Hartmut Ilsemann

The Weakest Goes to the Wall: An Early Shakespearean Melodrama*?*

Preliminaries

Some conjectures supported the hypothesis that the play *The Weakest Goes to the Wall* is an early melodrama by Shakespeare. Therefore, the question of authorship will find some consideration, if not solid evidence. The other question that the title poses concerns genre dispositions and a possible phase of experimentation that may have been undertaken by the young playwright. Thus Shakespeare's *Arden of Faversham* (< 1592) can be seen as an early domestic drama, a genre type that became dominant in the early eighteenth century, followed by melodrama at the end of the century, which then became the prevailing drama form in the nineteenth century. Before we come to the elements of melodrama in *The Weakest* it makes sense to look for external Shakespearean traits in the play, even though they were widely used by many playwrights of the time. The play starts off with a dumb show in which the malefactor is introduced and the audience reception finds it initial focus. A similar device was used by Hamlet in the play-within-the-play, enacting the murder of Conzago (III, 2). In the first scene we get to know the French king who is in line with a number of weak rulers whose attitude and behaviour brings further disaster. Richard II as supreme court judge is the obvious example arbitrating the quarrel between Mowbray and Bolingbroke. First he tries a trial by fight, but then out of the blue he changes his mind and sentences both to banishment from England. In *The Weakest* the French king who has sworn to participate in a crusade to the Holy Land, simply orders the enmity between the dukes of Bullen (Lodowick) and Anjou (Mercury) be ended. Even worse, he then transfers the power of rule equally to Lodowick and Mercury as vice-regents. Mercury, however, in a number of asides, just like Gloucester in *Richard III*, lets his fraudulent intentions show through and hastily departs from the court. Similarly Duke Vincentio's deputy Angelo in *Measure for Measure* develops an abhorrent personal conduct once in office, and thus exposes how irresponsibly a ruler acts who does not fulfil his mandate and abdicates responsibility. It may be nothing but coincidence that the swain of the pursued lovers is named Ferdinand, as in *The Tempest* where Ferdinand woos Miranda. Another link to Shakespeare can be seen in the story itself. It was contained in a book by Barnabe Rich, an English writer who was a soldier for a long time and lived from about 1540 to 1617.[1] The very first story of the book was turned into the play. Another story in the same book became Shakespeare's *Twelfth Night*. In 1946 Tom M. Cranfill published one of the very few papers on the play, titled "Barnabe Rich's *Sappho* and *The Weakest Goeth To The Wall*"[2] in which he asserted that *The Weakest*, apart from Shakespeare's exploitation for *Twelfth Night*, "was on the whole the most attractive drama […]

[1] Barnabe Rich. *Rich his farewell to militarie profession: conteining very pleasant discourses fit for a peaceable time. Gathered together for the onely delight of the courteous gentlewomen, both of England and Ireland, for whose onely pleasure they were collected together, and vnto whom they are directed and dedicated.* Newly augmented. By Barnabe Riche gentleman. Imprinted at London: By G. E[ld] for Thomas Adams, 1606, [EEBO: Imprinted at London,: by [J. Kingston for] Robart Walley, 1583].

[2] Tom M. Cranfill. Barnaby Rich's "Sappho" and "The Weakest goeth to the Wall," *Studies in English*, No. 25, 1945-1946, pp. 142-171.

inspired by the *Farewell*, which Rich had written "for the onely pleasure of gentilwomen" (p. 22). Cranfill mentions various attributions to Webster, Dekker and Munday. Collier suggested "that the story may have existed before 1581 as a drama which served as a foundation for both Rich's version and *The Weakest* (Cranfill, p. 166). This was refuted by Starnes[3] and Cranfill adds further evidence of the dependence of the play on the story.

In detail he lists how the play follows the complicated plot of *Sappho* and how words are taken over, which suggests "he had his copy of the *Farewell* open before him as he wrote" (p.167). Lodowick is described as noble but highly vocal in his suffering and the comparison of the texts comes to the evaluation: "But in both versions deaf fortune conducts the heroes to appalling economic and spiritual depths" (p. 168). And that brings us to the basic features of melodrama in which blameless heroes and heroines fight against an overpowering fate that confronts them in the form of the villain. They themselves are whole beings without any inner conflicts whereas the tragic hero would have a split personality. Cranfill concludes: "The character and the adventures of the hero thus are varied little by the playwright" (p. 169).

When Lodowick, his wife Oriana and their daughter Diana, fleeing from Mercury's persecutions, arrive at the house of their host Yacob van Smelt, they are not really safe, as "the host – who is sufficiently despicable in the novel – suffers a considerable transformation and becomes in the play even more loathsome than Rich's villain" (p. 169). Even though van Smelt's insufferable Dutch accent became a frequent commodity of the sixteenth and seventeenth century stage and was considered as hilarious, van Smelt was seeking to entangle Lodowick in debt in order to keep Oriana as a pledge. The whole thing is made a little more bearable by the tailor Bunch, who offers himself gratuitously to the impoverished family as a faithful servant, and takes on the old role of the clown in incomparable fashion, targeting the blackguard with his jokes and pranks. That the playwright was indebted to Barnabe Rich was also made visible in Bunch whose first name is also Barnabe. Eric Sams, in some letters and in his chapter on *Weakest*[4]*,* mentions the proverbial use of "the weakest goes to the wall" in *Romeo and Juliet* and sees it as "a characteristically Shakespearean touch of self-advertisement."[5] He lists parallels between *Weakest* and plays by Shakespeare as, for example, the word "lustick" spoken by Yacob van Smelt and recalled by Lafew in *All's Well That Ends Well*. He then enlarges on Barnaby Bunch and Parolles with impressive similarities, which brings him to the conclusion: "… the character Barnaby Bunch could have been inserted into the text of an early play; such problems and such solutions are inherent in the work of a revising artist" (p. 223). In fact, there are quite a few characters from Shakespeare's plays who share some similarities with both van Smelt and Parolles:

1. **Sir John Falstaff (*Henry IV, Henry V*):** Falstaff is one of Shakespeare's most famous and beloved characters. Like Parolles, he is known for his wit, humour, and roguish

[3] D.T. Starnes, "Barnabe Riche's 'Sappho Duke of Mantona': a Study in Elizabethan Story-Making," *Studies in Philology*, XXX (1933), 455-472.

[4] Eric Sams. *The Real Shakespeare II, Retrieving Retrieving the Later Years*, *1594-1616*, Centro Studi Eric Sams www.ericsams.org, Copyright © 2008 The Estate Of Eric Sams, pp. 221-223.

[5] https://ericsams.org/index.php/letters/to-nieves-hayat-de-madariaga/567-112-17-january-1997-es-the-weakest-goeth-to-the-wall-romeo-and-juliet-mra-paganini-rachmaninov

behaviour. Both characters engage in a fair amount of boasting, though Falstaff's character is more developed and has a broader presence in multiple plays.

2. **Osric (*Hamlet*):** Osric is a courtier who, like Parolles, is somewhat affected and overly concerned with courtly manners and appearance. He plays a role in the courtly politics of Elsinore and exhibits a similar sense of superficiality.
3. **Thersites (*Troilus and Cressida*):** Thersites is a cynical and sarcastic character. While different in temperament from Parolles, Thersites shares a penchant for mockery and a critical view of the world.
4. **Don Armado (*Love's Labour's Lost*):** Don Armado is a Spanish braggart who, like Parolles, engages in self-aggrandizement and often speaks in an affected manner. Both characters add humour to their respective plays through their exaggerated personalities.
5. **Autolycus (*The Winter's Tale*):** Autolycus is a rogue and a trickster. While not identical to Parolles, he shares some traits, such as being a rogue figure and using clever language. Autolycus, however, is more of a trickster and a peddler of goods.

Cranfill regrets that he was unable to discover solid arguments about the identity of the playwright in his study of *Sappho* and *The Weakest*. But he stresses the authentic ring of Yacob's dialect, and some first-hand knowledge of the Low Countries and France (p. 171), which may refer back to Rich's Gascoigne borrowings or to Dekker's background.

The end of the play fully coincides with the melodramatic course of action. The villain suffers an inglorious defeat and the damaged heroes and heroines are restored to their original circumstances with compensation. On the way, however, there are several obstacles to overcome, each time combined with the imminent danger of a total crash, heightening suspense. Finally, the return of the French king is announced and Lodowick finds not only his wife and daughter again, but also a lost son who had been raised as a foundling by Emmanuel, and Ferdinand whose real name is revealed as Frederick is finally able to pursue his love for Odillia, Emmanuel's daughter.

It is striking that only a meagre secondary literature exists on the *Weakest*. Apart from the literature indicated above, there is not even an entry in Wikipedia. Chambers briefly summarises the raw data, according to which a quarto appeared in 1600, printed by Thomas Creede for Richard Oliffe. The subtitle read: "As it hath bene sundry times plaide by the right honourable Earle of Oxenford, Lord great Chamberlaine of England his seruants." The Earl of Oxford's boys' company which performed the play was active in London during the winter of 1586-7. This date could well represent the production of an early Shakespeare play that was later revised and registered on 23rd October 1600. A second quarto came out in 1618, followed by editions from J. S. Farmer (1911) and W. W. Greg (1912). The play is also said to have been printed with Works of Webster, possibly due to Rich's story of the *Duchess of Malfy* that was transformed into a play. Webster was also mentioned as co-author together with Dekker by E. Phillips in *Theatrum Poetarum* (1675), which was rejected by Langbaine (1691) (E. Stoll, *Webster*, 34). Some other attributions refer to Dekker (Ward) and Chettle, revised by Dekker (Hunt). Fleay favours Munday as the only known writer for Oxford (Chambers, vol. IV, p. 52). The idea of a Shakespeare revision finds some support in speech lengths frequencies. Around 1599 there was a shift towards shorter speeches, and in most plays produced after 1599 the speech

length used most often was that of four words (Rizvi 2019, Ilsemann 2013, Jackson 2007). A brief graphic listing of Shakespeare's plays with their averaged speech lengths before and after 1599 summarizes the initial situation.

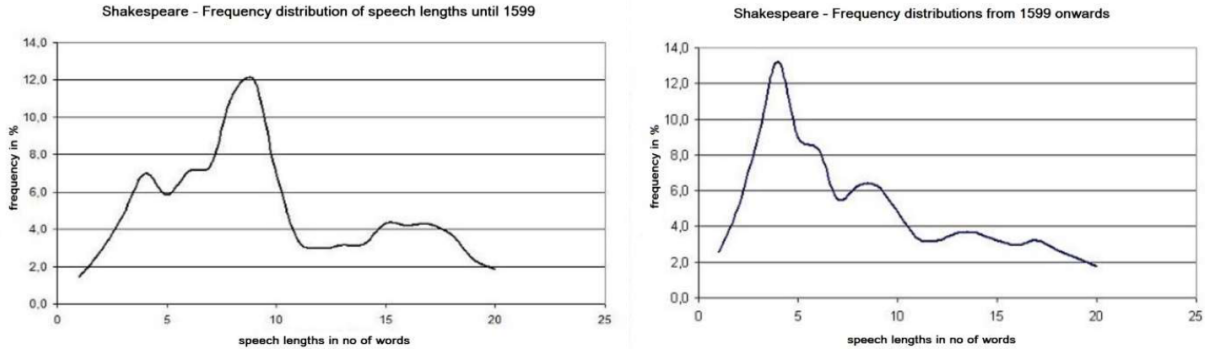
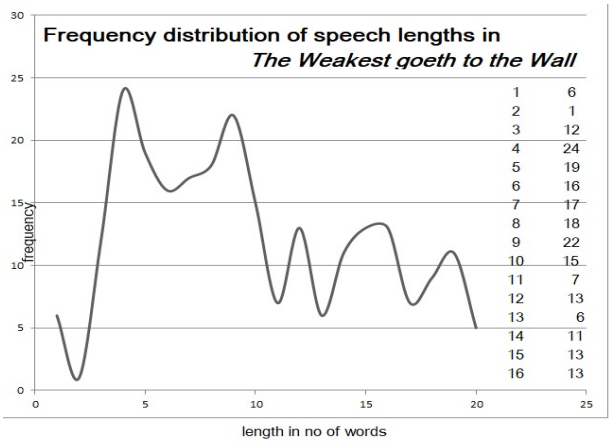


Figure 1 Frequency distribution of speech lengths before and after 1599

A brief look at the frequency distribution in *The Weakest* confirms that there are two distinct populations responsible for the mixed form of an early play and a later revision in Figure 2.



There are two columns of numbers in Figure 2. The first column refers to the speech length in no of words, and the second column notes how often a particular speech length occurs in the play. The first peak denotes a speech length of four words, and would refer to the time around 1600, and the other peak at nine words refers to an older text.

Figure 2 Frequency distribution of speech lengths in *The Weakest goes to the Wall*

It is indeed a privilege that modern non-traditional stylometry with its use of sophisticated computer programs can bring some light into the question of authorship. But electronic texts are equally rare. Early Print and Early Modern English Drama have no copies, and as a consequence Rizvi's database[6] does not contain any information as to unique n-grams that the *Weakest* might share with other plays. A reliable source, however, was provided by Jill L. Levenson in her critical edition as part of her Ph.D. thesis.[7] Brad Fillipone's electronic copy,[8] which was used in

[6] Pervez Rizvi, Collocations and N-grams, https://shakespearestext.com/can/index.htm, [accessed 1 April 2022].
[7] Jill L. Levenson, *A Critical Edition of the Anonymous Elizabethan Play The Weakest Goeth to the Wall*, University of Michigan: Garland Pub., 1980.
[8] Brad Fillipone. The Weakest Goeth to the Wall < https://bradfilippone.wordpress.com/2011/10/01/the-weakest-goeth-to-the-wall-introduction/> [accessed 1 April 2022].

analyses with R Stylo,[9] is based on the 1912 edition of the Malone society and Levenson's work. Fillipone's preface obviously favours Dekker as author of the play.[10]

Rolling Delta

The most promising features of R Stylo have been since about 2013 on the one hand Rolling Delta which is based on Burrows's Delta, dating back to 2002. Its assets have been explained in detail by Hoover in 2004 [11] and Grieve in 2007 [12] who both suggested parameters for optimal performances.[13] Likewise the introduction of Rolling Classify was a big step forward. Rather than using whole texts, these procedures work with windows of a particular size which then move through the texts with an overlap, so that a dense row of measurements comes into being. In Rolling Delta the lowest delta values indicate the reference texts (and its authors) with the smallest stylistic difference from the target text, and Rolling Classify gives for each determined window centroid of the target text the name of the author which in abridged form precedes the files in the training set, separated from the file name by an underscore. In 2018 the General Imposters method was added by Maciej Eder and explained in a blog of the Computational Stylistics Group.[14] It was hailed as a second verification system and is based on the delta classifier, enlarged by the cosine delta distance of the Würzburg computation group and the distance of Ružička metrics, the quality of which makes itself felt by an awful long computation time. The handling of the programs can be found in their pdf file *stylo_howto* at https://github.com/computationalstylistics/stylo_howto/blob/master/stylo_howto.pdf and was followed closely in the subsequent investigations.

One restriction applies to all investigations with R Stylo, because it is based on the existence of reference texts that provide information about the author(s). As soon as a drama originates from an author of whom no reference texts exist, an attribution is no longer within the realm of possibility.

In the analysis with Rolling Delta a tailored procedure was used that observed two criteria. The first criterion was the size of the windows that were moved through the texts. The second criterion concerned the choice of reference texts. In a very first test Rolling Delta was executed with all available reference texts and the window size was 4.000 words. The windows were moved through the text with an overlap of the window centroids of 250 words. As Eder confirmed, smaller windows are unreliable, and here the choice of the window size was based on

[9] Eder, M., Rybicki, J. and Kestemont, M. (2016). Stylometry with R: a package for computational text analysis. *R Journal* 8(1): 107-121. <https://journal.r-project.org/archive/2016/RJ-2016-007/index.html> [accessed 1 April 2022].

[10] https://bradfilippone.wordpress.com/2011/10/01/the-weakest-goeth-to-the-wall-introduction/ [accessed 15.04.2022]

[11] David L. Hoover, "Testing Burrows's Delta, *Literary and Linguistic Computing*, Volume 19, Issue 4, November 2004, Pages 453–475, https://doi.org/10.1093/llc/19.4.453.

[12] Jack Grieve, "Quantitative Authorship Attribution: An Evaluation of Techniques," *Literary and Linguistic Computing*, vol. 22, issue 3, 2007, 251–70.

[13] Hoover suggested a culling value of 70 % to avoid an all too specific vocabulary and Grieve tested variables like words (mf1w), character bigrams (mf2c) and character trigrams (mf3c) of which the latter performed best.

[14] Macij Eder, Authorship verification with the package 'stylo', blog 30 May, 2018, <https://computationalstylistics.github.io/blog/imposters/>, [accessed 1 April 2022].

experience gained over several years. The complete attribution table can be found in sorted order of the authors' plays on the Shakespeare Statistics website at http://www.shak-stat.engsem.uni-hannover.de/eallweakest.html.

The computer took more than six hours to run the program with two hundred reference texts and presented the stylistically most similar plays. Since the determination of the delta values depends on the averaged standard deviations, the large number of texts by Shakespeare plays a mathematical role compared to authors who are represented by only a few texts or only one. For further comparison with relevant authors, the marked reference texts from the first 42 plays that are stylistically closest will therefore be used, with up to two texts per author. The plays are identified by an author's abridged name followed by a delimiter and the abbreviated title of the play.

Table 1 stylistically close reference texts by various authors

	A		B
1	heyw_2edward4	22	shak_richii1595
2	shak_2henry6	23	fletchmass_spancurate
3	anon_oldcastle	24	shak_lear1606
4	shak_1henry6	25	shak_john
5	shak_merchant1596	26	chap_msd'olive1606
6	greene_jamesiv	27	middlecoll_famlovepure
7	shak_richiii1592	28	chap_allfools
8	shak_hamlet1600	29	peele_edward1
9	shak_1henry4	30	shak_henry8
10	mun_deathh1601	31	shak_romjul1595
11	anon_ironside	32	shak_lovelab1594
12	shak_2henry4	33	row_whenysee1603
13	anon_moregut	34	mars_malcontent
14	shak_cymbeline	35	heyw_fairmaidwest
15	shak_othello	36	fletch_philaster1608
16	shak_winters1609	37	heyw_engtravel1633
17	chettle_hoffman	38	kyd_spanpure
18	anon_kingleir1594	39	heyw_womkillkind1603
19	heyw_royalking1602	40	day_bednalgreen
20	greene/lodge_lookingglass	41	anon_edwardiii
21	shak_pericles	42	dekker_satiromastix

The following reference texts, which are used in further studies, were taken from this table and sorted in alphabetical order:
chap_allfools, chap_msd'olive1606, chettle_hoffman, day_bednalgreen, dekker_satiromastix., fletch_philaster1608, fletchmass_spancurate, greene/lodge_lookingglass, greene_jamesiv, heyw_2edward4, heyw_royalking1602, kyd_spanpure, mars_malcontent, middlecoll_famlovepure, mundeathh1601, peele_edward1, row_whenysee1603, shak_1henry6, shak_2henry6.

A renewed rolling delta run with the same parameters yielded the following sequential table, in which each delta value of a window centroid was checked to see if it was among the three

lowest delta values. Authors who did not have a single low delta value were deleted along with their texts.

Table 2 Rolling Delta attributions

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Words	heyw_2edward4	shak_2henry6	shak_1henry6	greene_jamesiv	mun_deathh1601	chettle_hoffman	heyw_royalking1602	middlecoll_famlovepure1602	chap_allfools	dekker_satiromastix	**SCENES**	**WORDS**
2	2000	**22,7**	22,8	**22,4**	23,1	24,2	23,9	25,4	24,8	25,6	24,9		
3	2250	22,9	23,2	**22,5**	**22,7**	24,1	24,3	24,9	24,4	25,2	24,6		
4	2500	23,2	23,4	**23,2**	**23,2**	24,7	25,0	25,1	24,6	25,2	24,6	2	2454
5	2750	**22,9**	23,4	23,1	**23,0**	24,3	24,9	24,5	24,0	24,8	24,2	3	2849
6	3000	**22,8**	**23,1**	23,1	23,5	24,0	24,8	24,1	24,1	24,4	23,9		
7	3250	23,0	**23,0**	**22,9**	23,6	24,2	24,4	24,3	24,1	25,1	24,0		
8	3500	**22,9**	23,1	**23,1**	24,1	24,5	24,2	24,0	24,4	24,6	24,7		
9	3750	**23,0**	23,2	**23,2**	24,2	24,3	24,1	24,1	24,4	24,5	24,8	4	3773
10	4000	24,1	**24,1**	**23,8**	25,3	25,0	24,9	25,2	25,2	25,5	25,3		
11	4250	**24,3**	**24,5**	24,6	25,6	25,2	25,1	25,5	25,7	26,1	25,3		
12	4500	**24,9**	25,7	**25,6**	26,3	25,7	25,8	26,1	26,1	26,0	25,6	5	4423
13	4750	**25,6**	26,7	26,5	26,6	**26,1**	26,9	26,5	26,5	26,3	26,4		
14	5000	**25,6**	27,6	27,5	26,9	26,3	27,7	26,1	26,3	**25,9**	26,6		
15	5250	**25,4**	27,8	27,6	27,6	**26,3**	27,5	26,4	26,6	26,3	26,9		
16	5500	**25,0**	27,2	27,0	27,2	26,5	27,5	**26,2**	26,4	26,8	26,7	6	5554
17	5750	**24,3**	26,0	25,8	26,5	26,0	26,6	25,6	**25,6**	26,5	26,0		
18	6000	**24,0**	25,3	25,4	26,0	25,7	26,3	25,8	25,4	26,2	**25,3**		
19	6250	**24,9**	25,9	26,3	26,3	26,3	26,8	26,5	26,3	26,8	**25,8**		
20	6500	**24,9**	26,0	26,5	26,4	26,1	26,9	27,1	26,4	26,9	**25,7**		
21	6750	**25,4**	26,4	26,8	26,6	26,2	27,0	27,3	26,6	27,2	**25,7**		
22	7000	**27,2**	27,6	28,2	27,2	27,6	28,6	28,5	27,7	28,7	**26,8**		
23	7250	28,4	28,5	29,3	28,1	**28,0**	29,7	29,5	28,5	29,4	**27,4**	7	7191
24	7500	28,8	29,2	29,7	**28,2**	28,3	30,0	30,0	28,7	30,0	**27,4**		
25	7750	28,6	28,9	29,4	**28,0**	28,3	30,0	29,8	28,3	29,9	**27,2**		
26	8000	27,1	27,6	28,5	**26,6**	26,8	28,7	28,3	27,1	28,8	**25,8**	8	8148
27	8250	25,7	26,6	27,1	**25,4**	25,9	27,7	27,4	26,1	27,8	**24,9**	9	8307
28	8500	25,1	26,1	26,5	**24,8**	26,0	27,2	27,4	25,9	27,7	**25,0**	10	8440
29	8750	24,4	25,0	25,5	**24,3**	25,7	26,8	26,7	25,5	27,4	**24,4**		
30	9000	**23,8**	24,1	24,4	**23,7**	25,2	26,1	26,6	25,1	27,1	24,0	11	8899
31	9250	23,6	**23,5**	24,1	**23,3**	25,3	26,0	26,5	25,1	26,8	24,3		
32	9500	23,4	**23,3**	23,5	**23,3**	25,2	25,6	26,0	25,1	26,2	24,5		

33	9750	**22,7**	**22,6**	22,9	23,3	24,6	25,4	25,6	25,0	25,8	24,5	12	9724
34	10000	**22,5**	22,9	**22,5**	23,1	24,5	25,0	25,3	25,1	26,0	24,9		
35	10250	**22,3**	23,2	**22,7**	22,8	24,2	25,0	24,8	25,2	25,6	24,9		
36	10500	**22,7**	23,7	23,3	**22,9**	24,2	24,8	24,8	25,4	25,5	25,5		
37	10750	**22,0**	**22,4**	22,7	22,6	24,0	24,5	25,0	25,4	25,5	25,4		
38	11000	**21,6**	**21,5**	22,3	22,6	24,1	24,1	25,1	25,3	25,2	25,8		
39	11250	**21,6**	**22,0**	22,7	22,8	24,2	24,4	25,1	25,4	25,4	26,2	13	11351
40	11500	**21,4**	**21,7**	22,8	23,0	24,1	24,1	24,9	25,0	25,3	26,2	14	11598
41	11750	**21,1**	**21,7**	22,6	22,8	24,2	23,8	24,5	25,0	25,2	26,3		
42	12000	**21,1**	**22,0**	22,5	22,8	24,1	23,8	24,0	25,1	24,6	26,4		
43	12250	**20,8**	**21,6**	21,9	22,2	23,4	23,2	23,8	24,7	24,4	26,2		
44	12500	**20,6**	**21,3**	21,3	22,3	23,1	22,4	23,3	24,5	23,9	26,2		
45	12750	**20,7**	22,0	**21,6**	22,4	23,3	22,8	23,3	25,1	24,1	27,0		
46	13000	**20,8**	22,3	**22,2**	22,6	23,6	22,8	23,4	25,5	24,4	27,4		
47	13250	**20,9**	22,3	**22,0**	22,4	23,3	22,6	23,0	25,3	24,1	27,4	15	13325
48	13500	**21,6**	22,8	**22,7**	23,4	23,6	23,2	23,0	25,8	24,1	27,9		
49	13750	**22,7**	23,5	23,6	23,8	24,2	23,9	**23,4**	26,6	24,3	28,6		
50	14000	**23,1**	23,8	24,1	24,2	24,2	24,0	**23,7**	26,7	24,9	28,6		
51	14250	**23,6**	**24,1**	24,3	25,2	24,8	24,3	24,6	27,0	25,9	29,0		
52	14500	**23,4**	24,0	**23,7**	25,1	24,8	24,1	24,6	26,9	26,1	28,7		
53	14750	**23,7**	24,7	**24,1**	25,3	24,7	24,1	24,7	27,4	26,1	29,1		
54	15000	**23,2**	25,0	24,1	25,1	24,3	**24,0**	24,1	27,6	25,9	29,0	16	15086
55	15250	**23,4**	25,3	24,5	26,0	24,7	**24,2**	25,0	28,3	26,1	29,9		
56	15500	**23,8**	25,4	24,2	26,2	25,5	**24,0**	25,4	28,9	26,6	29,6	17	15638
57	15750	**24,0**	25,9	25,1	26,7	25,5	**24,2**	25,6	29,2	26,9	29,7		
58	16000	**23,8**	25,7	24,7	26,6	25,0	**24,2**	25,9	29,1	27,1	29,5		
59	16250	**23,6**	26,4	25,5	27,3	25,3	**24,3**	25,6	29,3	27,2	30,0		
60	Σ 1st	**40**	**3**	**4**	**5**						**6**		
61	Σ 2nd	**5**	**13**	**12**	**8**	**3**	**6**	**3**	**1**	**1**	**6**		
62	Σ 3rd	9	14	18	4	5	1	2	1	2	2		
63		54	30	34	17	8	7	5	2	3	14		
64	17500												
65	17750												
66	18000											18	17976

The survey of stylistic similarities has two surprising results. The presumed author with the highest number of lowest delta values is Thomas Heywood, who said of himself that he had had his fingers, if not his whole hand, in more than 220 plays of his time.[15] The other important point is the existence of a collaborator, namely Thomas Dekker whose style is particularly dominant in scenes 7 to10, where Yakob van Smelt appears in scenes with Barnaby Bunch.

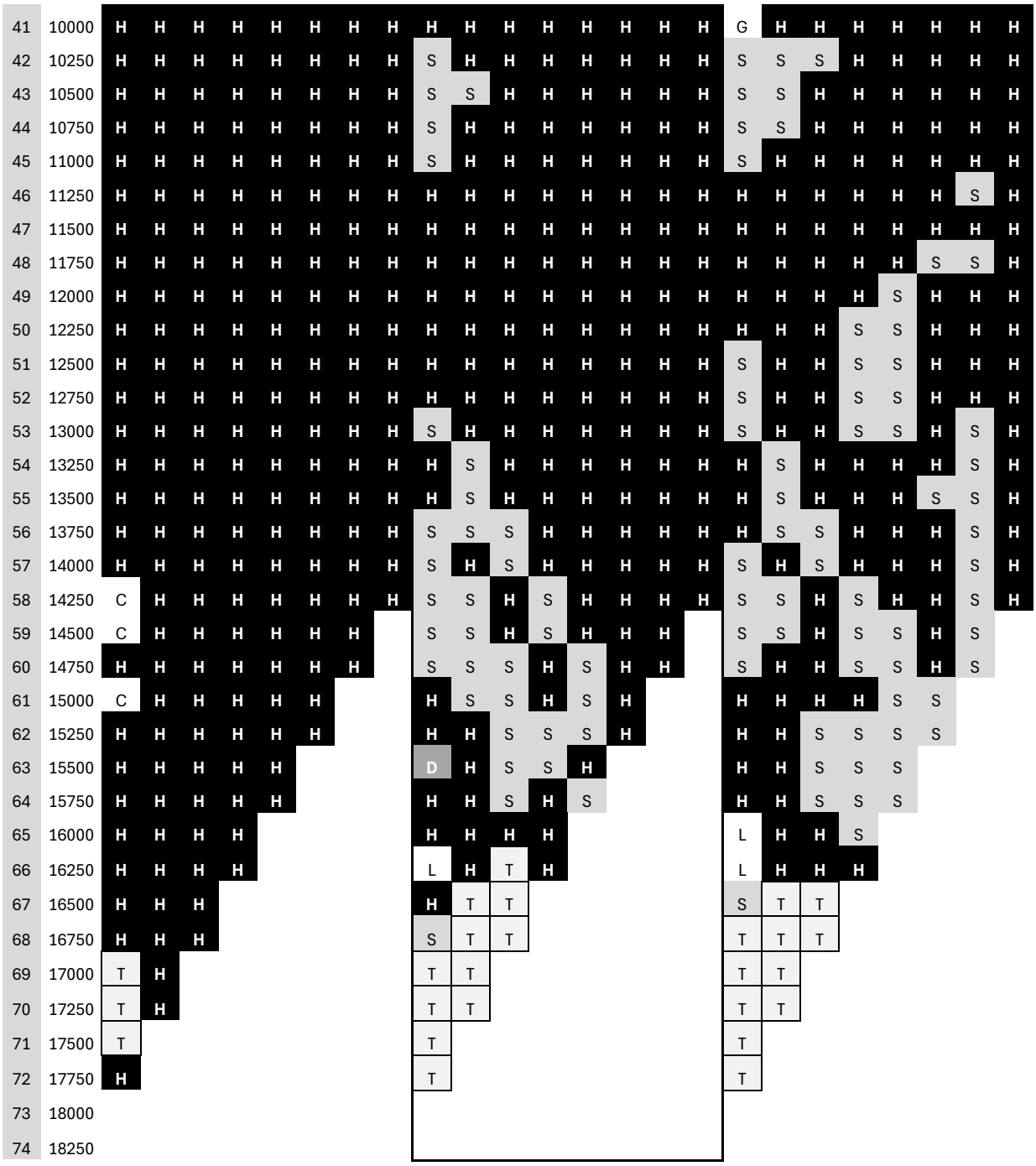
While Rolling Delta primarily returns stylistic similarities, Rolling Classify provides an author attribution for every measured window. This is done for window sizes from 1,000 to 8,000 words at a distance of 1,000 words with the variables mf1w, mf2c and mf3c. The chosen

[15] in *An Apology for Actors* (1612)

classifier in Table 3 is nsc (nearest shrunken centroids) which Eder described as classification friendly.

Table 3 Rolling Classify attributions with nsc and window sizes between 1,000 and 8,000 words

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
1		Window sizes:																							
2	nsc	1000	2000	3000	4000	5000	6000	7000	8000	1000	2000	3000	4000	5000	6000	7000	8000	1000	2000	3000	4000	5000	6000	7000	8000
3	500	H			mf1w					S			mf2c					S			mf3c				
4	750	H								H								H							
5	1000	H	H							H	S							H	S						
6	1250	H	H							H	H							H	H						
7	1500	H	H	H						H	H	S						H	H	S					
8	1750	H	H	H						S	S	S						S	S	S					
9	2000	H	H	H	H					G	S	H	H					S	S	S	S				
10	2250	H	H	H	H					S	S	D	H					S	S	H	H				
11	2500	S	H	H	H	H				S	D	G	H	H				S	S	H	H	H			
12	2750	H	H	H	H	H				S	D	D	H	H				S	G	H	H	H			
13	3000	H	H	H	H	H	H			D	D	D	H	H	H			D	D	D	H	H	S		
14	3250	G	H	H	H	H	H			D	D	H	H	H	H			D	D	H	H	H	H		
15	3500	G	H	H	H	H	H	H		D	D	H	H	H	H	H		D	D	H	H	H	H	H	
16	3750	C	H	H	H	H	H	H		D	D	H	H	H	H	H		D	H	H	H	H	H	H	
17	4000	C	H	C	H	C	H	H	H	H	C	H	H	D	H	D	D	H	C	H	H	D	H	H	H
18	4250	C	C	C	H	H	H	H	H	H	H	H	D	D	D	D	D	H	H	H	H	D	H	H	H
19	4500	C	C	H	H	H	H	H	H	C	H	H	D	D	D	D	D	H	H	H	D	D	H	H	H
20	4750	C	C	C	H	H	H	H	H	S	H	H	D	D	D	D	D	S	H	H	D	D	H	D	H
21	5000	C	C	C	H	H	H	H	H	S	S	H	D	D	D	D	D	S	H	H	D	D	H	D	D
22	5250	C	C	C	H	H	H	H	H	S	S	H	D	D	D	D	D	S	H	H	D	D	D	D	D
23	5500	C	C	C	H	H	H	H	H	T	H	H	D	D	D	D	D	S	H	H	H	D	D	D	D
24	5750	C	C	H	H	H	H	H	H	M	D	D	D	D	D	D	D	M	D	H	H	D	D	D	D
25	6000	C	H	H	H	H	H	H	H	D	D	D	D	D	D	D	D	D	D	D	H	D	D	D	D
26	6250	H	H	H	H	H	H	H	H	D	D	D	D	D	D	D	D	D	D	D	H	D	D	D	D
27	6500	H	H	H	H	H	H	H	H	D	D	D	D	D	H	D	D	D	D	D	D	D	H	D	D
28	6750	H	H	H	H	H	H	H	H	D	D	D	D	D	D	D	D	D	D	D	D	D	H	D	D
29	7000	H	H	H	H	H	H	H	H	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
30	7250	H	H	H	H	H	H	H	H	D	D	D	D	D	D	D	D	D	D	D	D	D	H	D	H
31	7500	H	H	H	H	H	H	H	H	D	D	D	D	D	D	D	H	D	D	D	D	D	H	D	H
32	7750	G	H	H	H	H	H	H	H	D	D	D	D	D	D	D	H	G	D	D	D	D	H	D	H
33	8000	G	H	H	H	H	H	H	H	D	D	D	D	D	D	D	H	G	D	D	D	D	H	H	H
34	8250	G	H	H	H	H	H	H	H	H	D	D	D	D	D	D	H	H	D	D	D	D	H	H	H
35	8500	H	H	H	H	H	H	H	H	D	D	D	D	D	D	D	H	D	D	D	D	D	H	H	H
36	8750	H	H	H	H	H	H	H	H	D	D	D	D	D	D	D	H	D	D	G	H	D	H	H	H
37	9000	H	H	H	H	H	H	H	H	M	D	D	D	D	H	D	H	M	D	G	H	G	H	D	H
38	9250	H	H	H	H	H	H	H	H	D	D	D	D	D	H	D	H	M	M	G	H	H	H	H	H
39	9500	H	H	H	H	H	H	H	H	D	H	D	H	H	H	D	D	M	H	H	H	H	H	H	H
40	9750	H	H	H	H	H	H	H	H	H	D	H	H	H	H	H	D	G	S	H	H	G	H	H	H



The results returned for larger windows are said to be more reliable than smaller windows, but the overall count already gives a clear picture.

Table 4 Summary of nsc attributions

	A	B	C	D
1			no.	%
2	Heywood	H	864	64,3
3	Dekker	D	263	19,6
4	Shakespeare	S	134	10,0
5	Chapman	C	30	2,2
6	Chettle	T	26	1,9

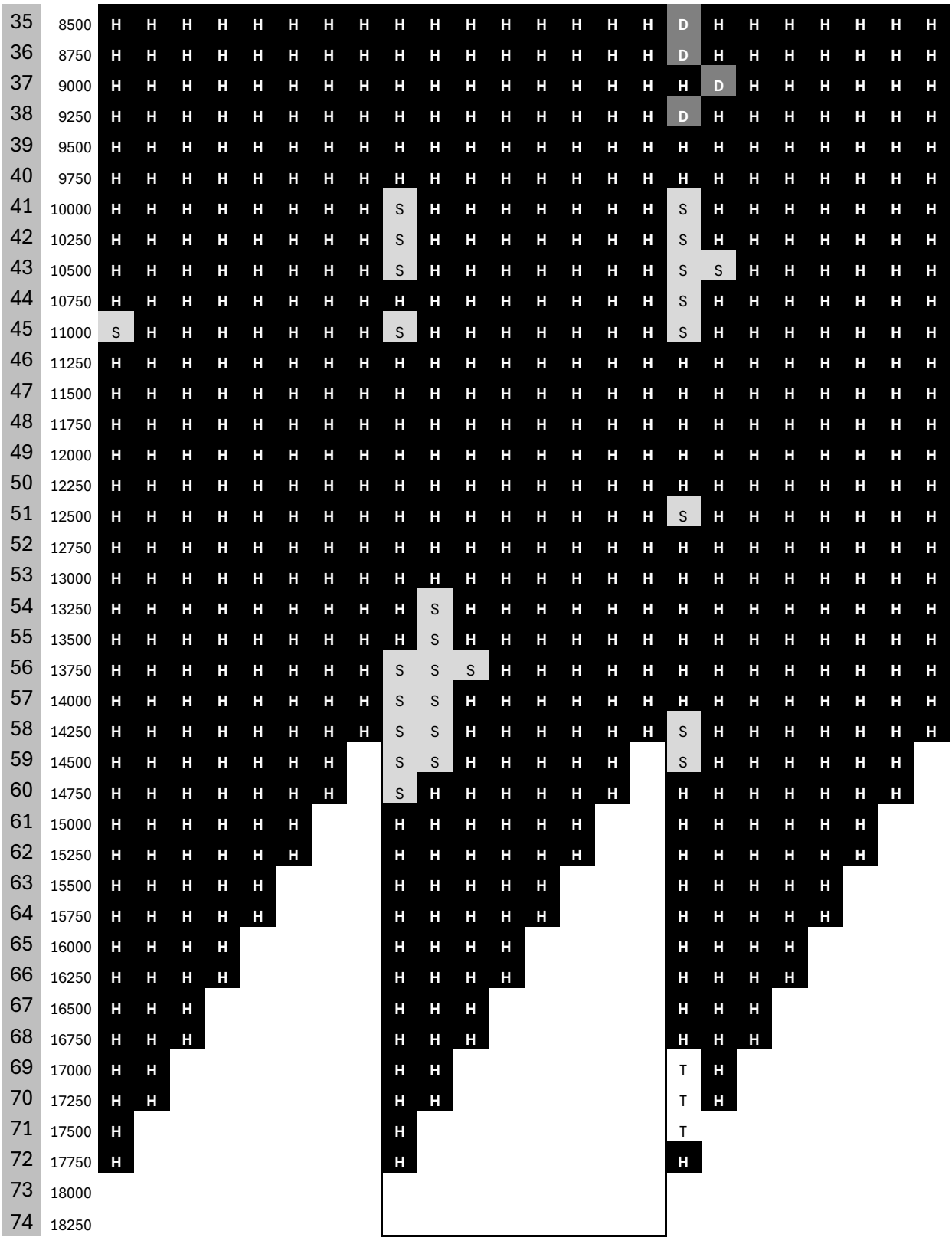
7	Greene	G	20	1,5
8	Munday	M	7	0,5

Around 65 % of the text go to Heywood, and Dekker would have added about 20 % of the text, whereas the remaining percentages arise from the linguistic commonalities between the authors.

The svm classifier is a valuable addition, as it requires a higher decision level than nsc and should therefore claim greater accuracy. Whether it can confirm the Heywood-Dekker combination can be seen from the following table, which is structured in the same way as Table 3.

Table 5 Rolling Classify attributions with svm and window sizes between 1,000 and 8,000 words

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
1		Window sizes:																							
2	svm	1000	2000	3000	4000	5000	6000	7000	8000	1000	2000	3000	4000	5000	6000	7000	8000	1000	2000	3000	4000	5000	6000	7000	8000
3	500	H			mf1w					S			mf2c					S			mf3c				
4	750	H								H								H							
5	1000	H	H							H	S							H	S						
6	1250	H	H							H	H							H	H						
7	1500	H	H	H						H	H	S						H	H	S					
8	1750	H	H	H						S	S	S						S	S	S					
9	2000	H	H	H	H					S	S	S	S					S	S	S	S				
10	2250	H	H	H	H					S	S	H	S					S	S	S	S				
11	2500	S	H	H	H	H				S	S	H	S	H				S	S	S	S	S			
12	2750	H	H	H	H	H				S	D	S	H	H				S	S	S	S	S			
13	3000	H	H	H	H	H	H			D	S	S	H	H	S			S	S	S	S	H	S		
14	3250	H	H	H	H	H	H			D	D	S	S	H	H			S	S	S	S	H	H		
15	3500	H	H	H	H	H	H	H		D	D	H	S	H	H	H		H	S	S	S	S	H	H	
16	3750	H	H	H	H	H	H	H		D	D	H	S	H	H	H		H	H	H	S	S	H	H	
17	4000	H	H	H	H	H	H	H	H	H	H	H	S	D	H	H	H	H	H	H	S	S	H	H	H
18	4250	H	H	H	H	H	H	H	H	H	H	H	S	D	H	H	H	H	H	H	S	S	H	H	H
19	4500	H	H	H	H	H	H	H	H	H	H	H	D	D	H	H	H	H	H	H	H	H	H	H	H
20	4750	H	H	H	H	H	H	H	H	H	H	H	D	D	H	D	H	H	H	H	H	H	H	H	H
21	5000	H	H	H	H	H	H	H	H	C	H	H	D	D	H	D	H	H	H	H	H	H	H	H	H
22	5250	H	H	H	H	H	H	H	H	S	H	H	D	D	H	H	H	S	H	H	H	H	H	H	H
23	5500	H	H	H	H	H	H	H	H	S	H	H	H	H	H	D	H	S	H	H	H	H	H	H	H
24	5750	H	H	H	H	H	H	H	H	D	D	H	H	H	H	D	H	S	H	H	H	H	H	H	H
25	6000	H	H	H	H	H	H	H	H	D	H	H	H	H	H	D	H	S	H	H	H	H	H	H	H
26	6250	H	H	H	H	H	H	H	H	D	H	H	H	H	H	D	H	H	H	H	H	H	H	H	H
27	6500	H	H	H	H	H	H	H	H	D	D	H	H	H	H	H	H	H	H	H	H	H	H	H	H
28	6750	H	H	H	H	H	H	H	H	H	D	H	H	H	H	H	H	H	H	H	H	H	H	H	H
29	7000	H	H	H	H	H	H	H	H	H	H	D	H	H	H	H	H	H	H	H	H	H	H	H	H
30	7250	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
31	7500	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
32	7750	H	H	H	H	H	H	H	H	S	H	H	D	H	H	H	H	H	H	H	D	H	H	H	H
33	8000	H	H	H	H	H	H	H	H	S	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
34	8250	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	D	H	H	H	H	H	H



The main difference in the results of the two classifiers is that the more accurate SVM classifier rejects Dekker as a collaborator and highlights Heywood as the author, who may well have made use of Dekker's types when Yacob van Smelt was developed.

Table 6 Summary of svm attributions

	A	B	C	D
1			no.	%
2	Heywood	H	1196	89,0
3	Shakespeare	S	105	7,8
4	Dekker	D	39	2,9
5	Chettle	T	3	0,2
6	Chapman	C	1	0,1

The question remains as to how reliable the contradictory measurements from nsc and svm are. Of course, they have each their specific mathematical kernel, and it makes sense to refer also to the General Imposters method. If it was Heywood who wrote the play, GI would show, at least in the Ružička metric. The other expectation is that in the case of a collaboration Heywood and Dekker can be expected in the grey area of insecure attributions between the low and high values that Jan Rybicki included in his script.

Table 7 GI evaluation of reference texts

	A	B	C	D	E	F	G	H	I	J	K	L
1	**delta**	low	high	**chap**	**chettle**	**dekker**	**greene**	**heyw**	**middle**	**mun**	**shak**	var.
2	anon_weakwall	0.45	0.49	0.25	0.04	0	0.12	**1**	0.05	0.26	0.06	mf1w
3	anon_weakwall	0.23	0.64	0	0.27	0.07	0	**0.94**	0	0.28	0.49	mf2w
4	anon_weakwall	0.34	0.58	0.12	0.21	0	0.02	**0.99**	0.05	0	0.35	mf2c
5	anon_weakwall	0.21	0.79	0.1	0.06	0	0.16	**1**	0	0.04	0.41	mf3c
6												
7	**wu**	low	high	**chap**	**chettle**	**dekker**	**greene**	**heyw**	**middle**	**mun**	**shak**	var.
8	anon_weakwall	0.38	0.44	0.02	0.01	0.01	0.04	**0.9**	0	0.09	0.34	mf1w
9	anon_weakwall	0.37	0.62	0	0.05	0.02	0.06	**1**	0.03	0.13	0.29	mf2w
10	anon_weakwall	0.45	0.5	0.16	0.37	0.01	0.01	0.44	0.07	0.02	0.31	mf2c
11	anon_weakwall	0.26	0.46	0.02	0.02	0	0.07	**0.7**	0	0	0.61	mf3c
12												
13	**ru**	low	high	**chap**	**chettle**	**dekker**	**greene**	**heyw**	**middle**	**mun**	**shak**	var.
14	anon_weakwall	0.22	0.78	0	0.09	0	0.07	**1**	0	0.33	0.31	mf1w
15	anon_weakwall	0.44	0.56	0.01	0.03	0	0.01	**1**	0	0.09	0.43	mf2w
16	anon_weakwall	0.47	0.53	0.04	0.42	0	0.06	**0.98**	0.07	0.16	0.15	mf2c
17	anon_weakwall	0.44	0.56	0.02	0.08	0	0.14	**1**	0	0.08	0.45	mf3c
18												

Just like the reliable classification with svm, the General Imposters method now also returns Thomas Heywood as the sole author, and while there were often discrepancies between delta, wu and ru in the past, there is now a rare unanimity in the evaluation. Dekker, on the other hand, has many zero values or values close to zero. Heywood may have borrowed from Dekker, but the overall composition of the play is his.

Unfortunately it is not possible to use Pervez Rizvi's database to find corresponding n-grams in *The Weakest* that are also present in other Renaissance plays, as *The Weakest* cannot be accessed in EEBO. Prof. Bloomfield's WCopyfind

(https://plagiarism.bloomfieldmedia.com/software/wcopyfind/) can, however, be used to register n-grams. Line 2 starts off with trigrams and returns the number of words. Line 3 accordingly returns the number of words that are found in tetragrams, and line 4 refers to pentagrams. The more similarities are found in the juxtaposition of texts, the more likely it is that they have a common origin. It was Martin Mueller, who in his blog post "Authors are trumps" on March 31, 2011 wrote at his Scalable Reading site that plays by the same author "share on average twice as many n-grams" as plays linked by genre or time. https://literaryinformatics.wordpress.com/2011/03/31/authors-are-trumps/?utm_source=chatgpt.com

Table 8 N-gram comparisons between anon_weakwall and the plays in line 1

	A	B	C	D	E	F	G	H	I
1	no of common words in	chap_msd'olive	chettle_hoffman	dekker_satiromastix	greene_jamesiv	middle_famlove	mun_deathhunt	shak_2henry vi	heyw_2edwardiv
2	Trigrams	767	772	740	887	725	969	1222	1416
3	Tetragrams	73	78	69	63	104	113	130	199
4	Pentagrams	5	10	5	11	5	5	10	37

It is Heywood's play *Edward IV, part 2*, which shares the most n-grams with *The Weakest goeth to the Wall.*

The hypothesis that Shakespeare could have written Edward IV, Part 2 must therefore be rejected in favor of Thomas Heywood. However, since there are repeated similarities between Shakespeare and Heywood, and Heywood wrote no other historical plays apart from *1 Edward IV*, it remains to be clarified whether *1* and *2 Edward IV* really originate from Heywood. First, we must ask what empirical evidence there is, and second, how GI assesses the stylistic identity with other Heywood plays. It must be conceded that *Edward IV* was first published *without* Heywood's name. The quartos (1599, 1600, etc.) bear no author. The first known attribution to Heywood appears in Francis Kirkman's 1661 Catalogue. Subsequent works (like lives of playwrights) repeat the attribution. The play was reprinted several times during Heywood's life (1599, 1600, 1605, 1613, 1619, 1626). The popularity and continued reprinting suggest that contemporaries accepted or assumed Heywood's authorship. It is recorded that *Edward IV* was performed by the servants of the Earl of Derby. Heywood was associated with that company. Also, Heywood's involvement with other playing companies, and his overall prominence in the theatrical world of the time, increase the plausibility of his authorship. In the *Revels Plays* edition (edited by Richard Rowland, 2005)[16], the editors conclude that while there is no absolutely conclusive external proof, internal evidence (style, word usage, dramatic technique) strongly suggests that Heywood was "at least a principal author." Whitney Anne Peterson's dissertation "A critical edition of Thomas Heywood's *The First and Second Partes of King Edward the*

[16] Richard Rowland, "'Some Words, but of No Importance'? Stage Directions, Thomas Heywood, and Edward IV" (Medieval & Renaissance Drama in England, 2005)

Fourth"[17] treats Heywood as the author. That involves comparing different quarto texts and analysing the text's language and variants. When in 2015 Segarra, Egan, Ribeiro et al. used Word-Adjacency Networks (WANs) there was not a single "Heywood = *Edward IV*" claim, but *Edward IV* was treated as part of Heywood's profile in the analyses.[18] Likewise in 2023 *Edward IV* was seen as a Heywood candidate in modern computational corpora, when R.M.M. Hicke et al. explored neural/LLM approaches for attribution.[19] The crucial point in GI analyses was therefore whether the target text 1+2edwardiv would stylistically coincide with other Heywood plays, even when these represented other genres. The following reference texts went into the corpus folder together with 1+2edward4: chap_blindbeggar.txt, chap_msd'olive.txt, chettle_hoffman.txt, fletch_bonduca.txt, fletch_philaster.txt, heyw_royalking1602.txt, heyw_womkillkind1603.txt, mun_deathh1601.txt, mun_downfall1598.txt, row_whenysee.txt, shak_cymbeline.txt, shak_richiii.txt.

Jan Rybicki's script produced the following survey with mf1w, mf2c and mf3c:

Table 9 GI analysis of the two parts of *Edward IV*

	A	B	C	D	E	F	G	H	I	J	K
1	**delta**	low	high	**chap**	**chettle**	**fletch**	**heyw**	**mun**	**row**	**shak**	var.
2	1+2edward4	0.01	0.99	0.61	0	0	**1**	0.17	0	0	mf1w
3	1+2edward4	0.14	0.72	0.31	0	0.41	**1**	0.02	0	0.03	mf2c
4	1+2edward4	0.26	0.74	0.44	0	0.31	**1**	0.06	0	0	mf3c
5											
6	**wu**	low	high	**chap**	**chettle**	**fletch**	**heyw**	**mun**	**row**	**shak**	var.
7	1+2edward4	0.17	0.83	0.23	0	0.02	**1**	0.58	0	0	mf1w
8	1+2edward4	0.02	0.84	0.39	0	0.1	**1**	0.17	0.05	0	mf2c
9	1+2edward4	0.16	0.81	0.35	0	0.04	**1**	0.32	0	0	mf3c
10											
11	**ru**	low	high	**chap**	**chettle**	**fletch**	**heyw**	**mun**	**row**	**shak**	var.
12	1+2edward4	0.4	0.6	**0.74**	0.42	0.4	**1**	0.42	0.44	**0.62**	mf1w
13	1+2edward4	0.14	0.75	0.13	0.06	0.23	**1**	0.08	0.4	0.08	mf2c
14	1+2edward4	0.27	0.73	0.41	0.06	0.18	**1**	0.13	0.5	0.11	mf3c
15											

The original assumption that the stylistic identity of *The Weakest goeth to the Wall* and *2 Edward IV* could be based on the fact that Shakespeare also wrote the history of *Edward IV* is thoroughly refuted by the GI analysis. However, the Ružička metric shows, in terms of vocabulary (mf1w), the influence Shakespeare had on contemporary drama in general.

[17] Whitney A. Peterson, "A critical edition of Thomas Heywood's The First and Second Partes of King Edward the Fourth" (PhD diss., Univ. of Nebraska, 1997)

[18] Segarra, Egan, Ribeiro et al., "Stylometric Analysis of Early Modern Period English Plays" (preprint / PDF, 2015)

[19] R. M. M. Hicke et al., "T5 meets Tybalt: Author Attribution in Early Modern English" (arXiv, 2023)

Summary

The investigation began with traditional literary concerns, such as themes, motifs, structures, analogies, and similarities in plots and character types, in order to question the Shakespeare authorship of *The Weakest Goeth to the Wall*. However, what initially appeared to be reliable expertise in the assessment of dramatic techniques and textual patterns was found to be inaccurate when non-traditional stylometry and distant reading, along with their algorithms and data mining, were applied to the play in question. While Rolling Delta was able to demonstrate the degree of similarity between the target text and the reference texts, it was Rolling Classify, the reliable SVM classifier and the General Imposters method that provided a definitive answer, identifying Thomas Heywood as the author of *The Weakest Goeth to the Wall*. The theoretical possibility that Heywood's primary reference texts, *Edward IV*, *parts 1* and *2,* might be Shakespeare's plays was ruled out by GI tests, as they stylistically matched other Heywood plays, even transcending genre.

Works Cited

Bloomfield Media. *Plagiarism Checker – Free Online Software for Plagiarism Detection.* Bloomfield Media, https://plagiarism.bloomfieldmedia.com/software/

Cranfill, Thomas Mabry. "Barnaby Rich's Sappho and The Weakest Goeth to the Wall." Studies in English, no. 25, 1945–1946, pp. 142–71.

Eder, Maciej, Jan Rybicki, and Mike Kestemont. "Stylometry with R: A Package for Computational Text Analysis." The R Journal, vol. 8, no. 1, 2016, pp. 107–21. The R Journal, https://journal.r-project.org/archive/2016/RJ-2016-007/index.html.

Eder, Maciej. "Authorship Verification with the Package 'stylo'." Computational Stylistics Group Blog, 30 May 2018, https://computationalstylistics.github.io/blog/imposters/.

Filippone, Brad. "The Weakest Goeth to the Wall." Brad Filippone's Blog, 1 Oct. 2011, https://bradfilippone.wordpress.com/2011/10/01/the-weakest-goeth-to-the-wall-introduction/.

Grieve, Jack. "Quantitative Authorship Attribution: An Evaluation of Techniques." Literary and Linguistic Computing, vol. 22, no. 3, 2007, pp. 251–70.

Heywood, Thomas. An Apology for Actors. 1612.

Hicke, R. M. M., et al. "T5 Meets Tybalt: Author Attribution in Early Modern English." arXiv, 2023, https://arxiv.org/abs/2301.XXXX.

Hoover, David L. "Testing Burrows's Delta." Literary and Linguistic Computing, vol. 19, no. 4, Nov. 2004, pp. 453–75. https://doi.org/10.1093/llc/19.4.453.

Ilsemann, Hartmut. "Some Statistical Observations on Speech Lengths in Shakespeare's Plays." Shakespeare Jahrbuch, vol. 141, 2005, pp. 158–68.

Ilsemann, Hartmut. "More Statistical Observations on Speech Lengths in Shakespeare's Plays." Literary and Linguistic Computing, vol. 23, no. 4, 2008, pp. 397–407. doi:10.1093/llc/fqn011.

Jackson, MacDonald P. "A New Chronological Indicator for Shakespeare's Plays and for Hand D of Sir Thomas More." Notes and Queries, vol. 252, 2007, pp. 304–07. doi:10.1093/notesj/gjm126.

Levenson, Jill L. A Critical Edition of the Anonymous Elizabethan Play "The Weakest Goeth to the Wall." Garland Publishing, 1980.

Peterson, Whitney A. "A Critical Edition of Thomas Heywood's The First and Second Partes of King Edward the Fourth." PhD diss., University of Nebraska, 1997.

Rich, Barnabe. Rich His Farewell to Militarie Profession: Conteining Very Pleasant Discourses Fit for a Peaceable Time. London, Printed by G. E. for Thomas Adams, 1606.

Rizvi, Pervez. "Collocations and N-grams." Shakespeare's Text, https://shakespearestext.com/can/index.htm.

Rizvi, Pervez, "Speech Lengths in Early Modern Plays," ANQ: A Quarterly Journal of Short Articles, Notes and Reviews, 2019, pp.1-5. DOI: 10.1080/0895769X.2019.1625260

Rowland, Richard. "'Some Words, but of No Importance'? Stage Directions, Thomas Heywood, and Edward IV." Medieval & Renaissance Drama in England, 2005.

Sams, Eric. The Real Shakespeare II: Retrieving the Later Years, 1594–1616. Centro Studi Eric Sams, 2008, pp. 221–23, https://ericsams.org.

Segarra, Egan, Ribeiro, et al. "Stylometric Analysis of Early Modern Period English Plays." Preprint, 2015.

Starnes, D. T. "Barnabe Riche's 'Sappho Duke of Mantona': A Study in Elizabethan Story-Making." Studies in Philology, vol. 30, 1933, pp. 455–72.