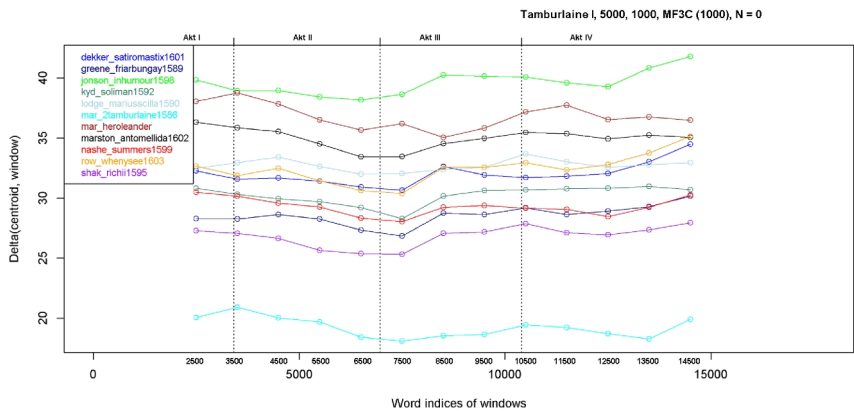


**Figure 1** *Tamburlaine 1 – MF3C (1000)*

the most frequent character trigrams (MF3C). The smallest difference in style is between *Tamburlaine 1* (represented by the x-axis) and *Tamburlaine 2*, followed by Shakespeare's *Richard II* and Greene's *Friar Bacon and Friar Bungay*. Smaller window sizes are associated with a reduction in the number of variables, and as sizes go down from 5000 words to 4000, then to 3000 and 2000 and then even to 1000 words, the clear attributions of the larger windows

lose their consistency, and the tendency to signal collaborations rises significantly. But with the two *Tamburlaines* even a 500-word window returns an unambigious attribution. Once again, up to a 1000 most-frequent-character trigrams were used in the analysis, and the following chart is a fine example of stylistic identity between the two plays.
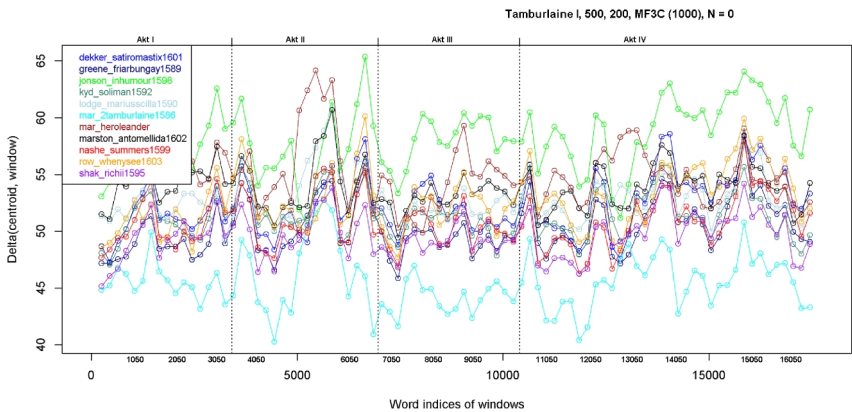


**Figure 2** *Tamburlaine 1 – MF3C (1000)*

Eder's Rolling Classify likewise yields results that are in complete agreement when the classification procedures of *nsc, svm* and *delta* are used. Each time, Marlowe is given as the author of the play. The case of *Tamburlaine 1* is remarkable because other texts show discrepancies in most cases between *nsc, svm* and *delta*, due to their specific mathematical kernel and/or possible collaborations. [5]

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[5] The charts were taken over from the German version and the German word for Act was retained throughout the text.

**Figure 3** *Tamburlaine 1* **– MF3C (1000)**
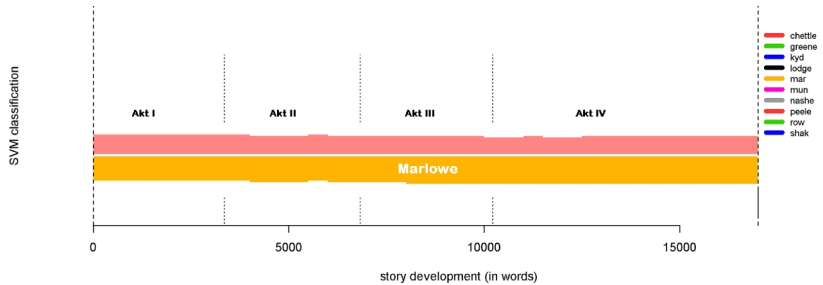


**Figure 4 Tamburlaine 1 – MF3C (1000)**

*Delta* shows exactly the same result although, economising on space, we omit the reproduction of the relevant chart. Likewise the proof that *Tamburlaine 1* is the best suited reference text for *Tamburlaine 2* will be omitted. What is important though, is that Rolling Delta and Rolling Classify possess the capacity to recognise Marlowe's style with the reference texts of *Tamburlaine 1* and *Tamburlaine 2.*

## *Dido, Queen of Carthage*

The title page of the 1594 quarto names Christopher Marlowe and Thomas Nashe as authors of this tragedy which was probably written between 1587 and 1593. In the 19th century Frederick Gard Fleay had assigned Acts I, 1 and III, 1, 2 and 4 as well as Act V, 1, 2 and 5 to Nashe and the rest to Marlowe. But this remained a controversial issue. Soon discrepancies with other parts of Nashe's works were named and the Marlowe parts contained untypical vocabulary. The strong female lead character and her passionate love represented a strong contrast with anything Marlowe had written before. It became necessary to widen the approach, using a large number of reference texts to exclude those plays that had no stylistic similarity at all. The following texts were ready for comparisons:

greene_friarbungay.txt, kyd_soliman.txt, lyly_motherbombie.txt, mar_1tamburlaine.txt, mun_kentcumber.txt, nashe_summers.txt, peele_arraignment.txt, row_whenysee.txt, shak_rich-iii1592.txt,

In fact, it was already the 1000-word window which on the basis of word frequencies gave evidence of John Lyly's reference text that was dominant throughout the play (see Figure 5). However, when discrepancies between MF1W- and MF3C-results were checked and the culling value was lowered to 70, a recommendation by Hoover[6], a loss of clarity could be observed. Eventually a suspicion developed that the discrepancy between texts in modern spelling and those taken directly from contemporary quartos might be un-

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[6] David L. Hoover. "Testing Burrows's Delta." *Literary and Linguistic Computing* 19 (2004), S. 456

reliable, particularly with MF1W. For this reason the 1594 quarto, available from Gutenberg's etexts,[7] was replaced by a text from *archive.org* that contained the 1825 edition published by Hurst and Robinson. [8]



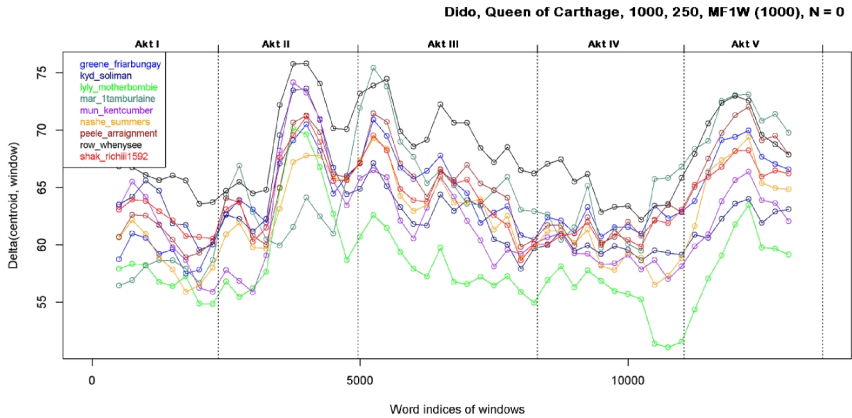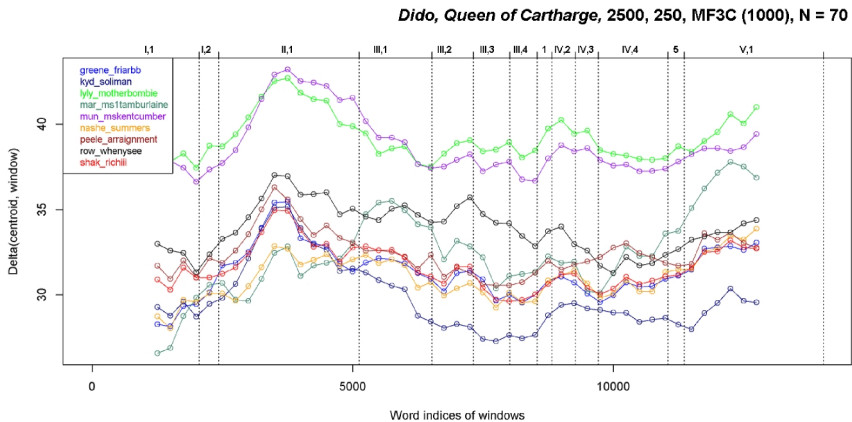**Figure 5** *Dido, Queen of Carthage* **– MF1W (1000)**



**Figure 6** *Dido, Queen of Carthage* **– MF3C (1000)**

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[7] http://www.gutenberg.org/files/16169/16169-0.txt

[8] https://archive.org/stream/didoqueenofcarth00marluoft/ didoqueenof-carth00marluoft_djvu.txt

Figure 5 and 6 account for the differences between the *Dido*-file in old and modern spelling, and between MF1W and MF3C. The latter returns Marlowe at the beginning of the play, which corresponds largely to what Merriam had found earlier, but where he had assumed Nashe due to the title page naming, Thomas Kyd is in fact the real author.[9] This is once again an example of the discrepancy between traditional and non-traditional stylometry, where the former can only confront two authors at a time and Rolling Delta and Rolling Classify make use of a number of reference texts.



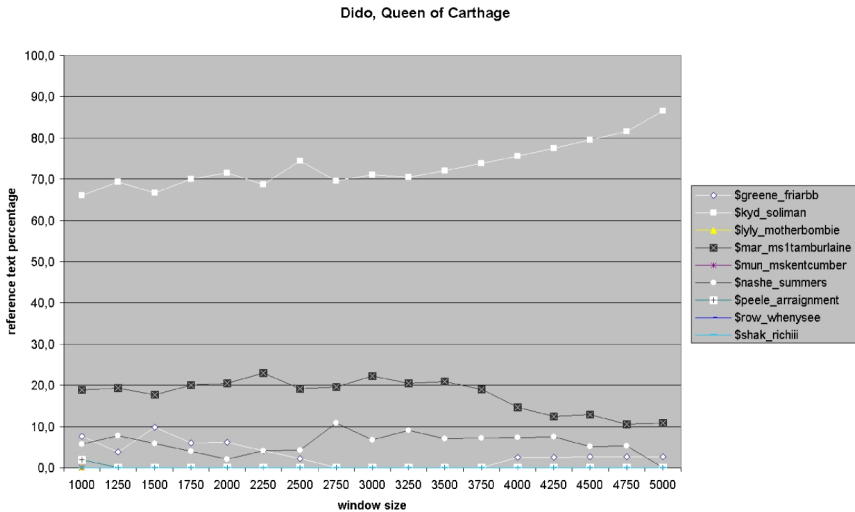**Figure 7 Authorship attribution with varying window sizes (MF3C)**

Figure 7 contains the striking example of those character trigrams that exist in 70 % of all files. The percentage of Kyd rises from the 1000-word window to the 5000-word window from 66 to 86.5 %.

[9] Thomas Merriam, „Marlowe and Nashe in Dido Queen of Carthage," *Notes and Queries*: vol. 47, No. 4. December 2000, pp. 425-428

Marlowe's figures go from 18.9 % to 10.8% with some values in the smaller windows well over 20 % (2250 = 22.2 %). Steady values are given for Nashe in window sizes between 2750 and 4750 words and percentages between 10.9 and 5.3 %. In the larger windows Greene can also be found between between 4000 up to 5000 words with about 2.6 % of all attributions. The question where the two nominal authors Marlowe and Nashe turn up becomes clear when the attributions are located within the textual sequence. The following cross-table gives the combination of window size and number of words in the running text. The bigger the window the more dominant is the author whose style prevails.

| | 1000 | 1250 | 1500 | 1750 | 2000 | 2250 | 2500 | 2750 | 3000 | 3250 | 3500 | 3750 | 4000 | 4250 | 4500 | 4750 | 5000 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 500  | M | M |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 750  | M | M | M | M |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1000 | M | M | M | M | M | M |   |   |   |   |   |   |   |   |   |   |   |
| 1250 | M | M | M | M | M | M | M | M |   |   |   |   |   |   |   |   |   |
| 1500 | N | N | M | M | M | M | M | M | M | M |   |   |   |   |   |   |   |
| 1750 | N | N | *G* | K | M | M | M | K | M | M | M | M |   |   |   |   |   |
| 2000 | M | K | K | K | K | K | K | M | M | M | M | M | M | M |   |   |   |
| 2250 | K | K | K | K | K | K | K | N | M | M | M | M | M | M | M | M |   |
| 2500 | K | K | K | K | K | N | K | N | M | M | M | M | M | M | M | M | M |
| 2750 | K | N | K | N | K | M | N | M | M | M | M | M | M | M | M | M | M |
| 3000 | P | N | N | N | M | M | M | M | M | M | M | M | M | M | M | M | M |
| 3250 | N | M | N | M | M | M | M | M | M | M | M | M | M | N | M | N | M |
| 3500 | M | M | M | M | N | N | M | M | M | M | M | M | N | N | N | *G* | *G* |
| 3750 | M | M | M | M | M | M | N | N | M | N | M | N | N | *G* | N | N | K |
| 4000 | M | M | M | M | M | M | M | M | N | N | N | K | *G* | K | *G* | K | K |
| 4250 | M | M | M | M | M | M | M | M | N | N | K | N | K | K | K | K | K |
| 4500 | M | M | M | M | M | M | M | M | K | K | K | K | K | K | K | K | K |
| 4750 | *G* | K | *G* | *G* | *G* | *G* | K | N | N | N | K | N | K | K | K | K | K |
| 5000 | K | K | K | K | *G* | K | *G* | K | K | N | N | N | K | K | K | K | K |
| 5250 | K | K | K | K | K | K | K | K | K | K | K | K | N | N | K | K | K |

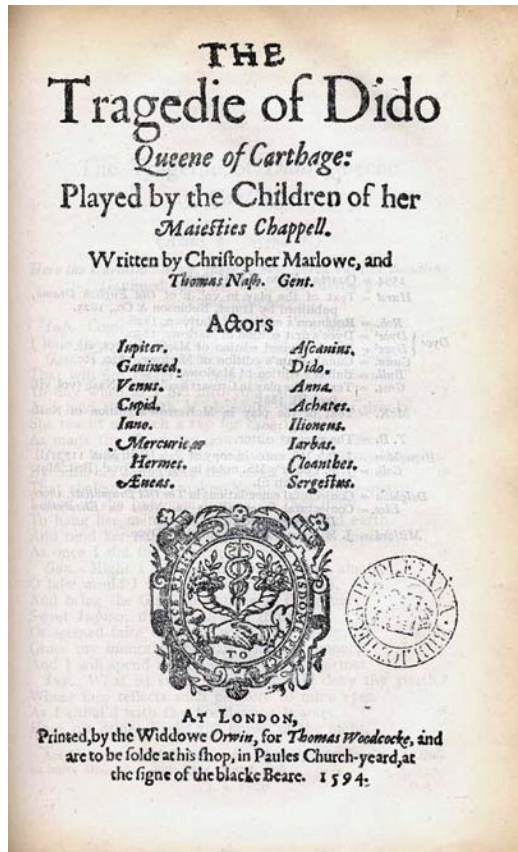|  | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5500 | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 5750 | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 6000 | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 6250 | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 6500 | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 6750 | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 7000 | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 7250 | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 7500 | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 7750 | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 8000 | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 8250 | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 8500 | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 8750 | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 9000 | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 9250 | K | K | ℕ | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 9500 | K | K | K | *G* | *G* | *G* | K | K | K | K | K | K | K | K | K | K | K |
| 9750 | *G* | *G* | *G* | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 10000 | *G* | *G* | *G* | *G* | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 10250 | *G* | K | *G* | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 10500 | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 10750 | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 11000 | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 11250 | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 11500 | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 11750 | K | K | K | K | K | K | K | K | K | K | K | K | K | K | | | |
| 12000 | K | K | K | K | K | K | K | K | K | K | K | K | | | | | |
| 12250 | K | K | K | K | K | K | K | K | K | K | | | | | | | |
| 12500 | K | K | K | K | K | K | K | K | | | | | | | | | |
| 12750 | K | K | K | K | K | K | | | | | | | | | | | |
| 13000 | K | K | K | K | | | | | | | | | | | | | |
| 13250 | K | K | | | | | | | | | | | | | | | |
| 13500 | K | | | | | | | | | | | | | | | | |

**Table 1 Cross-table of sequential attribution and window sizes**

The stylistics of authors who can be found in the smaller windows are swallowed, and the crucial question is whether smaller windows return real relations with a possibly insufficient population

of variables, or if larger windows impose upon coherent findings in the smaller windows.

Why Marlowe and Nashe were given as authors of the play on the title page of the quarto can however be guessed from the sequential attribution. Apparently they started composing the play together before Kyd took over. And it may well have been Nashe who brought Greene's style into the play. Both interacted in many other cases, for example when Nashe wrote the Preface to Greene's *Menaphon* (1589). But there is also some plausibility in the theory that printers and booksellers sensed a thriving and lucrative business when they announced a play by an infamous author who only a couple of months previously had died in a dramatic and spectacular way.

By that time (1594) Kyd had already undergone the agony of torture and his health was in a more than poor state. Apparently there was no need to mention his authorial contributions.

THE
Tragedie of Dido
*Queene of Carthage*:
Played by the Children of her
*Maiesties Chappell*.

Written by Christopher Marlowe, and
*Thomas Nash*. Gent.

Actors

| | |
|---|---|
| *Iupiter.* | *Ascanius.* |
| *Ganimed.* | *Dido.* |
| *Venus.* | *Anna.* |
| *Cupid.* | *Achates.* |
| *Iuno.* | *Ilionens.* |
| *Mercurie, or* | *Iarbas.* |
| *Hermes.* | *Cloanthes.* |
| *Æneas.* | *Sergestus.* |

AT LONDON,
Printed, by the Widdowe Orwin, for *Thomas Woodcocke*, and
are to be folde at his fhop, in Paules Church-yeard, at
the figne of the blacke Beare. 1594.

**M**ore methodical paths must be followed to underpin the tendencies that have thus far become clear. **M**achine-learning programs embedded in Rolling Classify consistently returned Kyd, Greene, Marlowe and Nashe classifications with *svm*, *nsc* and *delta* for word frequencies up to 100 words. With character 3-grams Greene's and Nashe's attributions were reduced or even renounced. The training folder contained Greene's *Friar Bacon and Friar Bungay* (friarbb.txt), Nashe's *Summer's Last Will and Testament* (sum.txt), Kyd's *Soliman and Perseda* (ksoli.txt), and Marlowe's *Tamburlaine 2* (2tam.txt).
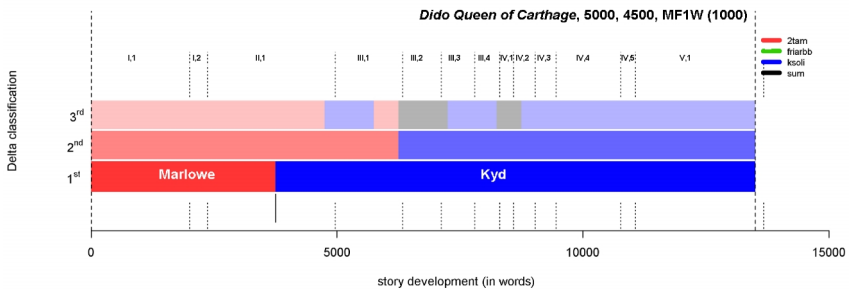


**Figure 8** *Dido, Queen of Carthage* **– delta classification with words**
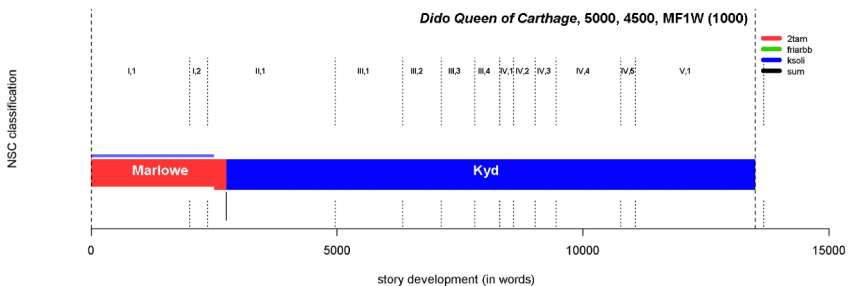


**Figure 9** *Dido, Queen of Carthage* **– nsc classification with words**

Figure 8 and 9 use up to 1000 variables and return a Marlowe-Kyd sequence that corresponds roughly with Figure 6 and Table 1.
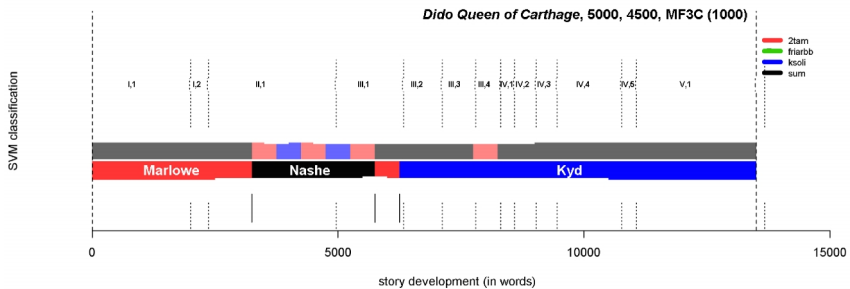
**Figure 10** *Dido, Queen of Carthage* **– svm classification with mf3c**
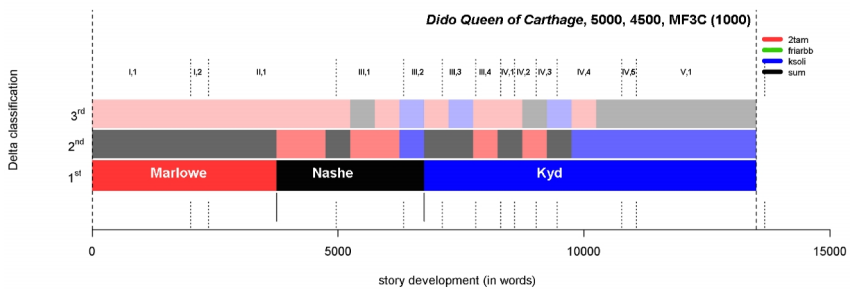


**Figure 11** *Dido, Queen of Carthage* **– delta classification with mf3c**

With character 3-grams the Marlowe-Kyd sequence is disrupted by a succession of Nashe values (see Figures 10 and 11). This would confirm a collaboration of Marlowe and Nashe which then gave rise to the 1594 quarto title page.

When the vocabulary of *Dido* is checked with Craig's Zeta function the following chart turns up where *Dido* finds its place between the avoided and preferred vocabulary of Marlowe's *Tamburlaines* and Kyd's *Soliman and Perseda*.

**Dido Queen of Carthage**
**Craig's Zeta**
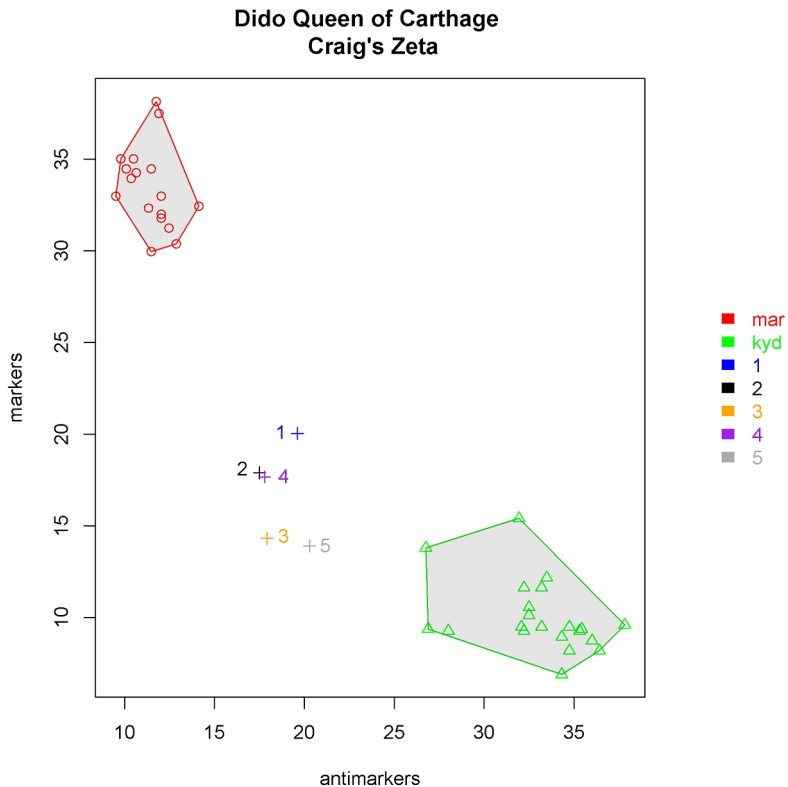
**Figure 12 Craig's Zeta and the five acts of *Dido***

Apparently Acts III and V contain vocabulary that is avoided by Marlowe and preferred by Kyd, whereas Act I is much closer to Marlowe's preferred vocabulary. In Figure 13 it is Nashe and Kyd's vocabulary which gives very much the same result in favour of Kyd, but it is also noteworthy that Act I has once again a leaning towards Nashe, even though to a lesser degree than in the Marlowe chart.
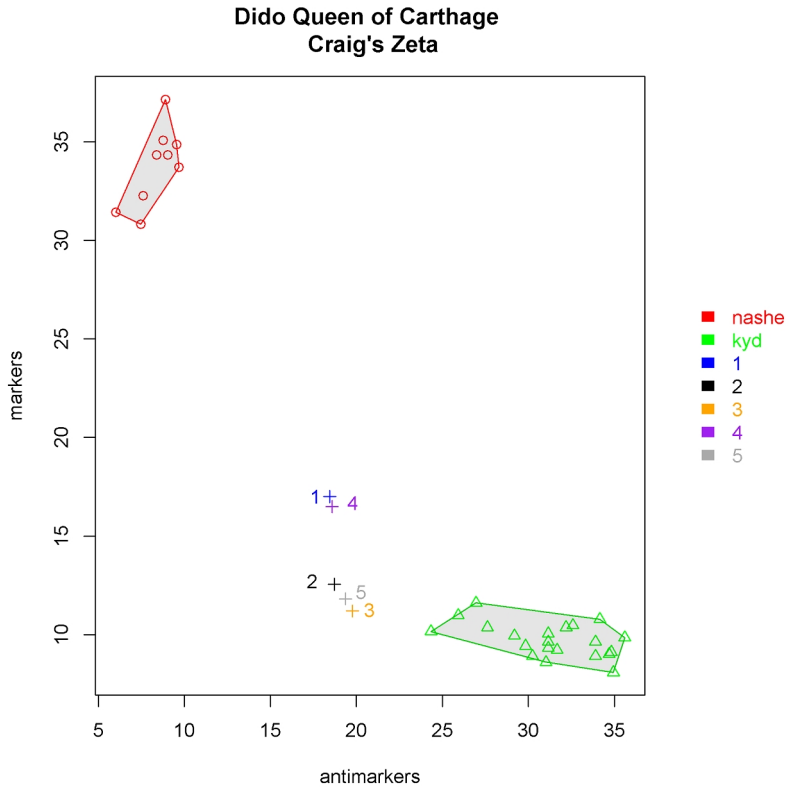
**Figure 13 Craig's Zeta and the five acts of** Dido

Craig's Zeta result is confirmed in part in the bootstrap consensus tree where both MF2C and MF3C position Act I of *Dido* together with Marlowe's reference texts *Tamburlaine 1* and *Tamburlaine 2* (see Figure 14).

# Dido Queen of Carthage
# Bootstrap Consensus Tree

mar 2tam

mar 1tam
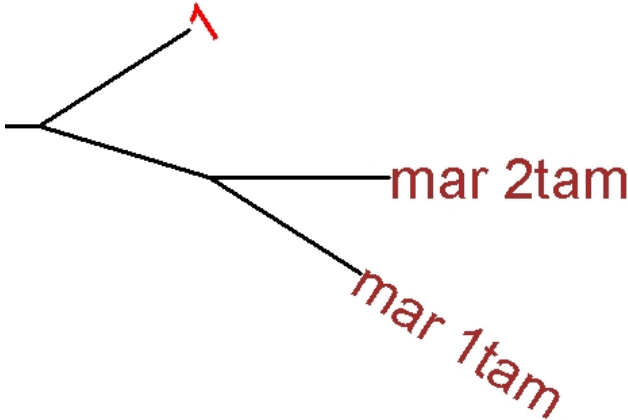
100-300 MFC 2-grams Culled @ 0-70%
Classic Delta distance Consensus 0.5
100-1000 MFC 3-grams Culled @ 0-70%
Classic Delta distance Consensus 0.5

**Figure 14 segment of Bootstrap consensus trees with MF2C and MF3C**

To sum up, one can say that Marlowe definitely started writing *Dido Queen of Carthage*. But as rolling delta indicated in the various window sizes, it is not absolutely clear where Marlowe's style ends and where Kyd took over. In between there are in the smaller windows many Nashe signals, and most certainly the inscription on the title page carries a lot of weight. If one had to reach a verdict one could conclude that Marlowe and Nashe wrote the first two acts of the play and then Kyd brought the plot to a satisfactory conclusion.

## *Edward II*

On 6 July 1593 the play was entered in the Stationer's Register, i.e. about five weeks after **M**arlowe's death. The first quarto with Marlowe's name on the title page appeared in the following year 1594. It bears the full title and the troupe of actors, the Earle of Pembrooke his servants. The historical data came from the third volume of Holinshed's Chronicles, and critics have variously paid attention to the homosexual relationship between the king and *G*aveston. Moreover, they detected similarities with *Dido, Queen of Carthage* and *The Massacre at Paris*.[10] To con-
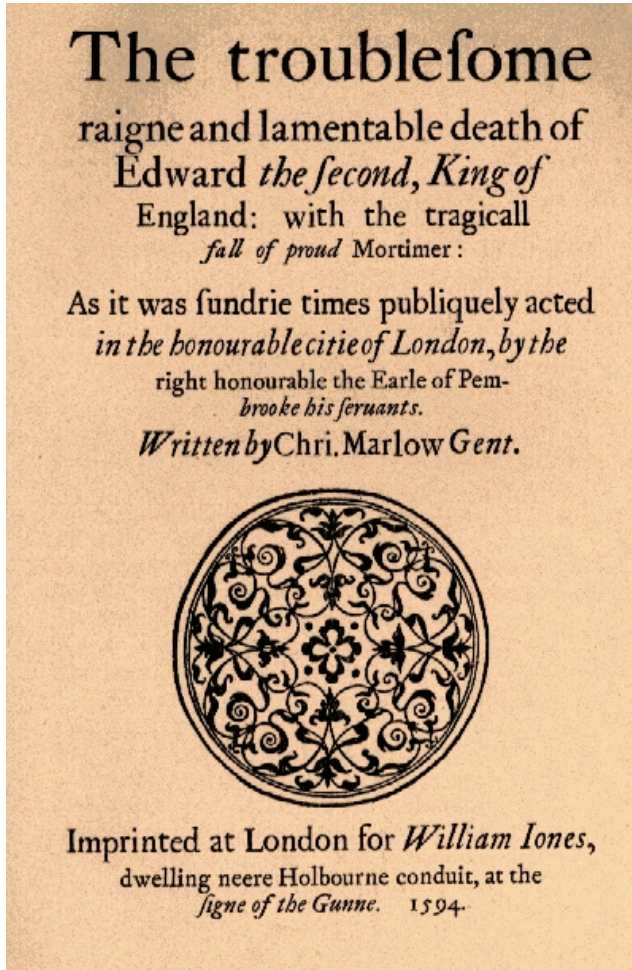


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[10] Cf. Frederick S. Boas, *Christopher Marlowe: A biographical and critical study* (Oxford: Clarendon Press, 1953), pp. 174f

firm Marlowe as the author we had recourse to the two parts of *Tamburlaine* and checked a vast range of possible reference texts. In these tests Lodge and Munday could be excluded, and, as the first attribution of *Dido* had gone wrong due to the exclusion of Lyly, two constellations of text clusters were examined. In the following examples MF3C is carried out with window sizes of 3000 words. The reference texts are in the top left corner of the charts.
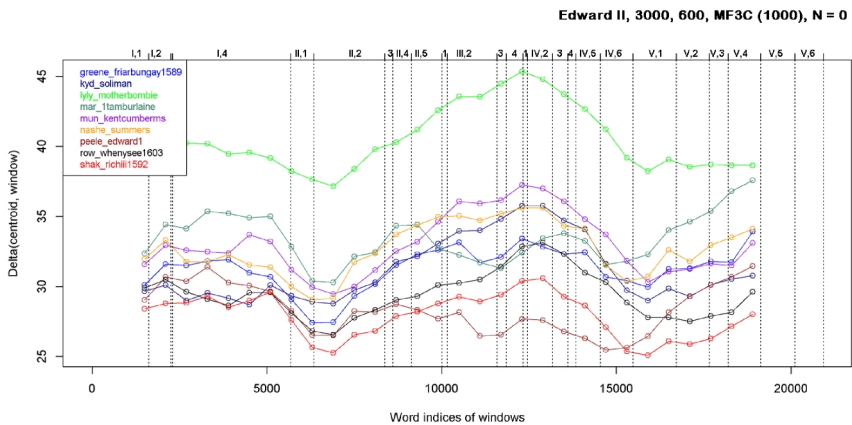


**Figure 15** *Edward II* – **MF3C (1000)**

The comparison of the two charts shows that the results depend largely on the choice of reference texts. Figure 15 informs us that Lyly cannot be the author, and further evidence from both charts signifies that the stylistics of *Tamburlaine* are not those of *Edward II*. The more interesting issue of methodology has to do with Shake-speare's style as derived from *Richard II* (Figures 16, 18) and the stylistic Shakespeare/Peele combination arising from *Richard III* (Figure 17).

A window size of 5000 words gave the following result:
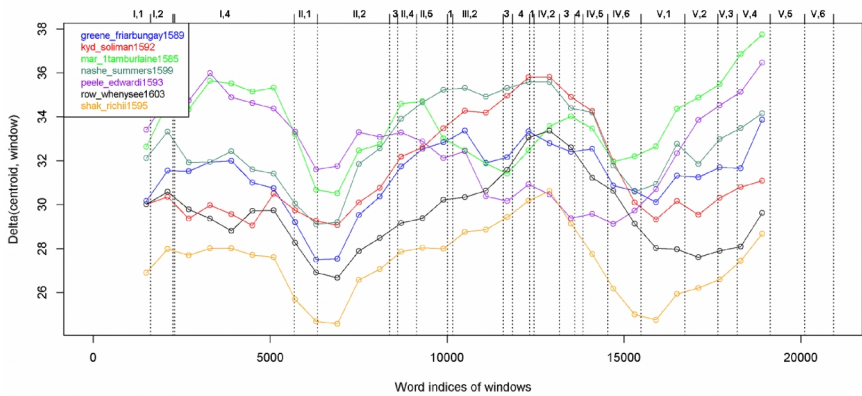


**Figure 16** *Edward II* – **MF3C (1000)**



**Figure 17** *Edward II* – **MF3C (1000)**

**Figure 18** *Edward II* – **MF3C (1000)**

There is a very slight advantage as far as the delta values of *Richard II* are concerned. On the other hand, *Richard III* is more trustworthy as a Shakespeare text. If we go through the whole range of window sizes from 1000 to 5000 MF3C gives us an idea what percentages the reference text authors are given in the various windows.



**Figure 19 Attributions and window sizes**

Where exactly the attribution to the stylistically closest reference text can be found is shown in the next table.

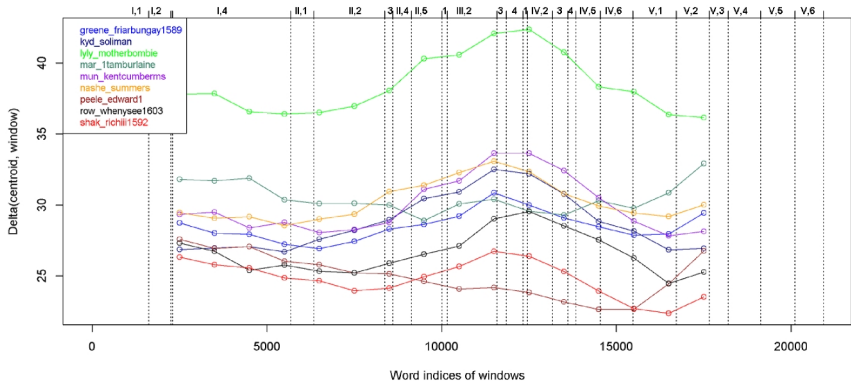| | T | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H | 0 | 2 | 5 | 7 | 0 | 2 | 5 | 7 | 0 | 2 | 5 | 7 | 0 | 2 | 5 | 7 | 0 |
| | T | 0 | 5 | 0 | 5 | 0 | 5 | 0 | 5 | 0 | 5 | 0 | 5 | 0 | 5 | 0 | 5 | 0 |
| | O | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 500 | S | S | | | | | | | | | | | | | | | | |
| 750 | **P** | **P** | **P** | **P** | | | | | | | | | | | | | | |
| 1000 | **P** | S | **P** | **P** | **P** | **P** | | | | | | | | | | | | |
| 1250 | **P** | S | **P** | **P** | **P** | **P** | **P** | S | | | | | | | | | | |
| 1500 | **P** | **P** | **P** | **P** | S | S | S | S | S | S | | | | | | | | |
| 1750 | **P** | S | **P** | S | S | S | S | S | S | S | S | S | | | | | | |
| 2000 | G | S | S | S | S | S | S | S | S | S | S | S | S | S | | | | |
| 2250 | R | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | | |
| 2500 | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | |
| 2750 | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | |
| 3000 | S | S | S | S | S | R | S | S | S | S | S | S | S | S | S | S | S | |
| 3250 | S | K | S | S | S | S | R | S | S | S | S | S | S | S | S | S | S | |
| 3500 | K | K | K | K | S | S | S | S | S | S | S | S | S | S | S | S | S | |
| 3750 | K | K | K | K | K | K | S | S | S | S | S | S | S | S | S | S | S | |
| 4000 | K | S | K | K | K | K | S | K | S | S | S | S | S | S | S | S | S | |
| 4250 | K | K | K | S | K | K | K | K | S | S | S | S | S | S | S | S | S | |
| 4500 | **P** | **P** | **P** | K | K | **P** | K | **P** | K | S | S | S | S | S | S | S | S | |
| 4750 | **P** | **P** | **P** | **P** | **P** | **P** | **P** | S | S | S | S | S | S | S | S | S | S | |
| 5000 | **P** | **P** | **P** | **P** | **P** | **P** | **P** | **P** | S | S | S | S | S | S | S | S | S | |
| 5250 | **P** | **P** | **P** | **P** | **P** | S | S | S | **P** | R | S | S | S | S | S | S | S | |
| 5500 | **P** | R | **P** | **P** | **P** | **P** | S | S | S | S | R | R | S | S | S | S | S | |
| 5750 | G | G | R | S | S | S | S | S | S | S | S | S | **P** | S | S | S | S | |
| 6000 | G | S | G | S | S | R | S | S | S | S | S | S | S | S | S | S | S | |
| 6250 | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | |
| 6500 | S | S | R | S | S | S | S | S | S | S | S | S | S | S | S | S | S | |
| 6750 | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | |
| 7000 | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | |
| 7250 | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | |
| 7500 | **P** | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | |
| 7750 | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | |
| 8000 | **P** | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | |

```
 8250  S S S S S S S S S S S S S S S S S S
 8500  S S S S S S S S S S S S S S S S S S
 8750  P S S S S S S S S S S S S S S S S P
 9000  S S P S S S S S P P S P S P S P P P
 9250  S P P P S P P P P P P P P P P P P P
 9500  P P P P P P P P P P P P P P P P P P
 9750  P P P P P P P P P P P P P P P P P P
10000  P P P P P P P P P P P P P P P P P P
10250  P P P P P P P P P P P P P P P P P P
10500  P P P P P P P P P P P P P P P P P P
10750  P P P P P P P P P P P P P P P P P P
11000  P P P P P P P P P P P P P P P P P P
11250  M M P P P P P P P P P P P P P P P P
11500  P P P P P P P P P P P P P P P P P P
11750  P P P P P P P P P P P P P P P P P P
12000  P P P P P P P P P P P P P P P P P P
12250  P P P P P P P P P P P P P P P P P P
12500  P P P P P P P P P P P P P P P P P P
12750  P P P P P P P P P P P P P P P P P P
13000  P P P P P P P P P P P P P P P P P P
13250  P P P P P P P P P P P P P P P P P P
13500  P P P P P P P P P P P P P P P P P P
13750  P P P P P P P P P P P P P P P P P P
14000  P P P P P P P P P P P P P P P P P P
14250  P P P P P P P P P P P P P P P P P P
14500  P P P P P P P P P P P P P P P P P P
14750  P P P P P P P P P P P P P P P P P P
15000  P P P S P P P S P S P P P P P P P P
15250  P P P S S S S S S S S S P S S S P P
15500  P S P S S S S S S S S S S S S S S S
15750  S S S S S S S S S S S S S S S S S S
16000  S S S S S S S S S S S S S S S S S S
16250  S S S S S S S S S S S S S S S S S S
16500  S S S S S S S S S S S S S S S S S S
16750  S S S S S S S S S S S S S S S S S S
17000  S S S S S S S S S S S S S S S S S S
17250  S S S S S S S S S S S S S S S S S S
```

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17500 | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S |
| 17750 | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S |
| 18000 | R | R | R | R | R | S | S | S | S | S | S | S | S | S | S | S | S |
| 18250 | R | R | R | R | S | S | S | S | S | S | S | S | S | S | S | | |
| 18500 | R | R | R | S | S | S | S | S | S | S | S | S | S | | | | |
| 18750 | R | S | S | S | S | S | S | S | S | S | S | | | | | | |
| 19000 | S | S | S | S | S | S | S | S | S | | | | | | | | |
| 19250 | K | S | S | S | S | S | S | | | | | | | | | | |
| 19500 | S | S | S | S | S | | | | | | | | | | | | |
| 19750 | S | S | S | | | | | | | | | | | | | | |
| 20000 | S | | | | | | | | | | | | | | | | |

**Table  2 Attribution in Edward II**

Whereas smaller windows show assignments to Kyd, Rowley and even Marlowe due to insufficient populations the stable information makes clear that the core of the play between II, 5 to IV,6 was written by George Peele, and the remaining text by William Shakespeare. It must be left to Rolling Classify to find out whether Peele really comes in as a co-author. The chart below gives the result of the delta classifier.
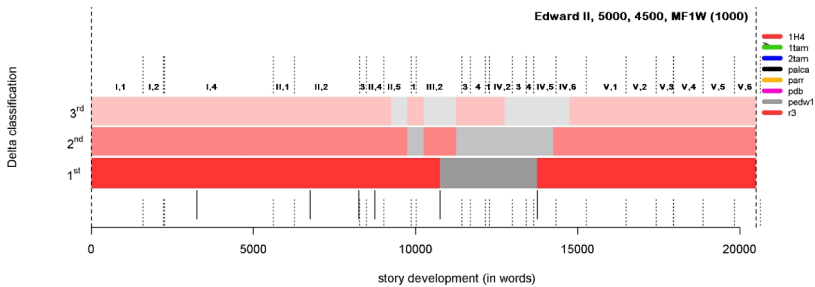


**Figure 20** *Edward II* **– Delta classification and attribution of text chunks**

It is obvious that Figure 20 corresponds to Figures 15 and 17, with differences only in quantity, not in quality. These are due to the

mathematical kernel of the procedure. Accordingly *svm, nsc* and *delta* give the following attributions with MF1W and MF3C:

**svm.words$classification.results**
classes assigned to particular test slices
 [1] r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3
[14] r3 pedw1 pedw1 pedw1 pedw1 pedw1 pedw1 pedw1
[22] pedw1 pedw1 pedw1 r3 r3 r3 r3 r3 r3 r3 r3
 (total number of elements: 32)

**nsc.words$classification.results**
classes assigned to particular test slices
 [1] r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3
 [19] r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3
(total number of elements: 32)

**delta.words$classification.results**
classes assigned to particular test slices
 [1] r3 r3 1H4 1H4 1H4 1H4 1H4 1H4 1H4 r3
 [11] r3 r3 1H4 r3 r3 r3 r3 pedw1 pedw1 pedw1
 [21] pedw1 pedw1 pedw1 r3 r3 r3 r3 r3 r3 r3
 [31] r3 r3
(total number of elements: 32)

**svm.mf3c$classification.results**
classes assigned to particular test slices
 [1] r3 r3 r3 r3 r3 r3 r3 r3 r3 r3
 [11] r3 r3 r3 r3 r3 r3 r3 r3 pedw1 pedw1
 [21] pedw1 r3 r3 r3 r3 r3 r3 r3 r3 r3
 [31] r3 r3
(total number of elements: 32)

**nsc.mf3c$classification.results**
classes assigned to particular test slices
 [1] r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3

[19] r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3 r3
(total number of elements: 32)

**delta.mf3c$classification.results**
classes assigned to particular test slices
 [1] r3 r3 r3 r3 r3 r3 r3 r3 r3 r3
[11] r3 r3 r3 r3 r3 r3 r3 r3 pedw1 pedw1
[21] pedw1 pedw1 pedw1 pedw1 r3 r3 r3 r3 r3 r3
[31] r3 r3
(total number of elements: 32)

Pure Shakespeare attributions can be found in the *nsc* classification which is regarded as classification friendly according to Eder,[11] i.e. bare possibilities suffice for attributions. All the remaining classifiers have Peele segments with *Edward I* as reference text. Not a single classification was achieved with texts by Marlowe. But there are huge differences in the number of words. With MF1W *svm* allocates about 5000 words to Peele, but only about 1500 with MF3C. The *delta* classifier measures in both approaches about 3000 words that carry the style of Peele. But in one case the Peele sequence starts after 8500 words, in the other case after 9000 words. This is certainly not a precise measurement, but the overall impression of a Shakespeare-Peele collaboration remains. All approaches used in the analysis of *Edward II* give the clear verdict that Marlowe is not the author of the play.

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[11] Maciej Eder. "Rolling Stylometry" (draft version, submitted to *LLC*), *Computational Stylistics Group*. Web. https://sites.google.com/site/com putational stylistics/projects/testing-rolling-stylometry, 11.12.2014, S. 5

## *The Jew of* M*alta*

Even though all the steps are seen as approximations in finding the right author, it becomes clear that, with the exception of the two parts of *Tamburlaine*, there has been no text solely written by Marlowe so far. This tendency can also be observed in *The Jew of* M*alta*, where with MF3C the *Tamburlaine* reference-text curve of Rolling Delta is quite distant and the 3000-word window that consists of 63 measuring-points with a step size of 250 words returns Kyd (14), Nashe (17), Rowley (1) and Shakespeare (31) as closest references (see Figure 22). In preliminary tests authors like John Lyly, Robert *G*reene, Anthony Munday and *G*eorge Peele had already been excluded as possible co-authors, and only the texts in the chart remained.
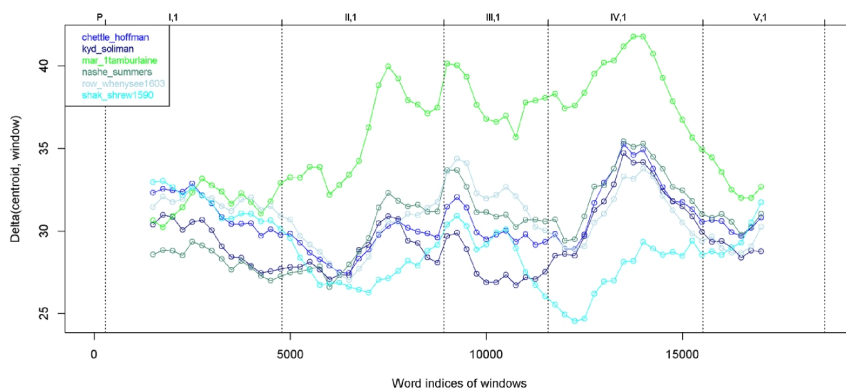


**Figure 21** *The Jew of* M*alta* **– MF3C (1000)**

With window sizes between 1000 and 5000 words where the sizes grew from one window to the next by 250 words the 3000-word window was surrounded by very similar curves so that a truly collaborative scenario opens up. Thomas Nashe wrote apparently Act

I, Shakespeare Act II, Kyd Act III, Shakespeare Act IV and Kyd again Act V, but there are also overlappings from the sides. The larger windows swallow the stylistics of authors who wrote a shorter section of the the play. This can also be seen in the assignment cross-table which records the window sizes horizontally and the sequential growth of the play in the number of words vertically.

| | 1000 | 1250 | 1500 | 1750 | 2000 | 2250 | 2500 | 2750 | 3000 | 3250 | 3500 | 3750 | 4000 | 4250 | 4500 | 4750 | 5000 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 500 | N | N | | | | | | | | | | | | | | | | |
| 750 | M | N | N | N | | | | | | | | | | | | | | |
| 1000 | N | N | N | N | N | | | | | | | | | | | | | |
| 1250 | N | N | N | N | N | N | N | | | | | | | | | | | |
| 1500 | N | N | N | N | N | N | N | N | N | | | | | | | | | |
| 1750 | R | R | R | N | N | N | N | N | N | N | N | | | | | | | |
| 2000 | R | N | N | R | N | N | N | N | N | N | N | N | N | | | | | |
| 2250 | R | R | R | N | N | N | N | N | N | N | N | N | N | N | N | | | |
| 2500 | R | M | M | N | N | N | N | N | N | N | N | N | N | N | N | N | N | Akt I |
| 2750 | M | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | | |
| 3000 | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | |
| 3250 | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | |
| 3500 | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | |
| 3750 | N | N | N | N | N | N | N | N | N | N | N | K | N | N | N | N | | |
| 4000 | K | K | N | N | N | N | N | N | N | K | K | N | N | N | N | N | N | |
| 4250 | N | N | N | K | N | N | N | N | N | N | N | N | N | N | N | N | N | |
| 4500 | N | K | K | K | K | K | K | N | N | N | N | N | N | N | N | N | | |
| 4750 | K | K | K | K | K | K | K | N | N | N | N | N | N | N | N | N | N | |
| 5000 | K | K | K | K | N | N | K | N | N | N | N | N | N | N | N | N | N | |
| 5250 | K | K | K | K | K | N | N | N | | S | K | K | K | N | N | N | | |
| 5500 | K | K | K | N | N | N | K | S | S | S | S | N | N | K | N | K | N | |
| 5750 | N | R | K | K | K | R | S | S | S | S | N | S | S | S | K | S | K | |
| 6000 | R | R | R | R | R | S | S | N | N | S | S | S | S | S | S | S | | |
| 6250 | R | S | S | S | S | S | K | S | S | S | S | S | S | S | S | S | | |

| Takt | Stimmen | Akt |
|---|---|---|
| 6500 | S S S S S S S S S S S S S S S S S S | **Akt II** |
| 6750 | S S S S S S S S S S S S S S S S S S | &#124; |
| 7000 | S S S S S S S S S S S S S S S S S S | &#124; |
| 7250 | S S S S S S S S S S S S S S S S S S | &#124; |
| 7500 | S S S S S S S S S S S S S S S S S S | &#124; |
| 7750 | S S S S S S S S S S S S S S S S S S | &#124; |
| 8000 | S S S S S S S S S S S S S S S S S S | &#124; |
| 8250 | S S S S S S S S S S S S S S S S S S | &#124; |
| 8500 | S S S **K** S S S **K K K K K K** S S S S S | &#124; |
| 8750 | S **K K K K K** S **K K K K K** S S S S S S | &#124; |
| 9000 | **K K K K K K K K K K K K K** S S S S S | &#124; |
| 9250 | **K K K K K K K K K K K K K K K K K** S | &#124; |
| 9500 | **K K K K K K K K K K K K K K K K K K** | &#124; |
| 9750 | **K K K K K K K K K K K K K K K K K K** | **Akt III** |
| 10000 | **K K K K K K K K K K K K K K K K K** S | &#124; |
| 10250 | **K K K K K K K K K K K K K K K K** S S | &#124; |
| 10500 | **K K K K K K K K K K K K K K K K** S S | &#124; |
| 10750 | **K K K K K K K K K K K K K K K K** S S | &#124; |
| 11000 | **K K K K K K K K** S **K K K** S S S S S S | &#124; |
| 11250 | **K K K** S S S S S S S S S S S S S S S | &#124; |
| 11500 | **K K K** S S S S S S S S S S S S S S S | &#124; |
| 11750 | **K** S S S S S S S S S S S S S S S S S | &#124; |
| 12000 | S S S S S S S S S S S S S S S S S S | &#124; |
| 12250 | S S S S S S S S S S S S S S S S S S | &#124; |
| 12500 | S S S S S S S S S S S S S S S S S S | &#124; |
| 12750 | S S S S S S S S S S S S S S S S S S | &#124; |
| 13000 | S S S S S S S S S S S S S S S S S S | **Akt IV** |
| 13250 | S S S S S S S S S S S S S S S S S S | &#124; |
| 13500 | S S S S S S S S S S S S S S S S S S | &#124; |
| 13750 | S S S S S S S S S S S S S S S S S S | &#124; |
| 14000 | S S S S S S S S S S S S S S S S S S | &#124; |
| 14250 | S S S S S S S S S S S S S S S S S S | &#124; |
| 14500 | S S S S S S S S S S S S S S S S S S | &#124; |
| 14750 | S S S S S S S S S S S S S S S S S S | &#124; |
| 15000 | S S S S S S S S S S S S S S S S S S | &#124; |
| 15250 | S S S S S S S S S S S S S S S S S S | &#124; |
| 15500 | C C S S S S S S S S S R S S S S S S | &#124; |

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| 15750 | C R C C S S S S S S S R R S S S S | **|** |
| 16000 | C **K K** R C **K** S R S S S **K** S R R R S | **|** |
| 16250 | G **K K K K** R R R R **K** S R **K K K** | **Akt V** |
| 16500 | G **K K K K K** R **K K K K K** | **|** |
| 16750 | G **K K K K K K K K K K** | **|** |
| 17000 | **K K K K K K K K** | **|** |
| 17250 | **K K K K K K** | **|** |
| 17500 | **K K K K** | **|** |
| 17750 | **K K K** | **|** |
| 18000 | **K** | **|** |

**Table 3 MF3C-attribution in *The Jew of Malta***

It is obvious that the larger window sizes make the reading of the table difficult, and this shows particularly at the beginning and at the end of tables. In Act V the largest window returns Shakespeare throughout the whole Act. But this result is derived from the window, the measurement of which starts at 13 000 words, i.e. in the middle of Act IV where Shakespeare is predominant. If we trust the steady results of smaller windows in Act V it is Thomas Kyd who is indicated as author of this part of the play. In Act I this problem does not exist as Nashe is present in both the smaller and the larger windows.

MF3C results and larger windows are normally regarded as more trustworthy than MF1W, MF2C and window sizes around and below 1 000 words. But it is quite rewarding to look for the majority of attributions in the various approaches. Figure 22 gives a clear picture as far as Acts II, III and IV are concerned where Shakespeare, Kyd and Shakespeare are the corresponding authors. Once again it is Acts I and V where deviations from the MF3C-results of Table 3 can be observed. The distinct Nashe attribution of Act I looks precarious when confronted with MF1W and MF2C. Particu-

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larly in the second half of Act I Kyd's vocabulary makes itself felt, and the beginning of the Act returns even Marlowe.
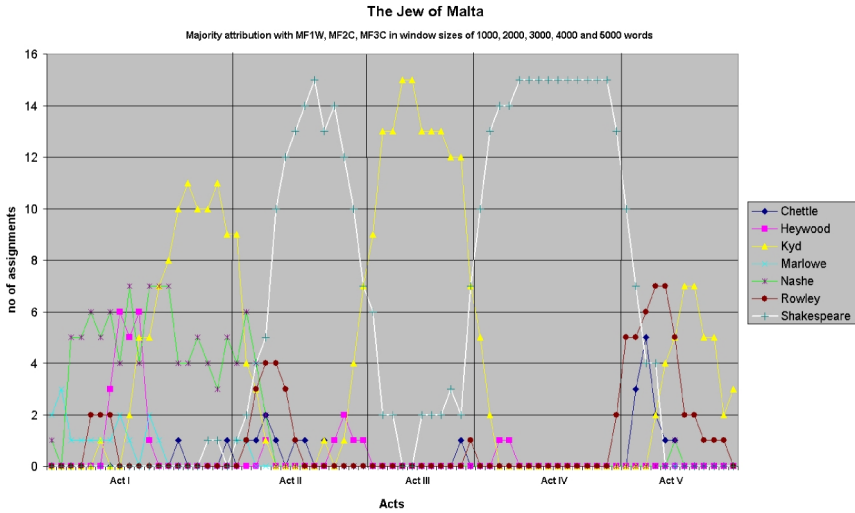


**Figure 22 Authorship attributions with MF1W, MF2C, and MF3C**

Could it be that Marlowe contributed to Act I and then bailed out as so often? Of course this is only a wild assumption, but tradition has it that Marlowe is the author of the play. The position of Shakespeare and Kyd at the time when *The Jew of Malta* was written was not that of established authors. It might not even be erroneous to presume a principal-agent relationship.

With recourse to classifications one usually encounters a high degree of conformity in the overall results when a non-collaborative situation is given. In the case of a collaborative scenario the degree of non-conformity can be substantial. And yet, the majority attributions with delta-, svm-, and nsc-classifiers yield a sequence of 500-word chunks (3 000 word-windows) that is not totally adverse to Rolling Delta-results: nashe, mar/kyd, nashe, nashe, nashe,

kyd/shak, shak/nashe, shak/nashe, shak, shak, shak, shak, shak, shak, shak, shak, kyd, kyd, kyd, shak, shak, shak, shak, shak, shak, shak, shak, shak, shak, kyd, kyd. When the 500-word chunks are based on a window size of 5 000 words the majority attributions (MF1W, MF2C, MF3C) of delta, svm and nsc return mostly Shakespeare, and only at the beginning do we find Nashe followed by 5 Kyd-chunks. Once again the enclosing and incorporating feature of larger windows is visible. One can therefore conclude that the delta-classification with MF3C based on a 3 000 word window is not altogether wrong:
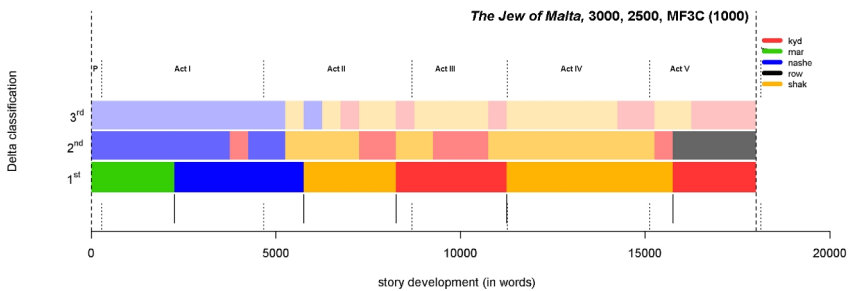


**Figure 23 Classificatory attribution including** M**arlowe**

Apart from the Marlowe attribution at the beginning the correspondence between Table 3 and Figure 23 confirms the overall finding that Shakespeare and Nashe wrote the play. As to its beginning the Nashe-Marlowe connection remains vague and indeterminate.

Shakespeare's share in *The Jew of* M*alta* is further confirmed by opposing the mean vocabulary of Shakespeare and co-authors with Craig's zeta and placing the five acts given as a 'mar' in the chart between them. Their position is inconspicuous with Nashe, but in the Shakespeare-Kyd confrontation displayed below there is a con-

vergence towards Shakespeare's preferred vocabulary – or a discernable turning away from Kyd's medium-ranged vocabulary (see Figure 24).
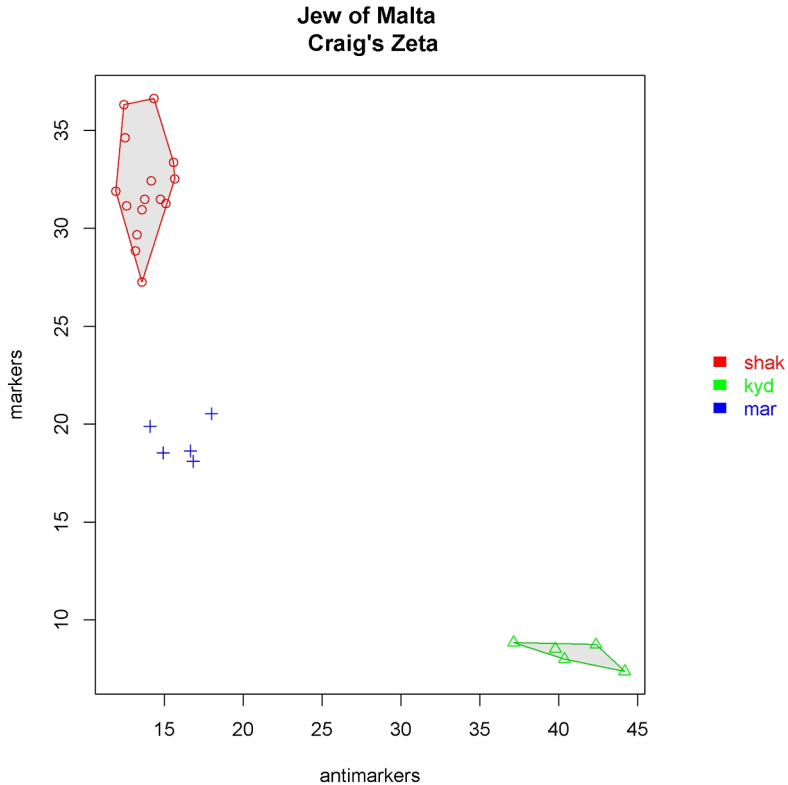


**Figure 24 Acts I – V of *The Jew of Malta* and their distances towards the corpora**

Thomas Heywood, who is supposed to have contributed the prologue and epilogue of the 1633 edition of the play, also deserves a mention. In the preliminary evaluations his shares were too small to have a statistical effect. The major result of this investigation must be seen in the prominent role of Shakespeare and Kyd in

writing this play, the topic of which found its sequel in *The Merchant of Venice*.

Chambers tells us that the first recorded performance was in 1592 and that the play was acted by Lord Strange's Men seventeen times between 26 February 1592 and 1 February 1593. In fact, this is the time when an outbreak of the plague had struck London, and it is
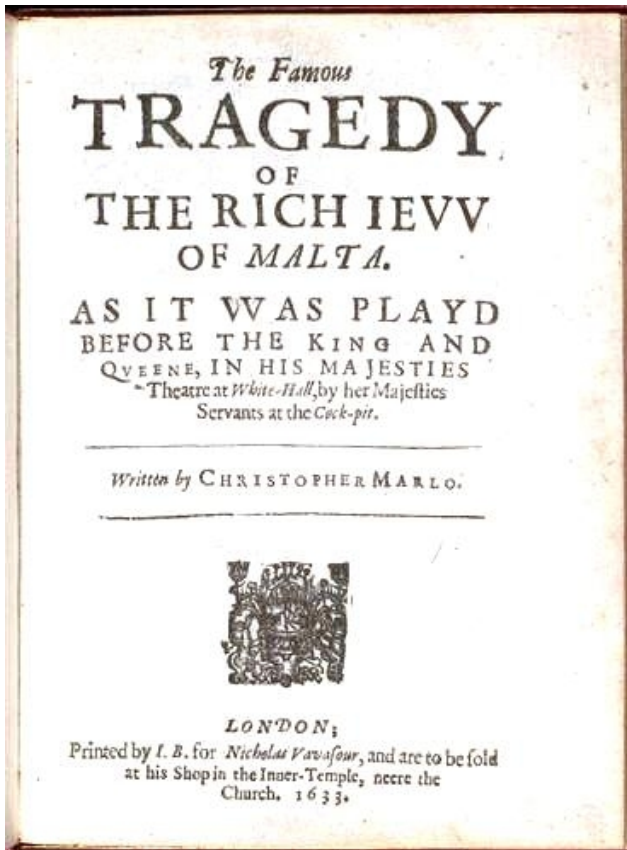


known that Lord Strange's Men and the Lord Admiral's Men had founded a touring company under the auspices of the Earl of Pembroke. Their first tour into the provinces was a financial disaster and a year later in 1593 they performed *3 Henry VI*, Marlowe's *Edward II* and *The Taming of a Shrew* which – as we know today – is a pure Shakespeare programme. Shakespeare was purported to have been a member of the company. *The Jew of Malta* may well have been an issue in their first tour, and, needless

to say, there is no sign of Marlowe in this context. Later *The Jew of Malta* was performed by Sussex's Men on 4 February 1594, and by a combination of Sussex's and Queen Elizabeth's Men on 3 and 8 April 1594. More than a dozen performances by the Lord Admiral's Men (also known simply as the Admiral's Men) occurred between May 1594 and June 1596.[12] There is of course a general link between the Admiral's Men, who were acting for the impresario Henslowe, and Marlowe. One can rightly assume that the *Jew of Malta* had in this way become the property of Henslowe who pocketed the play and secured his property by naming the dead Marlowe as its author.

## The Massacre at Paris

*The Massacre at Paris* is generally seen as a memorial reconstruction by actors, due to its brevity and incompleteness. Lord Strange's Men performed the play under the title *The Tragedy of the Guise* on 30 January 1593 and Chambers reports that subsequently the Admiral's Men performed *The Guise* or *The Massacre* ten times between 19 June and 25 September 1594.[13] In the Diary of Philip Henslowe the play is marked as "ne," which might refer to a new play or simply to the Newington Butts theatre. The play takes up the historical events around the assassination of the Duke of Guise and his brother the Cardinal of Guise in December 1588, followed by the killing of the French king Henry III in August 1589 by the fanatical Dominican monk Jacques Clément. All these events were of the utmost topicality for Protestant England as the defeat of the Spanish Armada had only just come to pass. The reference to Mar-

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[12] Chambers, Vol. 3, pp. 424–5.
[13] Chambers, Vol. 1, p. 323.

lowe as the author of the play may once again have to do with Henslowe, who claimed it for the repertoire of the Lord Admiral's Men and may have given it its present title, whereas Lord Strange's Men were linked with Shakespeare before he changed over to the Lord Chamberlain's Men in 1594. The Collier Leaf on the next page could be part of the original manuscript. Its speech is longer than in the printed text and was detected by John Payne Collier who is often named as a notorious forger. Wikipedia has reproduced the page and the subtitle is certainly eye-catching with its comma between "author" and "of Christopher Marlowe's *The Massacre at Paris*".

Author's foul sheets. Recto and verso of a scrap of paper bearing lines, presumably in the handwriting of the author, of Christopher Marlowe's *The Massacre at Paris* (1593). Reproduced from Folger Shakespeare Library Ms. J. b. 8. See p. 116.

**Figure 25 Collier Leaf of** *The Massacre at Paris*

A brief look at the attribution scheme where the window sizes of 1 000, 2 000, 3 000, 4 000 and 5 000 words are displayed horizontally for MF1W, MF2C and MF3C and the sequential development of the play is given vertically in the number of words, tells about the insecure status of the incomplete text.

| T | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| T | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| O | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 500 | L | | 1 | W | | S | | 2 | C | | S | | 3 | C | |
| 750 | M | | | | | M | | | | | M | | | | |
| 1000 | S | L | | | | K | S | | | | L | S | | | |
| 1250 | L | L | | | | L | S | | | | L | S | | | |
| 1500 | L | L | S | | | L | R | R | | | L | S | S | | |
| 1750 | L | L | S | | | R | R | R | | | R | L | S | | |
| 2000 | M | S | S | M | | R | R | R | R | | R | R | S | S | |
| 2250 | M | S | M | M | | R | R | R | R | | R | S | S | S | |
| 2500 | S | S | M | S | M | R | R | R | R | R | S | R | S | S | S |
| 2750 | S | S | S | M | M | R | R | R | R | R | S | R | S | S | S |
| 3000 | S | S | S | L | M | R | R | R | R | R | S | S | S | S | S |
| 3250 | S | S | M | L | M | R | R | R | R | R | S | S | S | S | S |
| 3500 | M | S | M | M | L | S | R | R | R | R | L | S | S | S | S |
| 3750 | M | L | S | M | L | R | R | R | R | R | L | S | S | S | S |
| 4000 | L | M | M | M | M | R | R | R | R | R | L | S | S | S | S |
| 4250 | L | L | M | M | M | S | S | R | R | R | L | S | S | S | S |
| 4500 | L | L | M | S | S | L | S | S | R | R | L | L | S | S | S |
| 4750 | L | L | M | M | S | L | S | R | R | R | L | L | S | S | S |
| 5000 | L | L | M | M | S | S | S | S | R | R | L | S | S | S | S |
| 5250 | L | L | S | M | S | S | S | S | R | R | L | L | S | S | S |
| 5500 | S | S | S | M | S | A | S | R | R | R | S | S | S | R | S |
| 5750 | M | S | S | S | S | S | S | R | R | R | M | S | R | S | S |
| 6000 | S | S | S | S | S | S | S | R | R | R | R | S | R | S | S |
| 6250 | S | M | S | S | S | R | R | R | R | R | R | S | S | S | S |
| 6500 | M | S | S | S | S | R | R | R | R | R | R | S | S | S | S |
| 6750 | S | S | S | S | S | R | R | R | S | R | R | R | S | S | S |
| 7000 | S | S | S | S | S | R | R | R | S | R | R | R | S | S | S |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7250 | S | S | S | S | R | R | R | R | R | S | S | S |
| 7500 | S | S | S | S | R | R | R | R | S | R | S | S |
| 7750 | S | S | S | | R | R | R | | S | S | S | |
| 8000 | K | S | S | | S | S | R | | S | S | S | |
| 8250 | S | S | | | S | S | | | S | S | | |
| 8500 | S | S | | | S | S | | | S | S | | |
| 8750 | S | | | | S | | | | S | | | |
| 9000 | S | | | | S | | | | S | | | |

**Table 4 Attribution scheme of** *The* M*assacre*

In stark contrast to previous attributions there are only very few equal attributions horizontally. For instance records MF2C an overwhelming majority of Rowley attributions whereas MF3C favours Shakespeare and MF1W in quite a number of cases Marlowe.
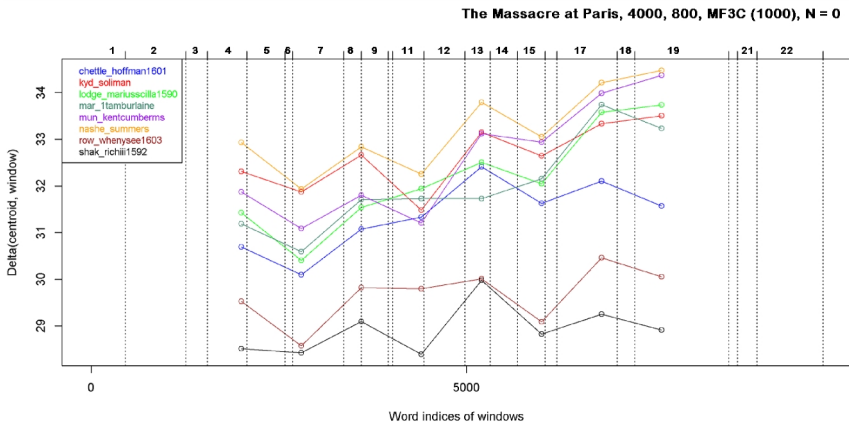


**Figure 26** *The* M*assacre at Paris* **– MF3C (1000)**

The stylistic references in Figure 26 point to Shakespeare and Rowley. The window size was 4000 words and Rolling Delta evaluated MF3C. As expected, different window sizes yield different shares, and for this reason the following three charts reproduce in a survey MF1W, MFn3C and MF3C. Each time, Shakespeare's reference text is in the foreground as a stylistic equivalent.

What are the immediate implications? The manuscript obviously does not conform to the handwriting that we find in the *Thomas More* manuscript. Could the handwriting have been counterfeited, being actually that of Collier himself? Forgeries could only be detected by experts. And even if the pages are genuine, anyone who was in one way or the other involved in the production of the play, or its preservation for the Admiral's Men, could have written them.
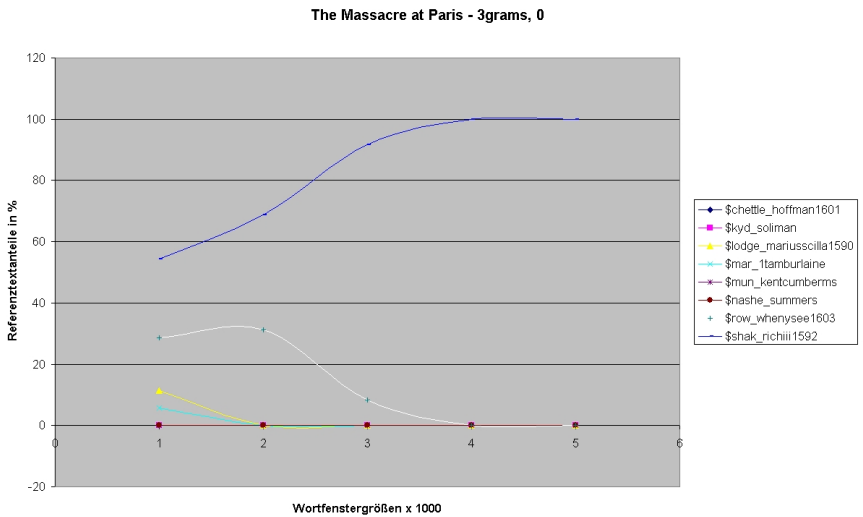
**The Massacre at Paris - 1w**
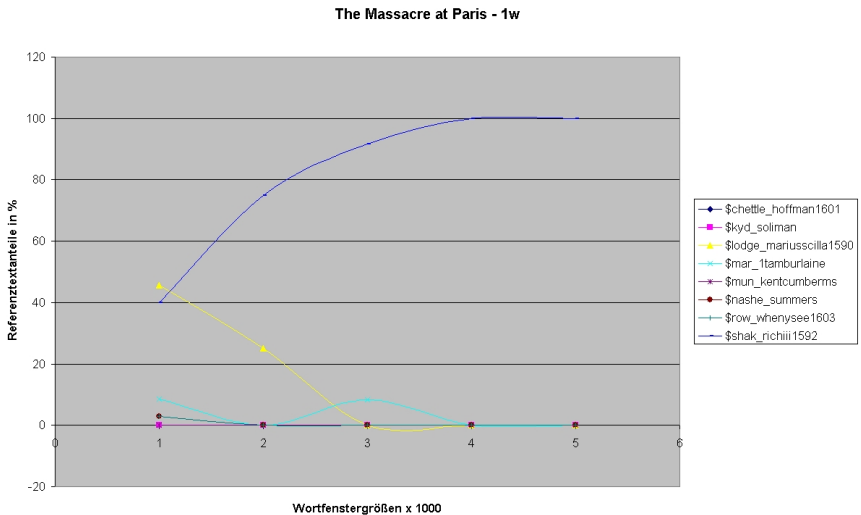


**Figure 27 window sizes and authorship attributions with MF1W**
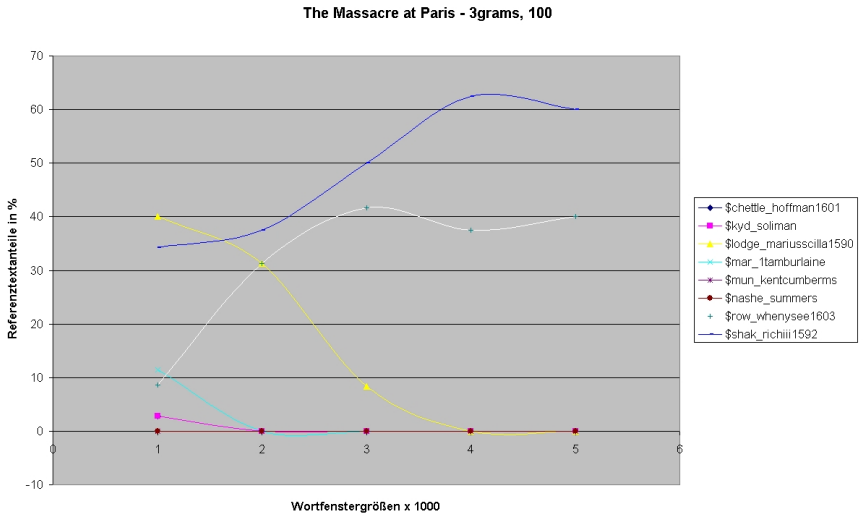
**Figure 28 window sizes and authorship attributions with MFn3C**

**Figure 29 window sizes and authorship attributions with MF3C**

Methodologically it becomes clear that the culling value of 100 which measures only those variables present in all files does not

have enough data to yield statistically sound results. Contrary to this, relative word frequencies and character trigrams return 100 % Shakespeare from a window size of 4000 words upwards.[14]

As Marlowe and Lodge disappear in smaller windows the question arises how machine-learning programs and their classification procedures embedded in Rolling Classify behave towards the reference texts. The given example in Figure 30 was generated with *svm*. The second subordinated stripe is that of Rowley's reference text. But the individual text chunks of 500 words occasionally record other classifications as well, depending on the mathematical kernel and the encountered patterns.
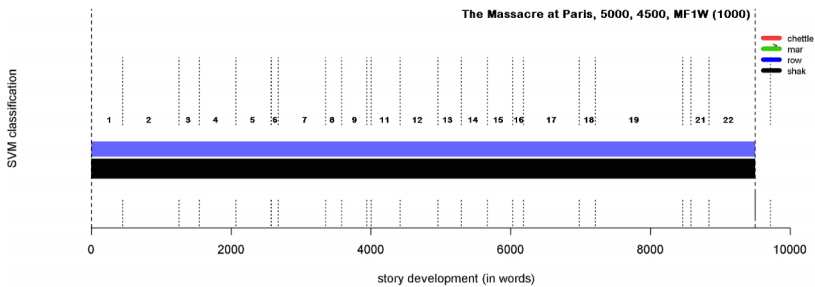


**Figure 30** *The Massacre at Paris* **– svm classification**

**nsc.words$classification.results**

classes assigned to particular test slices
 [1] shak shak shak shak shak shak shak shak shak shak
(total number of elements: 10)

**svm.words$classification.results**
classes assigned to particular test slices

---

[14] It might be of interest to know that *J Stylo*, another stylometric tool available in the US, requires 6500 words to produce reliable results.

[1] shak shak shak shak shak shak shak shak shak shak
(total number of elements: 10)

**delta.words$classification.results**
classes assigned to particular test slices
 [1] mar shak shak shak mar mar mar mar shak shak
(total number of elements: 10)

**nsc.mf3c$classification.results**
classes assigned to particular test slices
 [1] shak shak shak shak shak shak shak shak shak shak
(total number of elements: 10)

**svm.mf3c$classification.results**
classes assigned to particular test slices
 [1] row row shak shak row row row row shak shak
(total number of elements: 10)

**delta.mf3c$classification.results**
classes assigned to particular test slices
 [1] shak shak shak shak shak shak shak shak shak shak
(total number of elements: 10)

Four of six classifications return Shakespeare and only 11 of 60 chunks altogether name Marlowe and Rowley.

## *The Tragical History of Doctor Faustus*

This milestone of English theatre history exists in two printed versions, the A text dates back to 1604 and the B text to 1616. The A text is closer to Marlowe time-wise, but the quarto also contains allusions to the Lopez affair of 1594 when Marlowe was already dead. Both editions have many identical parts, but structurally they are different. The A text is much shorter than the B text, and whole

episodes are missing. No wonder that the notion of a *bad quarto* has crept in, just as in Shakespeare's plays, where the alleged original of the First Folio was compared to earlier copies. The B text contains a number of lowbrow comical scenes that were untypical of Marlowe. Perhaps these were additions by William Bird and Samuel Rowley, that Henslowe had asked for in 1602. Wikipedia also gives Thomas Nashe and Thomas Dekker next to William Rowley as contributors. This mixture of authors could be just right for Rolling Delta and Rolling Classify. The fact that Marlowe is seen as author of the play has to do with the history of the Faustus motif. The *G*erman *Faustbuch* came out in 1587, and only one year later the English translation *Historie of the Damnable Life, and Deserved Death of Doctor Iohn Faustus* was published. A copy of 1592 is still extant. On 28 February 1589 Marlowe entered the title *A Ballad of the life and death of doctor Faustus the great conquerer Doctor Faustus* in the Stationer's Register, followed by *The Tragicall History of Doctor Faustus* on 18 December 1589. The play was performed in the same year by the Admiral's Men in the Rose Theatre, and Ned Alleyn had the lead. This means that there may have been transformations of the original text and the style of the copies of 1604 and 1616 would be characterised more by the supplements and additions. A very first analysis of the A Text with Rolling Delta and MF3C was undertaken with a window size of 4000 words. The reference texts are in the top left corner of the chart and the best-fitting measuring points seem to indicate an older text with the style of Kyd in Acts I and II, Nashe in II,3,  followed by a more recent text by Dekker.
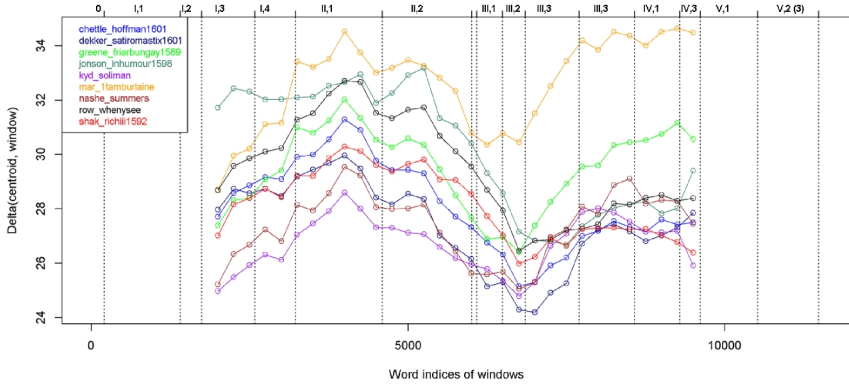
**Figure 31** *Doctor Faustus* **A – MF3C (1000)**

It is apparently Kyd's style that closes the play. It is obvious that the larger populations of larger windows collides with the presentation of scenes, and it is only legitimate to see how window sizes and the type of variables (MF1W, MF2C, MF3C) interact.

| T | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| T | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| O | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 500 | G | | C | w | | N | | 2 | c | | N | | 3 | c | | |
| 750 | G | | | | | N | | | | | M | | | | | |
| 1000 | G | G | | | | M | N | | | | M | N | | | | |
| 1250 | G | G | | | | N | N | | | | G | N | | | | |
| 1500 | K | G | G | | | N | N | N | | | K | K | N | | | Act I |
| 1750 | K | S | K | | | N | N | N | | | K | K | N | | | |
| 2000 | S | S | K | K | | N | N | N | N | | K | N | K | K | | |
| 2250 | S | K | K | K | | N | N | N | N | | K | N | K | K | | |
| 2500 | S | K | K | K | K | C | N | N | N | N | N | | K | K | K | |
| 2750 | J | K | K | K | K | C | N | N | N | N | J | N | K | K | K | |
| 3000 | J | K | K | K | K | 𝔻 | N | N | N | N | 𝔻 | K | K | K | K | |
| 3250 | 𝔻 | K | K | K | K | N | N | N | N | N | 𝔻 | K | K | K | K | |
| 3500 | K | K | K | K | K | N | N | N | N | N | K | K | K | K | K | |

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3750 | **K** | **K** | **K** | **K** | **K** | N | N | **K** | N | N | **K** | **K** | **K** | **K** | **K** | |
| 4000 | **K** | **K** | **K** | **K** | **K** | N | N | N | **K** | N | **K** | **K** | **K** | **K** | **K** | |
| 4250 | **K** | **K** | **K** | **K** | **K** | N | N | N | **K** | N | **K** | **K** | **K** | **K** | **K** | |
| 4500 | **K** | **K** | **K** | N | **K** | N | N | N | N | **K** | N | **K** | **K** | **K** | **K** | Act II |
| 4750 | D | N | **K** | **K** | **K** | N | N | N | N | **K** | N | **K** | **K** | **K** | **K** | |
| 5000 | N | N | N | **K** | D | N | N | N | N | **K** | N | **K** | **K** | **K** | D | |
| 5250 | N | N | G | **K** | D | N | N | N | N | N | N | **K** | **K** | D | | |
| 5500 | D | G | G | **K** | **K** | N | N | N | N | **K** | N | **K** | **K** | **K** | | |
| 5750 | G | G | G | G | **K** | N | N | N | N | **K** | **K** | D | **K** | **K** | | |
| 6000 | G | G | D | G | G | N | N | N | N | **K** | **K** | D | N | **K** | |
| 6250 | G | G | G | G | D | G | N | N | N | G | D | D | D | **K** | | |
| 6500 | R | D | G | D | D | N | D | N | N | G | D | D | D | N | | |
| 6750 | D | C | D | D | D | D | C | D | N | C | D | D | D | D | | Act III |
| 7000 | J | D | D | D | D | D | N | D | C | N | D | D | D | D | D | |
| 7250 | D | D | D | D | S | D | D | C | C | C | D | D | D | D | D | |
| 7500 | D | D | C | J | C | D | C | C | R | R | D | D | D | D | D | |
| 7750 | D | J | J | J | S | J | R | R | S | J | J | J | D | D | | |
| 8000 | C | J | J | C | S | **K** | J | J | R | **K** | **K** | J | J | C | D | |
| 8250 | J | J | J | S | S | J | J | R | R | **K** | J | J | J | S | D | |
| 8500 | J | J | J | S | S | J | J | R | R | **K** | J | J | J | D | S | |
| 8750 | J | J | J | S | S | J | J | R | **K** | **K** | J | J | J | D | S | Act IV |
| 9000 | J | J | S | **K** | S | J | R | **K** | **K** | **K** | J | J | **K** | S | S | |
| 9250 | J | J | S | S | | J | **K** | **K** | **K** | | J | S | **K** | S | | |
| 9500 | J | **K** | **K** | S | | R | **K** | **K** | **K** | | J | **K** | S | **K** | | |
| 9750 | S | S | **K** | | | **K** | **K** | **K** | | | S | **K** | **K** | | | |
| 10000 | **K** | **K** | **K** | | | **K** | **K** | **K** | | | **K** | **K** | **K** | | | |
| 10250 | **K** | **K** | | | | **K** | **K** | | | | **K** | **K** | | | | |
| 10500 | **K** | **K** | | | | **K** | **K** | | | | **K** | **K** | | | Act V |
| 10750 | **K** | | | | | **K** | | | | | **K** | | | | | |
| 11000 | **K** | | | | | **K** | | | | | **K** | | | | | |

**Table 5** *Doctor Faustus* **A –Attribution depending von window sizes and types of variables**

The result is in parts counterproductive, as clear attributions are replaced by confusing constellations. However, there are regularities which make sense. One refers to window sizes, where the larger window of 5000 words may have swallowed attributions of

smaller text sections. In windows of 1000 and 2000 words the number of variables may be too low, particularly with MF1W. If results are returned by only one type of variable, this can be regarded as doubtful. What has to be preferred would be multiple answers, and here one does actually find correspondences. Apart from MF2C Acts I and II seem to come from Kyd, but Nashe cannot be totally excluded. In Act III there are quite a number of references to the letter D, so Dekker is very likely the author of scenes in Act III. Wheras Act V bears the stylistics of Kyd Act IV remains opaque with no clear indication. Jonson, Rowley and Shakespeare are all candidates and may well have all contributed. Act V would then be older, possibly closer to the original. The only common ground is the exclusion of the Marlowe reference text *Tamburlaine*, part 1. It is only reasonable to display graphically  the qualitative dependencies arising from different window sizes and word and character evaluations. Figure 32 compares the top attributions and shows the discrepancy between MF1W and MF3C on the one hand and MF2C on the other. There is also a structural similarity between MF1W and MF3C in that the second rated reference text by Dekker shows rising figures as the windows become bigger.

A provisional conclusion would have to stress the outstanding relevance of Thomas Kyd, as far as the originally performed play is concerned, before additions were added and printed in 1604. Kyd died on 16 July 1594. After that, the Admiral's Men played *Doctor Faustus* 25 times in three years between October 1594 and October 1597. It would have been Dekker who changed the morality play contents into entertaining conjuring scenes with Faustus travelling all over Europe ending up in the Pope's privy chamber.
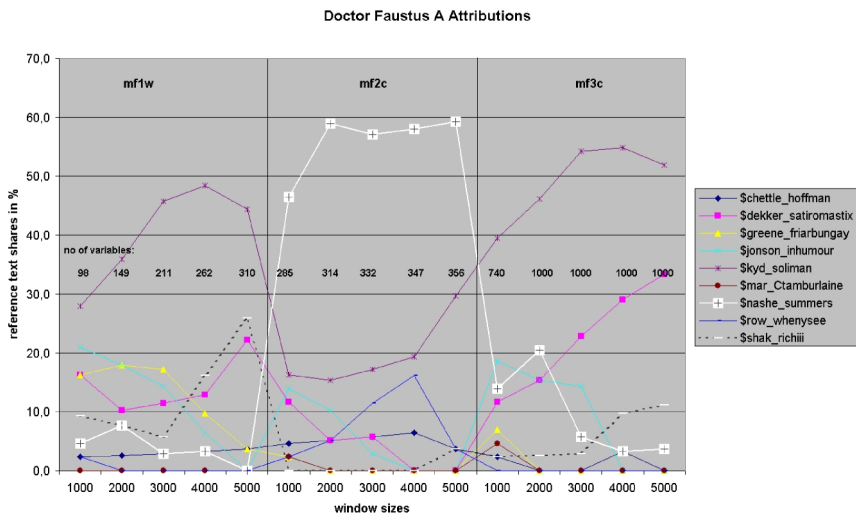
**Figure 32 Doctor Faustus A – MF1W (1000)**

The conjecture that the A text was a bad quarto of the more complete 1616 B text is apparently invalid, as the Dekker vain was continued in the later edition.

But before too much stress is laid on the original play and Kyd's role in it other approaches have to be checked as well. Creig's zeta which deals with the vocabulary in the middle frequency range places *Faustus* in a equidistant position between Kyd and Nashe. (see Figure 33).
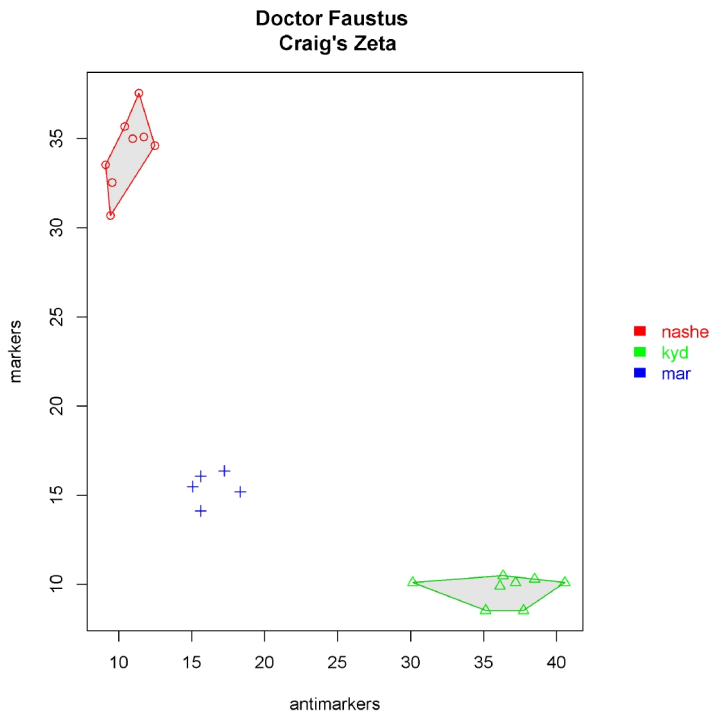
**Figure 33** *Doctor Faustus* **– equidistant position of mediate vocabulary range**

As can be expected classifications with *nsc, svm* and *delta* have contrastive results considering the stylistic mixtures that Rolling Delta found. And yet, classification friendly *nsc* found a pure Nashe-Kyd sequence with MF3C.

**nsc.mf3c$classification.results**
classes assigned to particular test slices
 [1] nashe nashe nashe nashe nashe nashe kyd kyd kyd
[10] kyd kyd kyd kyd
  (total number of elements: 13)

*Delta* too has a penchant for Kyd-Nashe, but with a clear preference for Kyd.

**delta.mf3c$classification.results**
classes assigned to particular test slices
 [1] kyd kyd kyd kyd kyd kyd kyd kyd kyd nashe
 [11] kyd kyd kyd
(total number of elements: 13)

On the other hand *svm* presents another version which is in line with Rolling Delta results; here Shakespeare comes into play again which also corresponds to evaluations with MF1W.
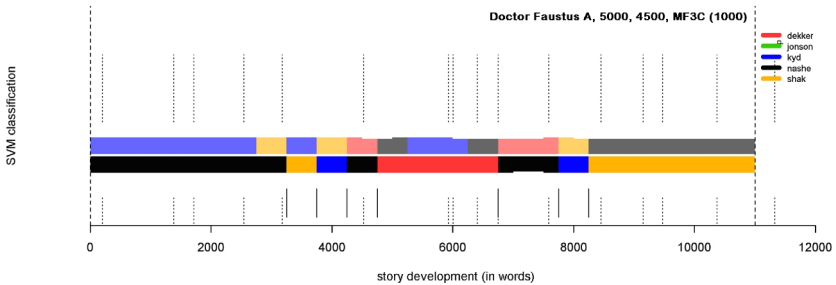


**Figure 34  Doctor Faustus A – attributions with *svm* classifiers**

If we subject the B text of 1616 to Rolling Delta with a window size of 3000 words and analyse character trigrams, we get the following survey (Figure 35) that reports a large number of references. The given attributions are Kyd, Nashe, Marlowe, Rowley, Chettle, Jonson, Shakespeare and once again Kyd. This picture becomes even more confusing when more window sizes are tested and MF1W is checked as well. MFn3C has in any case been left out due to its low number of variables. Figure 37 gives a picture of the weird schedule of attributing the text to authors. What one can gain at least is the insight that larger windows also have a larger capacity for discriminating between styles.

**Doctor Faustus B, 3000, 600, MF3C (1000), N = 0**
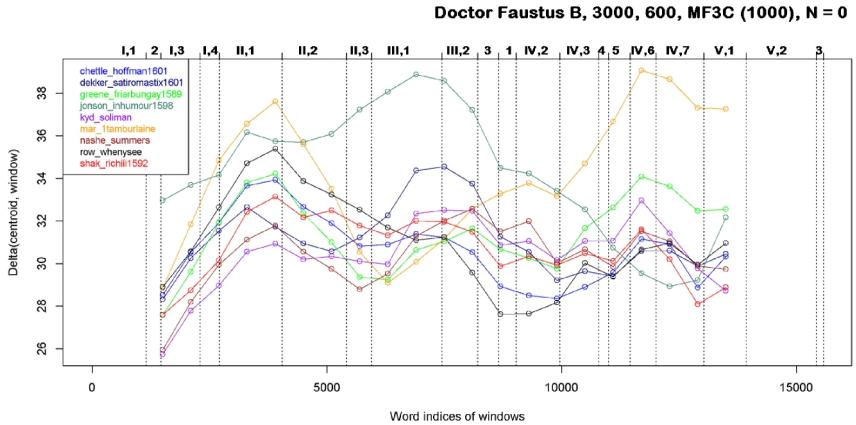


Figure 35 *Doctor Faustus* **B – MF3C (1000)**

**Faustus B, 1w**
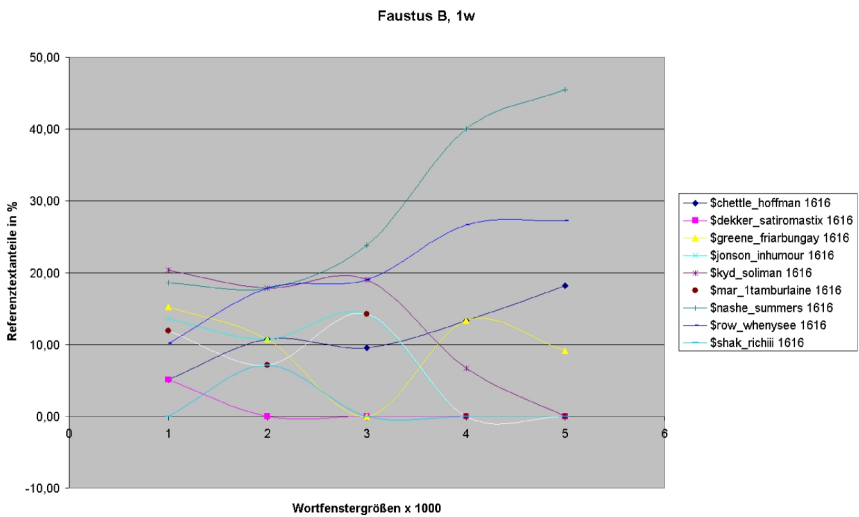


**Figure 36 window sizes and authorship attributions with MF1W**

With the elimination of unsuitable reference texts (Jonson, Dekker, Marlowe, Kyd and Shakespeare) in the 5000 word window, Nashe, Rowley, Chettle and *G*reene remain as contributors. This of course has to be crosschecked with other approaches as *G*reene,

Chettle and Nashe had already been dead for a very long time in 1616.

Character trigrams produce the same diffuse picture where different window sizes do not even convey steady trends but go up and down unchecked. Nashe is awarded the highest value in the 5000-word window after an inconspicuous start, followed by Rowley, Shakespeare and *G*reene, whereas Jonson and Marlowe are reduced to zero in the larger windows.
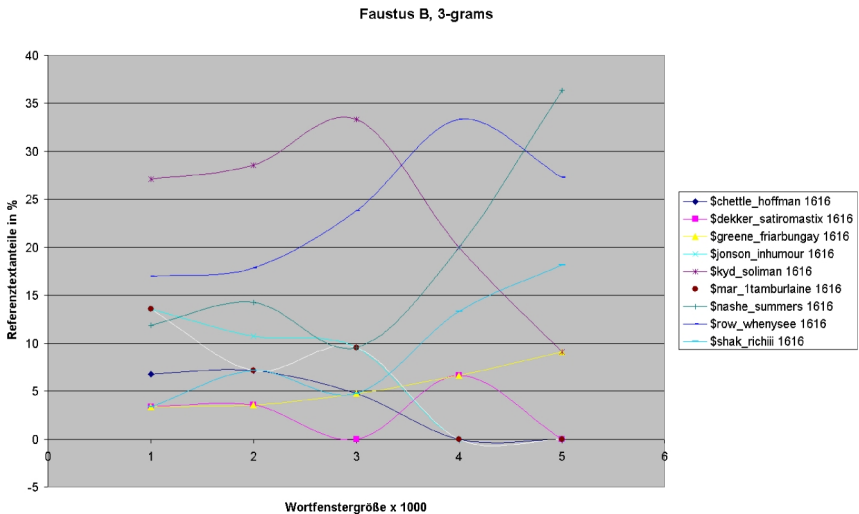


**Figure 37 windows sizes and authorship attribution with MF3C**

In a comparison between the A and B text a very rough division would stress the major role of Kyd and Nashe for the A text, to which the B text would add Rowley, but also Greene and Shakespeare. The smaller windows even returned Marlowe at the beginning of Act III.

If we proceed to the average ranking of reference texts and portray the way they participate in the best-suited delta values we are given once again the major role of Nashe and Kyd.
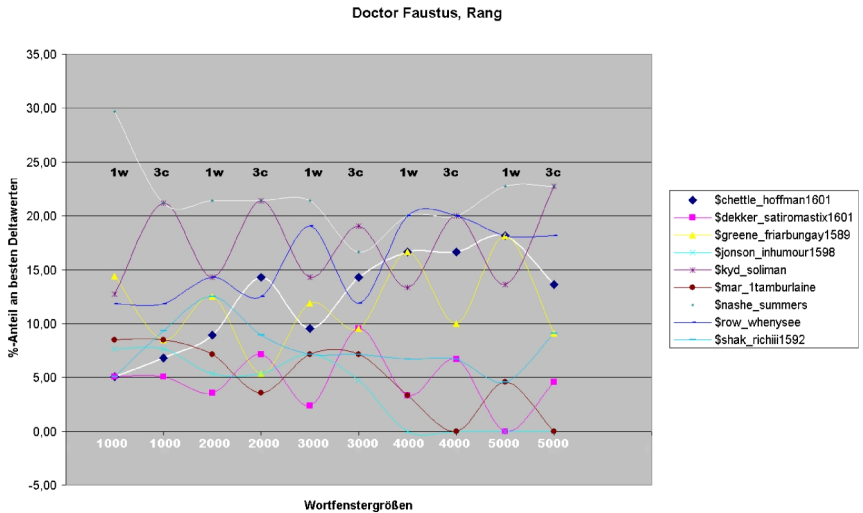


**Figure 38** *Doctor Faustus* **B - stilistic ranking of reference texts in %**

Both are followed by Rowley, who was hardly present in the 1604 edition, so that his position in the B text can be deduced from the additions he made. Chettle and Greene also have their stylistic share in the text, just like Shakespeare and Dekker. Marlowe and Jonson disappear in the larger windows, but if Marlowe had a hand in the play, this would be III, 1, the audience scene with the pope in Rome[15] (see also Figure 37 and the Appendix). This scene opens a series of comedic additions by Rowley (III, 2 bis IV, 3). If Jonson were involved, his style would prevail in IV, 6 und 7, the horse-courser scene and the conjuring tricks at the Duke of Van-

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[15] See also David Bevington and Eric Rasmussen, eds. *Doctor Faustus: A- and B-texts (1604, 1616)*, (Manchester: Univ. Press, 1993), pp. 72-73

holt. These are the major changes undertaken for the 1616 edition. But there are some minor changes as well. The A text gives Wertenberg as the place where Faustus studied. This malapropism for Württemberg is reminiscent of Calvinist attitudes that found their equivalent in Puritanism in England, culminating in the idea of predestination. The 1616 edition gives Lutheran Wittenberg as Faustus's place of study, probably a minor change in the concept of an enemy, but arousing as well the theological concept of grace.
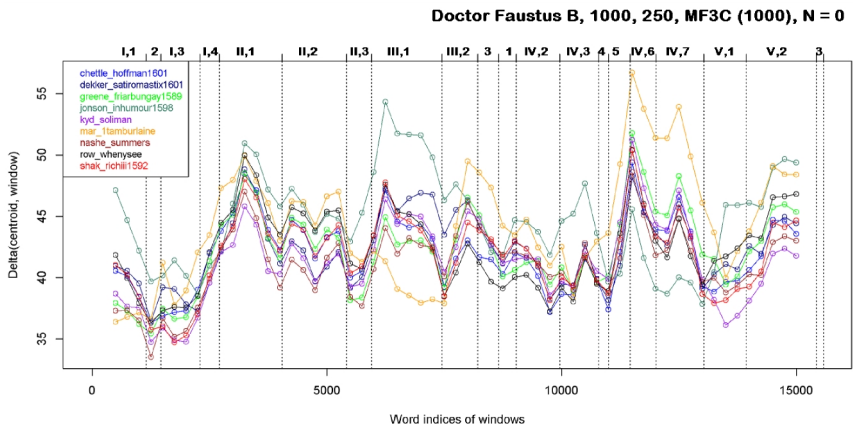


**Figure 39** *Doctor Faustus* **B – MF3C (1000)**

To conclude the Faustus investigations it makes sense to come back to Table 5 and to compare the attributions of the A text and the B text directly, using window sizes from 1000 to 5000 words and MF3C as variables. Due to the difference in length the acts are represented independently. Unfortunately the size of the table requires a lot of space. That is why it found its location in the appendix together with the discussion of the differences.

As far as Marlowe is concerned the final conclusion is disillusioning. Perhaps he was nothing more than the frontman whose atheism was gladly accepted by Nashe, Kyd and Chettle to present a

modern main character who dealt with the devil in a way that clearly surpassed the scope of morality plays. Of course, Marlowe too could have created such a figure, and perhaps he did. But, once again, as in so many other plays that carry his name, he may have acted as an initiator and inspirer, stimulating other playwrights. But his own character probably lacked the steadiness to conceive and execute his ingenious and brilliant ideas. The comparison between the A text and the B text, as put down in the appendix, suggests indeed that the A text is an abridged version of the B text, as the latter contains the same Kyd references and Marlowe signals. As such is could also be a readmission of an early original play, the text of which is not extant.

## Locrine

*The Lamentable Tragedie of Locrine* was entered in the Stationer's Register on 20 July 1594 and appeared a year later in print. The title page records that the play was 'newly set foorth, overseene and corrected By W.S.'

Accordingly, the tragedy found its way into Shakespeare's Third Folio of 1664 and also the Fourth Folio of 1685. The *Shakespeare Encyclopaedia* remarks that '"W.S." … may not be a claim of authorship, but may merely refer to the fact that "W.S." revised and edited the play for publication' (p. 462). Apart from William Shakespeare, the poet William Smith is named as an editor. Smith had been a disciple of Spenser and this

THE

Lamentable Tragedie of

*Locrine*, the eldeſt ſonne of King *Brutus*, diſcourſing the warres of the *Britaines*, and *Hunnes*, with their diſcomfiture:

*The* Britaines *victorie with their Accidents, and the death of* Albanact. *No leſſe pleaſant then profitable.*

Newly ſet foorth, ouerſeene and corrected, By *VV. S.*

LONDON
Printed by Thomas Creede.
1 5 9 5.

would explain that the play repeats historical data from Spenser's *Faerie Queene* (1590). The authorship question remained open until John Payne Collier found a note by the Master of the Revels,

George Buc, who had attributed the tragedy to Charles Tilney in an extant copy. Tilney had been executed for treason on 20 September 1586, and people believed that the note was another example of Collier's forgeries. But W.W. Greg argued for its authenticity and restored the note. Two points might be of importance. The title is given as Estrild, and there is a figure in *Locrine* called Estrild. The second piece of information is that 'some fellow has published it.' Chambers, however, relates the play to members of the University Wits, namely George Peele und Robert Greene.[16] This assumption would contradict research results by Thomas Merriam.[17] And in fact, the principal-component analysis carried out with MF3C gives the same relationships that Merriam had achieved with only a few function words.

*Locrine* (1) is positioned next to the two *Tamburlaines* in Figure 42, whereas *The Massacre at Paris (12)* and *The Jew of Malta* (11) can be found in totally different stylistic contexts.

1 = anon_locrine1594.txt
2 = chettle_hoffman1601.txt
3 = greene_jamesiv.txt
4 = greene_Selimus.txt
5 = kyd_soliman1592.txt
6 = kyd_spanishtrag1592.txt
7 = lodge_mariusscilla1590.txt
8 = lyly_motherBombie1588.txt
9 = mar_1tamburlaine1585.txt
10 = mar_2tamburlaine1586.txt
11 = mar_jewmalta1591.txt
12 = mar_massacre1593.txt
13 = nashe_summers1599.txt
14 = peele_david1599.txt
15 = peele_edwardi1593.txt
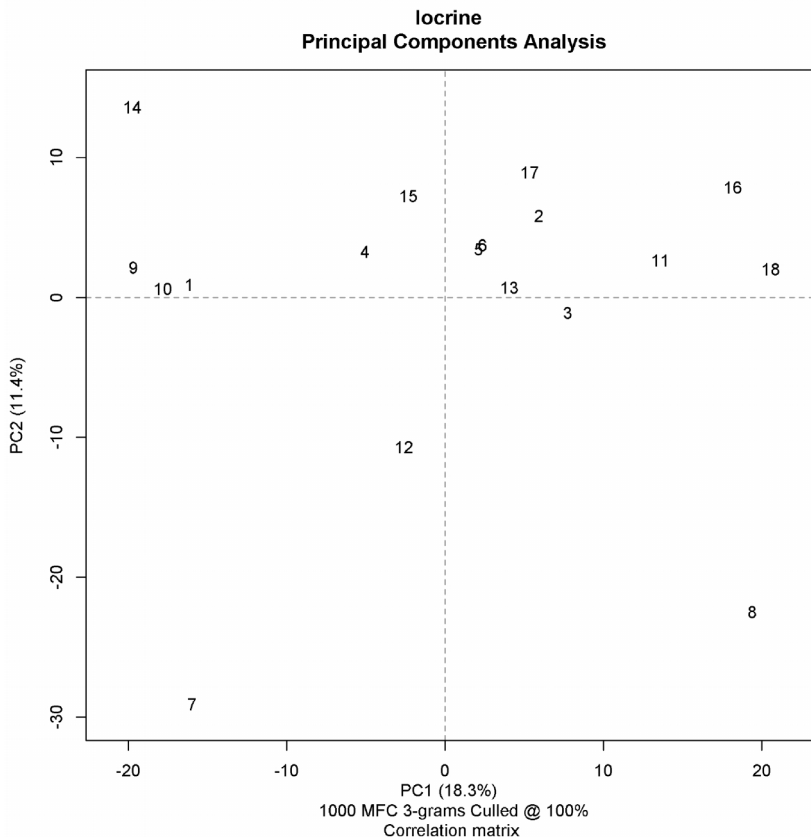16 = shak_errors1594.txt
17 = shak_richiii1592.txt
18 = shak_shrew1590.txt

---

[16] O.J. Campbell and E. G. Quinn (eds. ). *The Reader's Encyclopaedia of Shakespeare*. New York: Crowell, 1966, p. 462.

[17] Thomas Merriam. "Marlowe's Hand in Edward III Revisited," *Literary and Linguistic Computing*, vol. 11, No. 1, 1996, pp. 19-21.

**Iocrine**
**Principal Components Analysis**

Figure 40 PCA of selected texts

*Rolling delta* places *Locrine* next to *Tamburlaine 1* in both the 5000 and 2000-word windows. The Marlowe signal is clearly predominant. And even the presentation of Act I in Figure 41 that used a very small window of only 800 words, has an unmistakable result. This applies to all window sizes where the larger windows return a percentage of 100 for Marlowe's reference text *Tamburlaine 1* (see Figure 43).
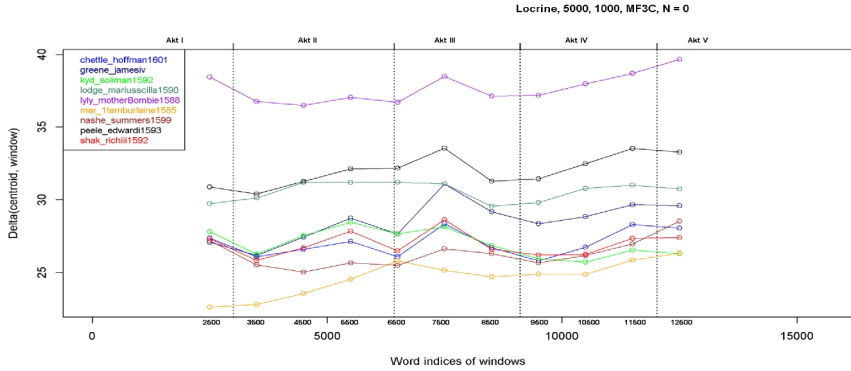
**Figure 41** *Locrine* **– MF3C (1000)**
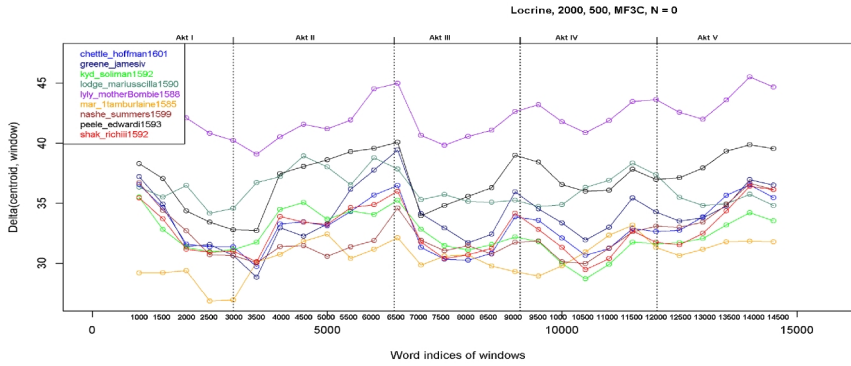


**Figure 42** *Locrine* **– MF3C (1000)**
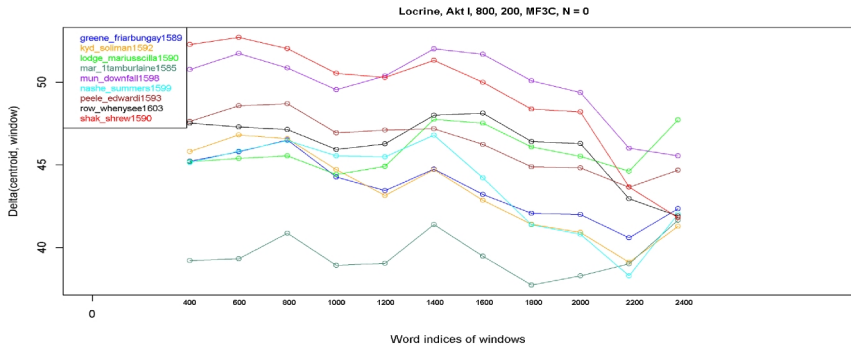


**Figure 43** *Locrine*, **Act I – MF3C (1000)**
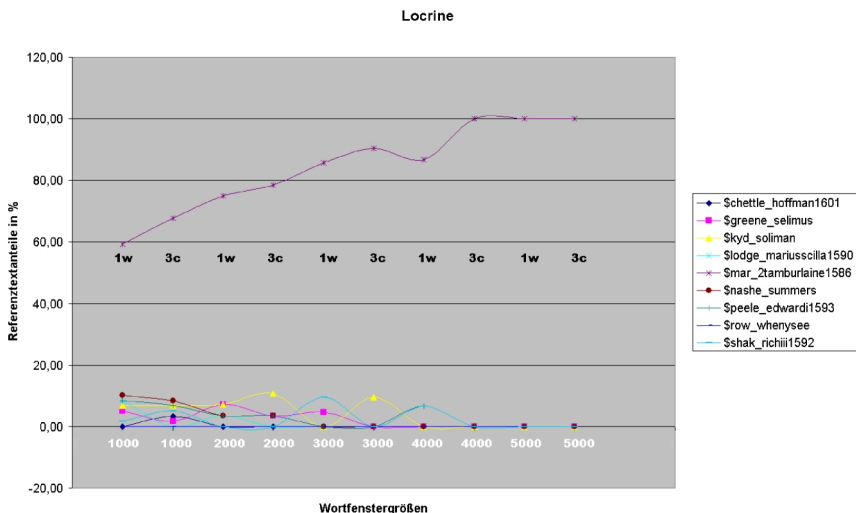
**Figure 44 window sizes and authorship attributions with MF1W and MF3C**

It is not really a surprise that machine-learning programs confirm the Marlowe attribution, as Figure 47 informs us with the delta classifier based on MF3C.
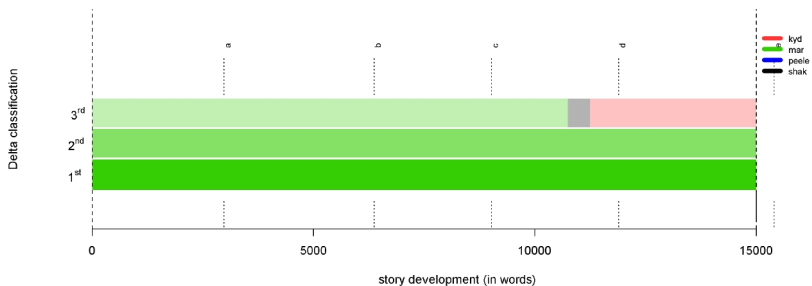


**Figure 45 Locrine – classification with MF3C**

The score given for *delta* is more than clear. But it is equally obvious that 21 text chunks of 500 words each will also contain occasional deviants.

**delta.mf3c$classification.results**
classes assigned to particular test slices
 [1] mar mar mar mar mar mar mar mar mar mar mar mar
[13] mar mar mar mar mar mar mar mar mar
(total number of elements: 21)

**svm.mf3c$classification.results**
classes assigned to particular test slices
 [1] mar mar peele mar mar mar mar mar mar mar
[11] mar mar mar mar mar mar mar mar mar mar
[21] mar (total number of elements: 21)

While *svm* gives one Peele reference, classification friendly *nsc* also names Shakespeare and Kyd according to the mathematical kernel of the procedure.

**nsc.mf3c$classification.results**
classes assigned to particular test slices
 [1] mar mar mar mar mar mar mar shak shak mar mar
[12] kyd shak shak shak shak shak shak shak shak kyd
(total number of elements: 21)

There is another relatively simple test for authorship attributions. Two texts are collated as if they were one text. The result can be seen in Figure 48. The lowest delta values achieved with MF3C are clearly distant from reference texts other than *Tamburlaine 2*. It is true that the values go up in the *Locrine* section, but this is a matter of degree not quality.
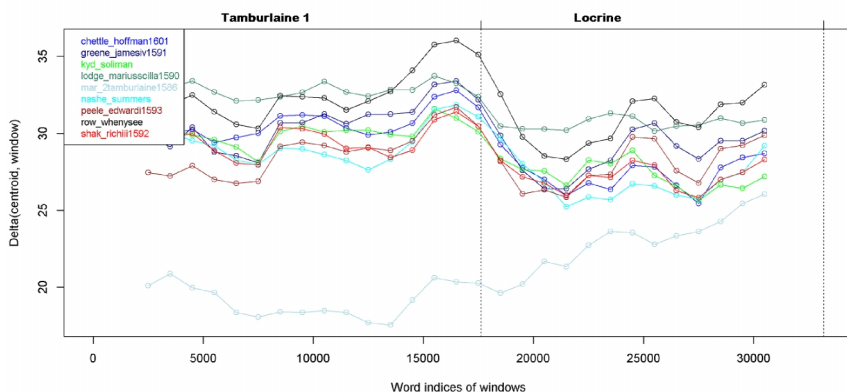
**Figure 46 collated texts of** *Tamburlaine 1* **and** *Locrine* **– MF3C (1000)**

To conclude: Marlowe is the author of *The Lamentable Tragedy of Locrine*. "W.S." on the title page may have been intended as a promotional measure in 1595 when the Marlowe hype connected with his spectacular death two years previously had subsided, and Shakespeare had won new ground with the Lord Chamberlain's Men since 1594. The poet and editor William Smith most likely lent his initials to the title page.

## *Evaluation*

The variety of approaches in the evaluation of Marlowe's works has resulted in quantitative irregularities as far as attributions are concerned. Qualitative trends and tendencies, however, yield a clearer picture. The seven plays that were classed as those of Marlowe in their editorial history do not represent a stylistically homogeneous unity. The two parts of *Tamburlaine* remain undoubted, and the same finding is true of *Locrine*, a play that has so far not found an author. *Dido, Queen of Carthage* was also linked to Thomas Nashe on the title page of the 1594 quarto, but as R Stylo has been able to prove beyond doubt, all stylistic markers refer to Thomas Kyd. Marlowe and Nashe could only be found at the beginning of the play, but this would explain the 1594 title page.

Overall, the history play *Edward II* bears the mark of Shakespeare and Peele according to both the Rolling Delta and Rolling Classify procedures of R Stylo. *Edward II* was performed together with *The Taming of a Shrew* by a touring company in 1593 when the plague had struck London. Actors from Lord Strange's Men and the Admiral's Men had joined under the auspices of the Earl of Pembroke to tour the provinces. It is very likely that Shakespeare was a member of the company on this tour which was a disaster in financial terms. As a result there was a general sell-off of assets on their return to London. *Edward II* may have come into the hands of Henslowe, who may have seen a chance of pocketing the play as well as *The Massacre at Paris* and *The Jew of Malta* by giving Marlowe as author. This, of course is conjecture, but the factual framework was provided by Chambers *et al*.

*The Jew of Malta* might also fall into this group of plays that were added to the repertoire of the Admiral's Men when, after the plague, the playing companies reorganised themselves. The Rolling Delta windows return the stylistics of Shakespeare, Nashe and Kyd. The larger proportions are allocated to Shakespeare (Acts 2 and 4), whereas Nashe seems to have written Act I. But Rolling Classify also records Marlowe in Act I. Once again he may have initiated the play and then bailed out.

*The Massacre at Paris,* written in 1592, is sometimes mentioned in connection with Marlowe's activities as a secret agent. Sir Francis Walsingham had witnessed the historical events at Paris as ambassador and could have passed on valuable information to Marlowe. *Rolling delta* finds mostly the style of Shakespeare and Rowley in the short fragmented text and the classifiers *delta, nsc* and *svm* confirm the result but attribute some of the 22 text chunks to Rowley as well. But there are also a few Marlowe signals, but these are dispersed and do in no way cluster anywhere.

*The Tragical History of Doctor Faustus* is methodologically the hardest task, due to the intermingling styles of quite a number of candidates. The original text of the 1589 performance is not extant, and the A text of 1604 contains stylistic sections of Nashe, Kyd, Dekker and Shakespeare. Reference texts by Greene, Rowley, Marlowe and Jonson played no role in the larger windows. Quantitatively, Kyd and Nashe appear as the main authors of the play. Both were dead by the time the play was published and one can assume that smaller changes by Dekker and Shakespeare had been added. The B text of 1616 recalls the values determined so far. But additions come from Rowley and Dekker, and strangely enough the stylistics of Greene and Chettle appear again in smaller text sec-

tions. Assuming that these measurements are correct, there may have been an original text that was changed for the 1604 edition and that was again taken up for the 1616 version. And yet Nashe's and Kyd's dominance is present in both editions.

If we consider the overall results concerning Marlowe's authorship of plays, there is not much to say in his favour. Apart from the parts of *Tamburlaine* and *Locrine,* only smaller windows of Rolling Delta occasionally record a scene or text segment that fits his reference text stylistically. But it is known from other investigations that he contributed to *Edward III* (Act III), and Shakespeare may have taken up Marlowe's material when he wrote the verse parts of *Henry V.* How then was it possible that his name was linked with a number of plays? Editorial circumstances in the 18th and 19th century may have helped in establishing the corpus. Faustus was entered in the Stationer's Register on 18 December 1589, followed on 14 August 1590 by the *Tamburlaines* and *Edward II* on 5 July 1593, about five weeks after his death, and the quarto a year later. The entry of *Hero and Leander* is dated 28 September 1593.[18] On 17 May 1594 *The Jew of Malta* followed, but *Dido, Queen of Carthage* and *The Massacre at Paris* were left without an entry. The activities of Henslowe in securing a repertoire for the Admiral's Men and the precarious situation of other playing companies, in particular the ones with which Shakespeare probably toured the country during the time of the plague, have already been mentioned. But perhaps it makes sense in the attempt to attribute plays to Marlowe to leave the higher spheres of stylometric and literary analyses and to look

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[18] Sara Munson Deats und Robert A. Logan (eds.), *Marlowe's Empery – Expanding His Critical Contexts.* (Cranbury, London: Associated University Presses, 2002), p. 85

at the competition wars of profit-seeking printers and booksellers. Marlowe's reputation as an atheist, secret agent and *enfant terrible* was several times attested, for example by Robert Greene in his preface to *Perimedes the Blacksmith* (1588), in M*enaphon* (1589) and in his *Groatsworth of Wit* (1592). Arrests of Marlowe took place in 1589 (18 September) and 1592 (15 September, at the Chequers Inn, Canterbury). When he was stabbed to death by Ingram Frizer on 30 May 1593 in Deptford in the course of a brawl, this was sensational news even for a city with a population about to expand towards 200,000 inhabitants. The news may well have provided a further incentive to print Marlowe's name and thus achieve higher sales figures, simultaneously securing the plays for Henslowe and his company. The results of stylometric analyses would certainly support such hypotheses.

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