

CAUGHT BETWEEN LIVY AND CICERO: A COMPUTATIONAL STUDY OF VALERIUS MAXIMUS' STYLE

In his *Facta et Dicta Memorabilia*, Valerius Maximus brings together many stories that are primarily treated in the writings of Livy and Cicero. Scholars have long struggled with Valerius' collection and re-appropriation of these Republican *exempla* into a moralizing compendium. In this paper, I establish a more nuanced understanding of Valerius Maximus' engagement with the works of Livy and Cicero in the *Facta et Dicta*. I examine the lexical features of Valerius' text using John Burrow's Delta Method, an established method for studying authorial attribution, to argue that Valerius engages each of his predecessors differently in both functional and semantic ways.

The Delta Method, which uses feature words—the most commonly occurring words in chosen corpora—to analyze authorial style, is a well-proven method for attributing texts of unknown authorship to known authors. Though there is little disagreement about whether Valerius wrote the *Facta et Dicta* or not, this method provides a fascinating opportunity to compare Valerius' use of both function and semantic words compare to Livy's and Cicero's respectively. For the purposes of this study, I define Latin function words to be any particle, preposition, pronoun, or conjunction, as well as certain nouns and adjectives—essentially words that contain no inherent semantic value, but rather are used to organize those that do. Semantic words, then, are everything else, but primarily verbs and nouns.

Using this methodology, I demonstrate that Valerius' use of function words is most similar to Livy but that his semantic range becomes increasingly more similar to Cicero as more and more words are added to the analysis.

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17 Dec. 2018

LAT 798

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Caught Between Livy and Cicero: A Computational Study of Valerius Maximus' Style

In his *Facta et Dicta Memorabilia*, Valerius Maximus brings together many stories that are primarily treated in the writings of Livy and Cicero. Scholars have long struggled with Valerius' collection and re-appropriation of these Republican *exempla* into a moralizing compendium. Though the *Facta et Dicta*, for the most part, has only been what Jason Davies calls "footnote fodder" since its *floruit* in the Medieval period, several modern scholars have found value in examining the text for its own sake.¹ Francis Bliss wrote a seminal dissertation on the topic of Valerius' style and W. Martin Bloomer dedicates nearly his entire monograph to the topic.² Since then, nearly every monograph on Valerius Maximus and the *Facta et Dicta* attempts to make some sense of his peculiar style—perhaps in a more positive light than the ancient author's many critics of the 19th and early 20th centuries³—often in terms of how it relates to Livy and Cicero, the two authors from which he draws a majority of his content.⁴

In this paper, I aim to establish a more nuanced understanding of Valerius Maximus' engagement with the works of Livy and Cicero in the *Facta et Dicta*. I will examine the lexical features of Valerius' text using John Burrow's Delta Method, an established method for studying authorial attribution, to argue that Valerius engages each of his predecessors differently in both functional and semantic ways. The Delta Method, which uses feature words—the most commonly occurring words in chosen corpora—to analyze authorial style, is a well-proven

¹ Davies 2003: 400.

² Bliss 1951; Bloomer 1992.

³ There are many but take for instance Leeman 1963: 252-55.

⁴ Mueller 2002; Skidmore 1996.

method for attributing texts of unknown authorship to known authors.⁵ Though there is little disagreement about whether Valerius wrote the *Facta et Dicta* or not, this method provides a fascinating opportunity to compare styles of known authors. To accomplish this computational study, I will examine how Valerius' use of both function and semantic words compare to the joined corpora of other authors. For the purposes of this study, I define Latin function words to be any particle, preposition, pronoun, or conjunction, as well as certain nouns and adjectives—essentially words that contain no inherent semantic value, but rather are used to organize those that do.⁶ Semantic words, then, are everything else, but primarily verbs and nouns. In this study, I will demonstrate that Valerius' use of function words is most similar to Livy but that his semantic range becomes increasingly more similar to Cicero as more and more words are added to the analysis. This paper will not only provide a statistical examination of Valerius' style in terms of both functional and semantic similarities to Livy and Cicero respectively but will provide close readings of key passages that explicate the findings, ultimately arguing that Valerius' unique style is formed from a combination of Ciceronian content and Livian style.

METHODOLOGY

This study primarily utilizes the Delta method for authorship analysis, according to which, one creates a frequency distribution of the most common words, also known as features or feature words, from the selected corpus.⁷ The conductor of the study can choose how many of the most common words to include; a point I will revisit later in this section. After creating the frequency distribution, one then calculates what share each feature has in an authors' subcorpus.

⁵ Burrows 2002; Kestemont 2014; Evert, *et al.* 2017.

⁶ A full list of the feature words can be found in Appendix 1, with the function words highlighted.

⁷ The version of the Delta method used in this study is relatively simple and the authors owes a great debt to François Dominic Laramée, who made the method easily comprehensible (Laramée 2018). For a fuller treatment of the Delta method and its possible complexities, see Evert, *et al.* 2017.

For example, the conjunction *et* occurs 12,267 times in Livy’s subcorpus, which has a total of 513,866 lemmatized words. Thus, the feature *et* makes up 2.4% of Livy’s lexical range. The mean and standard deviation are then calculated for each feature. These are then used to calculate the overall means and standard deviations over the entire corpus. This methodology eliminates one overly large subcorpus—Cicero, in this case—from skewing the results. Finally, the Z-scores are calculated for each feature using the following formula:

$$Z_i = \frac{C_i - \mu_i}{\sigma_i}$$

where Z_i is the Z-score for every feature (i); C_i is the number of times that feature appears in the corpus; μ_i is the mean occurrence of that feature in the overall corpus; and σ_i is the standard deviation for that feature in the overall corpus. The Z-scores for the test case are then calculated independently and compared to the Z-scores of the other subcorpora. Finally, the delta score is produced from comparing these individual sets of Z-scores and indicates the “distance” between the test case and the other subcorpora. The lower the delta score, the more similar the test case is to any subcorpus.

To analyze the relationship between the styles of Valerius Maximus, Livy, and Cicero, I modified the Delta method for lexical comparison of known authors. Although this method is typically used to attribute a text of unknown authorship and there is little debate that Valerius wrote the *Facta et Dicta*, we can still glean valuable insight from applying the method in these circumstances. To increase the sample size of the data and provide a more pervasive study, I included the works of Seneca the Elder, Sallust, and Ovid alongside those of Cicero and Livy, and maintained all nine books of the *Facta et Dicta* as the test case. Including these authors also ensured that the results would be comparable to authors other than Livy and Cicero that have

often been mentioned when discussing Valerius' style.⁸ And, as Bloomer right states, "the choices of Valerius' source should not be formulated as a clear-cut alternative, Cicero or Livy."⁹ Though, as I will demonstrate, Cicero and Livy do rise above any other author in terms of Valerius' possible sources. At first, I thought to include Tacitus, a historiographer who postdated Valerius, in order to see how Valerius' style might have been received in the works of subsequent authors, but this largely skewed the results of the study. The delta scores produced when Tacitus was included as a possible author with the *Facta et Dicta* as the test case clustered Tacitus, Livy, and Sallust together as the most similar (lowest delta scores) to Valerius with Cicero, Ovid, and Seneca clustered as the least similar (highest delta scores). Since it is impossible that Valerius looked to the works of Tacitus for inspiration while he wrote the *Facta et Dicta*, such results only complicate this study and lie outside the aim of this paper. With the corpus and general methodology established, I will now discuss the individual steps and limitations of this study.

Each text was tokenized—that is, every text was transformed into a list of words instead of a continuous string of text—using the Classical Language Toolkit's (henceforth "CLTK") built-in tokenizer.¹⁰ The CLTK tokenizer is especially suited for Latin stylometry because it splits enclitics like '-que' and '-ve' into their own objects in the list, thus allowing them to be counted as features. I then removed all the punctuation and made every word lowercase before lemmatizing each text—taking every word back to a basic dictionary-entry style format and thus allowing all the declined and conjugated forms of nouns, adjectives, and verbs to be counted as a single word—with the CLTK's back-off lemmatizer. These texts were then analyzed according to the Delta method which calculates the difference (z-score) between the counted uses of the

⁸ Leeman 1963: 252-55; von Albrecht 1989; Bloomer 1992: 230-59.

⁹ Bloomer 1992: 71.

¹⁰ Johnson 2017.

selected features per author and the overall number of features in the combined corpus. I then compared the z-scores of our test case to those of the other authors and calculate a numerical distance (the delta score) for each author. The delta score thus indicates the similarity in use of the selected features between the test case and the respective authors.

As I have already said, scholars often employ this method to study authors' use of function words and thus their style. Some scholars, however, disagree on the best method for analyzing the style of Latin authors specifically. Anjalie Field has recently argued that such a lexical study of function words is not fitting for Latin because of the highly-inflected language's resistance to lemmatization and its natural feature of flexible word order.¹¹ While Field prefers a syntax-based approach, I would argue that the issues she raises concerning a lexical analysis also face a syntax-based approach. For example, Field attempts to use the quantity of ablative absolutes as indicators of authorial style but admits that the range of error for such an analysis is high, given the inherent difficulties in actually teaching a machine to recognize an ablative absolute—a problem directly related to methods for tagging parts of speech and lemmatization.¹²

Although Field raises interesting points that the syntactic analysis of Latin texts might well provide deeper insight into authorial style, I contend that a lexical analysis—especially of texts for which the authorship is known, like the *Facta et Dicta*—can provide equally valuable results. Given the inherent issues with accurately identifying grammatical structures, which would be intensely prohibitive if not done computationally, this approach to studying the lexical range of Valerius' *Facta et Dicta* seems best. This study does make another slight modification to the Delta method, however, by iterating the established methodology over the dataset while also incrementally increasing the number of feature words. Iterating the method over a growing

¹¹ Field 2016.

¹² Similar issues are discussed in Eder 2011.

set of feature words allows patterns to emerge within the results and provides further insight into the nature of Valerius' prose style.

RESULTS

In this section, I will describe the results in detail with accompanying graphs of the data generated by the study.¹³ As I mentioned in the previous section, I modified the Delta method to iterate over the same texts with an increasing number of feature words included into the analysis, thus providing snapshot of the similarities between the selected authors as I added more and different words. The initial results of this study are supplied in Figure 1 below:

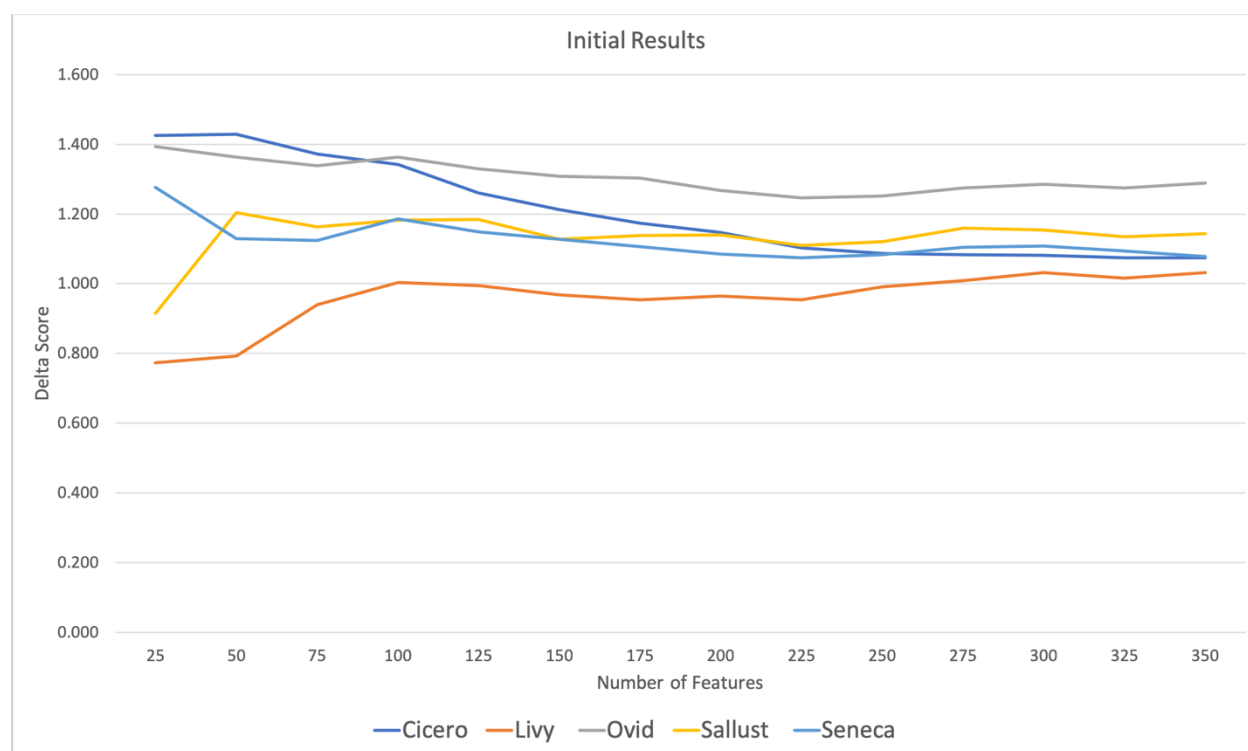


Figure 1: Initial Results

The first three iterations of the study included the 75 most common features of the data set and mostly contains function words.¹⁴ Within this range, we see the highest level of differentiation between the authors' styles and their similarity to Valerius. That is to say, the range of delta

¹³ The data table itself can be viewed in Appendix 2.

¹⁴ See Appendix 1.

scores is the highest and demonstrates that in terms of function words, Sallust and Livy are the most similar to Valerius while the others are all quite dissimilar (given that they have much higher delta scores). This is unsurprising given the extensive scholarship that has been published on the validity of function words as markers of authorial style.¹⁵ A noteworthy trend in this data, however, is that Cicero is the only author to become significantly more similar to Valerius as more feature words are included in the study. While a clear indication of the results is that Livy and Valerius likely use function words in a similar way, Cicero's increasing similarity to Valerius is perhaps an obscure trend in the data—although the change in delta values for Cicero decrease the most by far. The decrease in delta values coincides with the shift in type of feature words being considered: the more semantic words are included, the more similar Valerius' style is to Cicero's. Of course, the Ciceronian corpus is large and vast in terms of genre, which incites further inquiry and a more granular stylistic study.

If we separate the texts from the Ciceronian corpus into 3 categories (Letters, Oratory, and Philosophy), we see a much larger correlation between the *Facta et Dicta* and Cicero's rhetorical texts as they regard semantic range. In Figure 2, we see a marked distinction between the delta values of Cicero's rhetorical texts and his philosophical and epistolary texts:

¹⁵ Burrows 2002; Eder 2011; Kestemont 2014; *contra* Fields 2016.

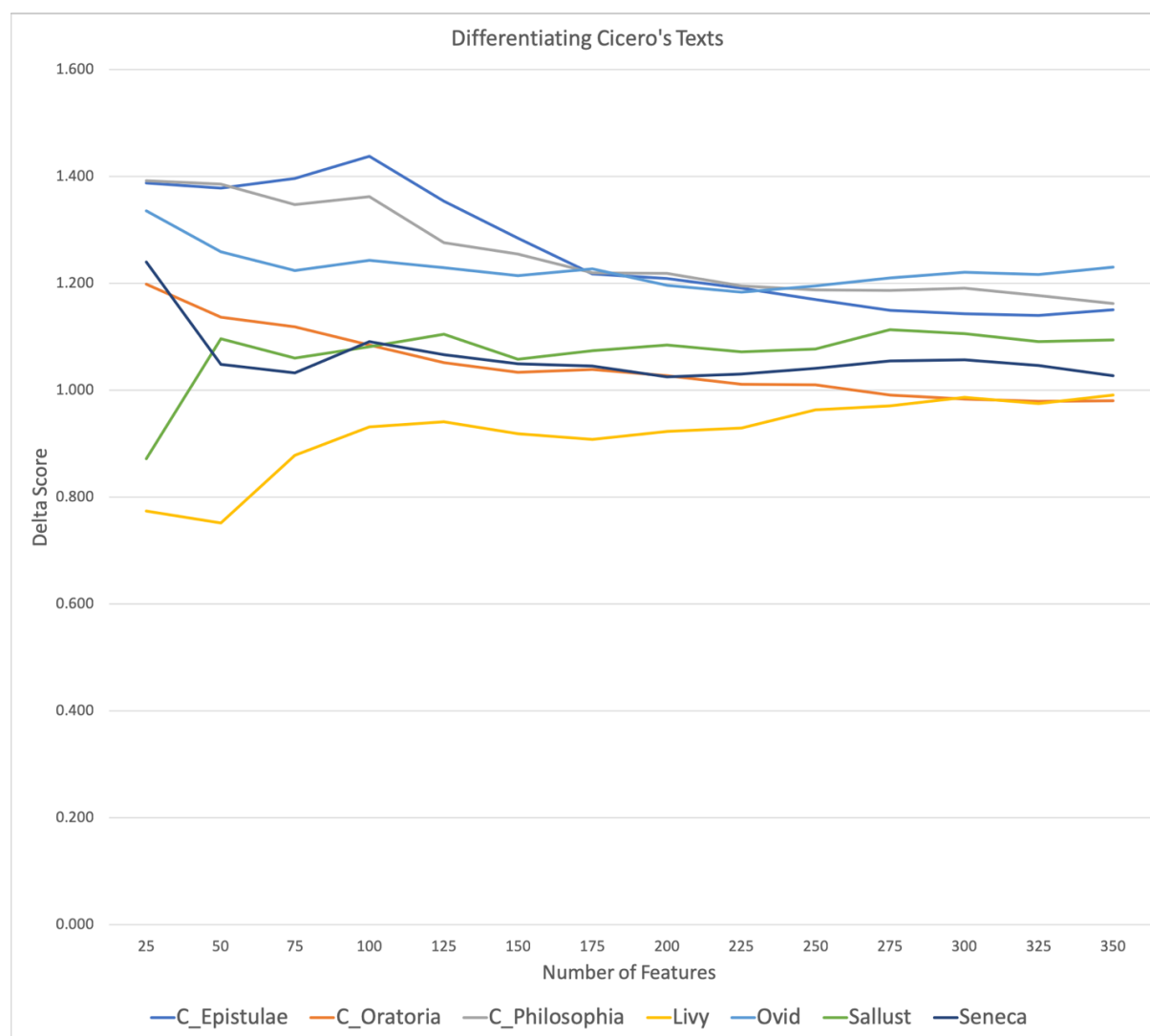


Figure 2: Differentiating Cicero's Texts

As I have already noted, the feature words become markers of semantic range within the texts after about the hundredth feature word. As the results in Figure 2 make clear, Cicero's rhetorical texts are much more similar in style to the *Facta et Dicta*. The delta scores for the rhetorical text experience a change of -0.219 and even eclipse Livy in terms of similarity by about 0.02. While this difference may not be much, it becomes more marked once we remove the philosophical and epistolary texts. Removing these texts creates a clearer comparison between the part of the

Ciceronian corpus with which Valerius was most familiar and the other works in the corpus.¹⁶

This can be seen in Figure 3 below:

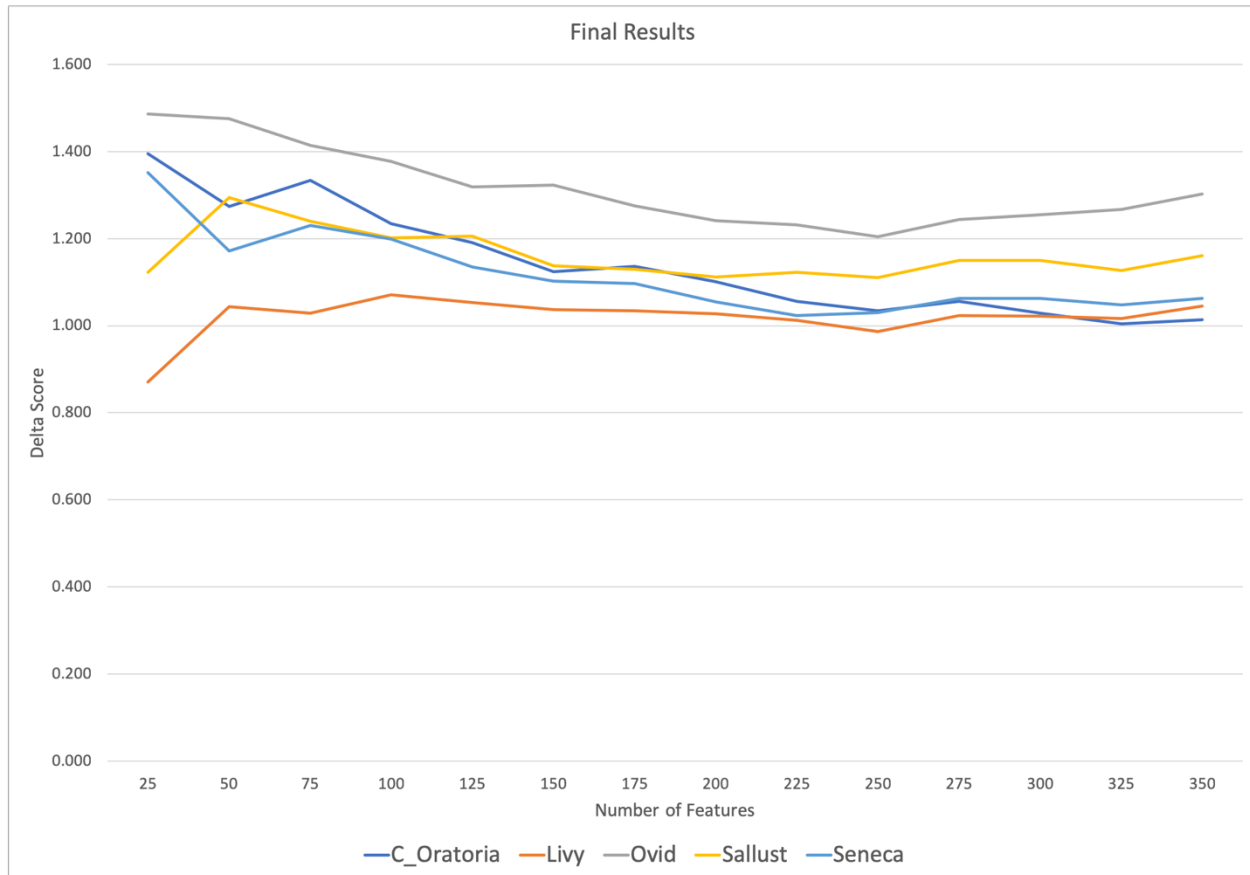


Figure 3: Final Results

Having pared down the Ciceronian corpus to just his rhetorical texts, we see that Cicero and Seneca are the only two authors to experience a negative trend in delta values. Cicero actually becomes the most similar to Valerius at 350 feature words and displaces Livy, whose trend suggests a semantic range slightly less similar to Valerius. As we increase the number of feature words to include more and more semantic words, Cicero becomes the most similar stylistically to

¹⁶ Bloomer 1992.

Valerius while Livy's similarity remains the largely the same, though with a slight decrease in similarity. This can be seen more clearly in Figure 4, which shows only the delta scores for Cicero and Livy. Given these results, Valerius Maximus is employing Livy's use of function words while at the same time engaging Cicero's semantic range from the rhetorical tradition.

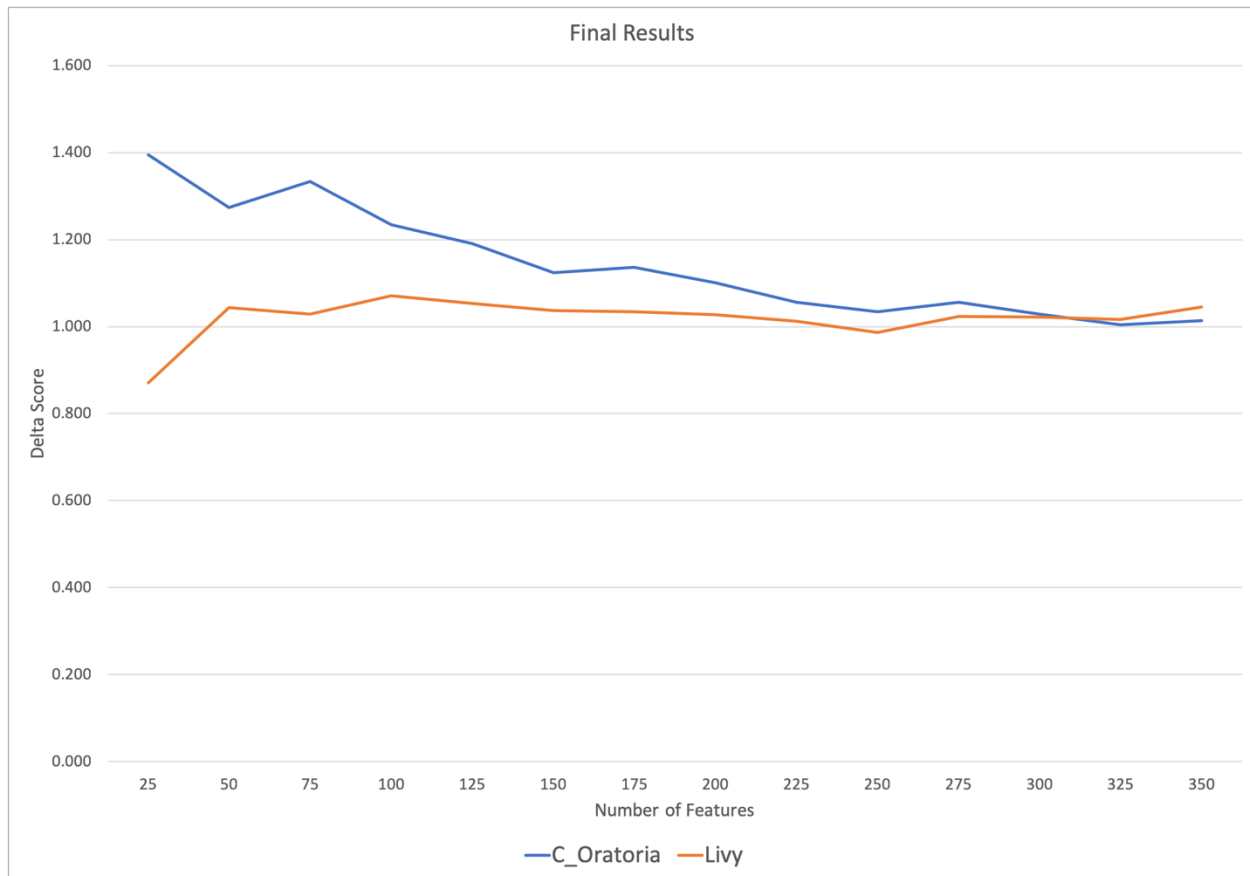


Figure 4: Final Results only showing Cicero and Livy

DISCUSSION

Having observed how the results from the Delta study demonstrate that Valerius uses Livy's historiographical style in terms of function words and employs Cicero's rhetorical semantic range, we must ask: is this observable at the level of individual *exempla*? As we will find in the following close readings, the similarities that I have just discussed are indeed visible

at the level of individual *exempla*. Francis Bliss observed as much, though perhaps unknowingly, in his dissertation on Valerius' style, noting that the author higher number of repeated word collocations with Cicero than with Livy.¹⁷ The present study largely benefits from Bliss' seminal work on Valerius' style, which pointed out that the author's first direct engagement with Cicero occurs in the first five *exempla* in Book 1.¹⁸ The very first *exemplum* demonstrates how Valerius mines Cicero's rhetorical diction for his semantic range and neglects his use of function words.¹⁹

Sed quoniam mea causa expedita est, videamus nunc **quid** haruspices dicant. Ego enim fateor me et magnitudine **ostenti** et gravitate responsi et una atque constanti haruspicum voce vehementer esse commotum; neque is sum **qui**, si **cui** forte videor plus **quam** ceteri **qui** aequae atque ego sunt occupati versari in studio litterarum, his delecter aut utar omnino litteris **quae** nostros animos deterrent atque avocant a religione. Ego vero primum habeo auctores ac magistros religionum colendarum **maiores** nostros, **quorum** mihi tanta fuisse sapientia videtur ut satis super**que** prudentes sint **qui** illorum prudentiam non dicam adsequi, sed quanta fuerit perspicere possint; **qui** **statas** **sollemnisque** **caerimonias** pontificatu, **rerum** **bene** **gerundarum** **auctoritates** augurio, fatorum veteres **praedictiones** **Apollinis** **vatum** **libris**, **portentorum** expiationes Etruscorum **disciplina** contineri putaverunt; **quae** quidem tanta est ut nostra memoria primum Italici belli funesta illa principia, post Sullani Cinnan**ique** temporis extremum paene discrimen, tum hanc recentem urbis inflammandae delend**ique** imperi coniurationem non obscure nobis paulo ante praedixerint (Cic. *Har. resp.* 18).

Maiores **statas** **sollemnesque** **caerimonias** pontificum scientia, **bene** **gerendarum** **rerum** **auctoritate**<s> augurum observatione, **Apollinis** **praedictione**<s> **vatum** **libris**, **portentorum** depulsi<one>s Etrusca **disciplina** explicari voluerunt. prisco etiam instituto **rebus** divinis opera datur: cum aliquid commendandum est, precatione; cum exposcendum, voto; cum solvendum, gratulatione; cum inquirendum vel extis vel sortibus, impetratio; cum sollemni ritu peragendum, sacrificio, **quo** etiam **ostentorum** ac fulgurum denuntiationes procurantur (Val.Max. 1.1.1).

But since the question affecting myself has been satisfactorily disposed of, let us now consider what the soothsayers say. For I must admit that I have been deeply impressed both by the awe-inspiring nature of the prodigy and the solemnity of its interpretation, and the firm and unwavering utterances of the soothsayers; and indeed, though I may perhaps appear to some to be a greater student of literature than others whose lives are as full of distractions as my own, my natural bent does not lead me to find any pleasure in, or indeed any use whatsoever for, such literature as tends to discourage and withdraw our minds from religion. In the first place, speaking for myself, I look for authority and guidance in religious observance to our ancestors, whose wisdom seems to me to have been so unquestionable that those who are able, I will not say

¹⁷ Bliss 1951: 56-70.

¹⁸ All five of these initial *exempla* come from various works of Cicero. See Appendix IV in Bliss 1951 for a full list and description.

¹⁹ The translations are delayed so that the reader may fully appreciate the semantic similarities between these two texts. Shared **function words are highlighted in green** and shared **semantic words are highlighted in yellow**.

to reach the level of, but only to have gained an insight into, their sagacity, themselves possess sagacity which is sufficient, and more than sufficient. In their view, all prescribed and liturgical ceremonies depended upon the Pontificate, and all regulations determining auspicious action upon augury; they thought that the ancient prophecies of the oracle of Apollo were comprised in the books of the seers, and all interpretations of prodigies in the lore of the Etruscans; and indeed the efficacy of this last is shown by the fact that even in our memory unmistakable predictions were given shortly before each event, first of the calamitous outbreak of the Italian war, later of the perilous days of Sulla and Cinna that so nearly proved fatal, and more recently still, of the conspiracy to burn and destroy the city.²⁰

Our ancestors wished that the following be carried out properly: established and annual ceremonies by the science of the pontiffs; sound advice on affairs by the observation of augury; the predictions of Apollo by the books of the seers; and that the repelling of portents be explicated by the Etruscan discipline. By ancient institution also are rituals performed: when something must be commended, it should be done by prayer; when it must be demanded, by vow; when it must be absolved, by thanks; when it must be investigated, either by entrails or by lots, it should be done by solicitation of response; when it must be carried out by solemn rite, by sacrifice, by which also warnings of prodigies and lightning are managed.²¹

The common semantic words (*Apollinis, auctoritas, bene, caerimonia, disciplina, gero, libra, magnus, ostendo, portendo, praedictio, res, sollemnis, sto, vates*) between each text far outnumber the occurrences of shared function words (*-que, atque, and quis*). It is also noteworthy that, even though Valerius uses the suffix ‘*-que*’ the relative pronoun ‘*quis*’ like Cicero, he only uses each once whereas Cicero uses both generously. One of Valerius’ uses is even in the section of the text quoted directly from Cicero (*sollemnesque*). Since this collocation is specific to Cicero’s work and Valerius nearly copies the semantic words of phrase *in toto*, it is clear that our author is reframing Cicero’s words into a different stylistic format. In fact, Valerius’ borrowed function words only make up 11% of the total borrowed words. The semantic words that Valerius copies from the Ciceronian original are nearly all located towards the end of the feature word list, meaning that they are less frequently used in the overall corpus and are not included in the delta method analysis until the feature count is increased to about 300

²⁰ Translation by Watts 1923: 337-9.

²¹ All translations are mine unless otherwise noted.

words.²² This example, then, helps to explain how Cicero becomes more similar to Valerius as more and more feature words are added.²³

Aside from word counts, we can see other instances where Valerius modifies Cicero's style. At the end of the passage from the *Facta et Dicta*, our author summarizes much of what Cicero has to say with a very neat set of gerundives in parallel structure (*cum solvendum, cum inquirendum, cum peragendum*)—a very Livian stylistic feature.²⁴ Cicero noticeably refrains from using *cum* in his version of the story, though he does use gerundives (though fewer than Valerius), which makes Valerius' frequent use of the word in such a short passage contrast strongly in terms of function words. That is not to say, however, that Cicero's version of the story lacks function words—far from it. There are many function words in the passage from Cicero with which Valerius does not engage (*sed, quoniam, nunc, enim, and ut*, just to name a few). Bloomer has noted that Valerius appears to draw the outline of 1.6 from Cicero, but that the individual examples must be drawn from Livy's fuller descriptions.²⁵ He specifically follows the order from Cicero's various treatments of the *exempla* but sticks closely to Livy's style of relating the stories.

Given Bloomer's analysis on Valerius' propensity for Livian style, let us now turn to a different passage where Valerius primarily draws on the historian:

Consulum alter T. Quinctius Crispinus ad exercitum quem Q. Fulvius Flaccus habuerat cum supplemento in Lucanos est profectus. Marcellum aliae atque aliae obiectae animo religiones tenebant, in quibus quod cum bello Gallico ad Clastidium aedem Honori et Virtuti uouisset dedicatio eius a pontificibus impediabatur, quod negabant unam cellam amplius quam uni deo recte dedicari, quia si de caelo tacta aut prodigii aliquid in ea factum esset difficilis procuratio foret, quod utri deo res diuina fieret sciri non posset; neque enim duobus nisi certis deis rite una hostia fieri. ita addita Uirtutis aedes adproperato opere; neque tamen ab ipso aedes eae dedicatae sunt. tum demum ad exercitum quem priore anno Venusiae reliquerat cum supplemento proficiscitur (Livy 27.25).

²² See Appendix 1.

²³ See Figure 4.

²⁴ Steele 1906.

²⁵ Bloomer 1992: 29-40.

Non mirum igitur si pro eo imperio augendo custodiendoque pertinax deorum indulgentia semper excubuit quo tam scrupulosa cura parvula quoque momenta religionis examinari videntur, quia numquam remotos ab exactissimo cultu caerimoniarum oculos habuisse nostra civitas existimanda est. in qua cum <M.> Marcellus quintum consulatum gerens templum Honori et Virtuti, Clastidio prius deinde Syracusis potitus, nuncupatis debitum votis consecrare vellet, a collegio pontificum impeditus est, negante unam cellam duobus dis recte dicari: futurum enim, si quid prodigii in ea accidisset, ne dinosceretur utri rem divinam fieri oporteret, nec duobus nisi certis dis una sacrificari solere. ea pontificum admonitione effectum est ut Marcellus separatis aedibus Honoris ac Virtutis simulacra statueret, neque aut collegio pontificum auctoritas amplissimi viri aut Marcello adiunctio impensae impedimento fuit quo minus religionibus suis tenor suaeque observatio redderetur (Val.Max. 1.1.8).

Of the consuls one, Titus Quinctius Crispinus, set out for Lucania with additional recruits to join the army which Quintus Fulvius Flaccus had held. Marcellus was detained by religious scruples one after another, as they were impressed upon his mind. One of them was that, although he had vowed at Clastidium, in the Gallic War, a temple to Honour and Valour, the dedication of the temple was being blocked by the pontiffs. These said that one cella was not properly dedicated to more than a single divinity, since, if it should be struck by lightning, or some portent should occur in it, expiation would be difficult, because it could not be known to which god sacrifice should be offered; for, with the exception of certain deities, sacrifice of a single victim to two gods was not proper. Accordingly a temple of Valour was added, its construction being hastened. Even so the temples were not dedicated by Marcellus in person.⁴ Then at last he set out with additional recruits to join the army which he had left at Venusia the previous year.²⁶

It's no wonder then if persistent indulgence of the gods was always watchful for the imperial power to be increased and protected by which the tiniest moments of religion seem to be examined with such scrupulous care because our city must never be thought to have cast its eyes away from the most exact practice of ceremonies. In which city, when M. Marcellus, carrying out his fifth consulship, having captured first Clastidium and then Syracuse, wished to consecrate a temple to Honor and Virtue, one owed by pronounced vows, he was impeded by the College of Pontiffs, who denied that a single chapel could be rightly dedicated to two deities: for should some prodigy happen in that place, one would not be able to distinguish to which deity a sacrifice should be made, nor was it customary to sacrifice to two gods at once except for certain deities. It happened by the administration of pontiffs that Marcellus would place images of Honor and Virtue on separate altars, and neither was the authority of such a great man weighed down by the College of Pontiffs, nor was there an additional expense to Marcellus, by which the less his course and his observance of religion might be restored.

While it is clear that Valerius engaged with Livy's semantic range in addition to his use of function words, the number of occurrences of the latter outweigh the former. Valerius and Livy's respective texts share 18 of the same function words (*ab, in, atque, aut, is, cum, duo, enim, et, neque, non, prior, qui, quia, si, unus, uter, certus*), yet Valerius draws from this set 29 times. These same texts share only 16 of the same semantic words (*aedes, amplius, cella, deus, fio,*

²⁶ Translation by Moore 1943: 313.

habeo, honor, impedio, nego, nitor, pontifex, prodigium, recingo, religio, virtus, voveo), which only appear 19 times in Valerius' text. Thus, Valerius emulates Livy's style by using (often) the same function words. In the passage above, I have marked out proper names in light blue. These technically count as semantic features for the purpose of this study but, given the topical nature of Valerius' *exempla*, do not constitute real semantic borrowing. After removing the proper names from the counted features in this passage, the ratio of borrowed semantic words to borrowed feature words is 20 to 29. Put another way, the borrowed function words make up 60% of Valerius' total borrowed words. In comparison to the Cicero passage above, where Valerius' borrowed function words made up only 11% of the total borrowing, it is clear that Valerius is engaging with Livy in a specifically functional way. This observation also fits the results of our previous computational study seen in Figure 4.

But are these similarities also indicative of genre, and if so, to what extent is Valerius being intentional with his stylistic choices? To answer these questions, we must turn to Valerius' preface, where his stylistic choices subtly outline his underlying goals for the text. His method for constructing the preface of the *Facta et Dicta* is similar to Livy's preface for the *Ab Urbe Condita*.²⁷ Many of these similarities cannot be simply customary, or as I hope to show, coincidental. Valerius is directly responding to Livy's preface and at the same time including all the markers of historiographical commonplaces. The customary openings to historiographical works, in which the author was expected to describe his own take on history and provide a rhetorical treatise on why reading a history would be profitable, had been long established by Hellenistic historians before Valerius and even before Livy.²⁸ Valerius thus begins his preface by describing the essential goals of his work and why it is valuable: namely to collect deeds and

²⁷ Bloomer has examined Valerius' historiographical tendencies (147-184), but neglects to examine the preface.

²⁸ Ogilvie 1965: 23.

says of famous authors which are *worthy* enough to be remembered (*facta simul ac dicta memoratu digna*). Valerius' use of the adjective *digna* with the supine *memoratu* is marked here as it places him in the context of the historiographical genre.²⁹ This opening statement echoes Livy's own preface where he immediately describes the value of his work (*facturusne operae pretium sim*). Further, Livy goes on to humble himself in the face of his great predecessors and current peers (*si in tanta scriptorum turba mea fama in obscuro sit, nobilitate ac magnitudine eorum me qui nomini officient me consoler*), which Valerius also does in his address to Tiberius where he describes himself as "my smallness" (*mea parvitas*). Valerius, like Livy, humbles himself before those who might be perceived as their betters.

On the scope of the work however, Valerius directly contrasts Livy, writing that he does not wish for his work to be all-encompassing (*nec mihi cuncta complectendi cupido incessit*) and that he wishes for labor to be away from a long inquisition (*longae inquisitionis labor absit*) whereas Livy expressly states that he wishes to create an all-encompassing history that with require much labor (*res est praeterrea et immensi operis*). Further, Valerius specifically nods to Livy's magnum opus, when he writes "who with a composed mind would hope that he might transmit with either more attentive care or superior eloquence the series of domestic and foreign histories produced by the felicitous stylus of his predecessors?" (*quis compos mentis domesticate peregrinaeque historiae seriem felici superiorum stilo conditam vel attentiore cura vel paraestantiore facundia traditurum se speravit*). Valerius' specific use of *conditam* here refers to the very title of Livy's work, *Ab Urbe Condita*. Valerius seeks to make works like Livy's (and all his literary and rhetorical predecessors) more approachable and appears entirely intentional in doing so. Tara Welch has also investigated this aspect of Valerius' treatment of Livy, though not

²⁹ Ogilvie 1965: 25 n.1.

concerning the preface specifically.³⁰ Valerius thus contextualizes the *Facta et Dicta* as a historiographical work, though one that is in conversation with the historians of the past, but also one that seeks to make accessible the lengthy histories of Livy.

CONCLUSION

I hope to have shown in this study not only how Valerius engages differently with the styles of Livy and Cicero, but that he also blends their two distinct styles in order to create something new. In the *Facta et Dicta*, Valerius recasts the efficaciousness and influence of Cicero's rhetorical *exempla* with Livy's historiographical method of constructing sentences, as we saw in Bloomer's treatment of 1.6 and as I further demonstrated in the previous section. This difference, which I hope to have made evident by employing the Delta method in tandem with close readings to study the authorial similarities between Valerius and his predecessors, lies at the heart of Valerius' own distinctive style. That is to say, Valerius produced a unique hybrid of Ciceronian content and Livian style, which he wished to be perceived in exactly this way. Bloomer wrote that "it is insufficient and insignificant to say this author or indeed the literature of his generation is rhetorical or that Valerius offers rhetoricized history."³¹ This is entirely correct. Valerius indeed does not provide a rhetoricized history, but rather a historicized rhetoric.

³⁰ Welch 2013: 81-82. See also Bloomer 1992: 203-4 on Valerius' engagement with Cicero.

³¹ Bloomer 1992: 230.

Appendix 1: Feature Words³²

'qui1'	47063	'neol'	4218	'quidem'	2484	'armo'	1733
'et'	35819	'suo'	4038	'mitto'	2464	'nomen'	1729
'edol'	30666	'enim'	3855	'sino'	2405	'duo'	1725
'in'	29907	'homo'	3817	'capio'	2352	'civitas'	1710
'sum1'	24082	'etiam'	3809	'exerceo'	2288	'quisquam'	1708
'-que'	23992	'jam'	3793	'nunc'	2273	'indo'	1692
'non'	18306	'bellus'	3729	'inter'	2243	'gerol'	1689
'hic'	16438	'res'	3707	'pro1'	2234	'vester'	1685
'cum'	15386	'bonus'	3704	'consul'	2180	'ager'	1679
'is'	14375	'fero'	3652	'jubeo'	2177	'serol'	1671
'ad'	13232	'venio'	3638	'pars'	2140	'legol'	1661
'ut'	12392	'hostis'	3512	'nitor1'	2124	'an'	1637
'ille'	11693	'modus'	3410	'tam'	2122	'terra'	1636
'ab'	11209	'idem'	3410	'dies'	2100	'corpus'	1624
'tu'	11137	'primus'	3339	'vir'	2096	'magus2'	1616
'atque'	9527	'tantus'	3332	'deus'	2036	'queo'	1614
'si'	9309	'urbs'	3247	'-ne'	2025	'mille'	1605
'ego'	9071	'causa'	3241	'ante'	1943	'audio'	1572
'quis1'	8980	'unus'	3221	'meus'	1942	'quaero'	1562
'sui'	8964	'nihil'	3187	'peto'	1905	'l.'	1556
'neque'	8781	'tamen'	3187	'nam'	1893	'autem'	1553
'possum'	7941	'iste'	3172	'lego2'	1885	'quidam'	1551
'sed'	7715	'tuus'	3134	'ubi'	1878	'meo'	1547
'facio'	7656	'multus'	3030	'parvus'	1875	'm.'	1543
'omne'	7531	'nullus'	3017	'deinde'	1862	'manus1'	1538
'ex'	7490	'animus'	2878	'ceter'	1855	'c.'	1533
'ipse'	7069	'ago'	2869	'vis'	1846	'publica'	1531
'magnus'	6510	'volo1'	2863	'totus1'	1840	'romani'	1516
'dico2'	6479	'verus'	2774	'judico'	1829	'teneo'	1511
'eol'	6432	'senatus'	2729	'fio'	1821	'virtus'	1494
'video'	5934	'noster'	2686	'quia'	1778	'sic'	1488
'de'	5778	'quoque'	2668	'puto'	1771	'moveo'	1469
'habeo'	5654	'populus1'	2659	'duco'	1769	'debeo'	1466
'aut'	5362	'nos'	2628	'locus'	1767	'loco'	1465
'ito'	4846	'suum'	2605	'accipio'	1765	'relinquo'	1451
'do'	4784	'tempus'	2566	'alter'	1758	'pario2'	1439
'alius2'	4592	'consulo'	2548	'quisque'	1751	'aliqui'	1432
'per'	4423	'redeo'	2521	'quantus'	1747	'credo'	1424
'reor'	4271	'tum'	2487	'omnes'	1736	'scio'	1411

³² Function words are highlighted in yellow. Semantic words are not highlighted.

'judicium'	1410
'vinco'	1409
'pater'	1393
'imperium'	1389
'fortis'	1367
'uter'	1358
'liceol'	1343
'inquam'	1329
'civis'	1317
'pono'	1317
'at'	1307
'provincia'	1304
'spes'	1296
'jus'	1288
'miles'	1285
'tribunus'	1285
'prior'	1273
'nemo'	1272
'praetor'	1270
'verbum'	1266
'socius'	1265
'domus'	1260
'rego'	1258
'annus'	1251
'voco'	1243
'refero'	1229
'castro'	1229
'malus'	1227
'mors'	1214
'ullus'	1214
'solus1'	1210
'dius'	1210
'paro1'	1205
'publico'	1204
'pecunia'	1204
'p.'	1204
'longus'	1200
'sequor'	1192
'apud'	1185
'gravis'	1180
'patior'	1154
'rex'	1153
'tueor'	1148

'pax'	1142
'dum'	1141
'post'	1140
'saepis'	1126
'multo2'	1108
'cado'	1100
'semper'	1081
'populo'	1073
'praesidium'	1067
'proficio'	1062
'sto'	1060
'nosco'	1052
'periculum'	1051
'nox'	1042
'mare'	1034
'medius'	1025
'milito'	1024
'simul'	1024
'mорий'	1023
'sentio'	1020
'ergo'	1010
'animo'	1009
'certus'	997
'haud'	990
'decerno'	985
'ratio'	975
'contra'	972
'alo'	971
'pugno'	966
'gens'	963
'solo1'	962
'patro'	959
'for'	955
'vivo'	951
'adeol'	950
'natura'	943
'caedo'	936
'adverro'	935
'vita'	935
'aurum'	931
'metus'	931
'malo'	925
'uto'	921

'ira'	920
'opus1'	914
'sub'	907
'fortuno'	899
'q.'	898
'numquam'	887
'ibi'	885
'vel'	873
'injuria'	871
'nego'	859
'cogo'	858
'aqua'	856
'copial'	852
'igitur'	846
'filius'	843
'reddo'	842
'posterus'	833
'signo'	833
'timeo'	831
'ignis'	830
'aliquis'	828
'facilis'	828
'consilium'	828
'ulter'	825
'recipio'	816
'scribo'	807
'via'	806
'ingens'	803
'legio'	803
'defendo'	802
'trado'	799
'pleo'	798
'armus'	798
'frater'	793
'respondeo'	790
'sententia'	789
'romanis'	787
'oculus'	787
'equito'	785
'libertas'	782
'quisquis'	780
'coepio'	779
'gratia'	778

'potestas'	774
'multa1'	773
'invenio'	773
'amo'	772
'fallo'	768
'curo'	764
'auctoritas'	763
'gener'	762
'audeo'	760
'princeps'	759
'littera'	759
'ops1'	754
'classis'	753
'amicus1'	752
'adsum'	748
'censeol'	744
'aio'	736
'diu'	735
'consilior'	734
'pareo'	733
'plebs'	730
'prope'	723
'aliqua'	720
'tres'	716
'aequus'	715
'tego'	715
'fortuna'	711
'crimen'	711
'fugio'	711
'romam'	707
'sapio'	705
'potis'	701
'tot'	700
'beneficium'	700
'suus'	697
'oro'	695
'impetus'	692
'mereo'	689
'novo'	688
'cur'	687
'colo1'	685
'vito'	685
'loquor'	684

'poena'	681
'exeo'	680
'sua'	679
'imperator'	677
'talis'	677
'castra'	676
'levis1'	673
'intellego'	673
'postquam'	672
'summus'	671
'fama'	669
'scipio1'	668
'ob'	668
'libo1'	665
'absum'	662
'-ue'	660
'creo'	658
'cn.'	656
'subeo'	656
'equus1'	656
'convenio'	652
'praeda'	651

Appendix 2: Delta Values

Preliminary Results		Number of Features													
		25	50	75	100	125	150	175	200	225	250	275	300	325	350
Figure 1	Cicero	1.425	1.429	1.371	1.342	1.260	1.213	1.173	1.147	1.103	1.087	1.083	1.082	1.074	1.074
	Livy	0.772	0.792	0.940	1.004	0.994	0.967	0.953	0.964	0.954	0.991	1.008	1.031	1.015	1.032
	Ovid	1.393	1.362	1.339	1.364	1.329	1.308	1.304	1.268	1.246	1.251	1.275	1.285	1.275	1.289
	Sallust	0.914	1.204	1.163	1.182	1.185	1.127	1.138	1.140	1.111	1.120	1.159	1.154	1.134	1.144
	Seneca	1.277	1.129	1.124	1.187	1.149	1.127	1.107	1.085	1.075	1.082	1.105	1.109	1.094	1.077
Differentiating Cicero's Texts		25	50	75	100	125	150	175	200	225	250	275	300	325	350
Figure 2	C_Epistulae	1.388	1.378	1.396	1.438	1.354	1.284	1.217	1.209	1.190	1.169	1.150	1.143	1.139	1.150
	C_Oratoria	1.199	1.136	1.118	1.085	1.052	1.033	1.038	1.027	1.010	1.010	0.991	0.983	0.979	0.980
	C_Philosophia	1.392	1.386	1.347	1.362	1.276	1.254	1.220	1.218	1.195	1.188	1.186	1.191	1.177	1.162
	Livy	0.773	0.751	0.878	0.931	0.940	0.918	0.908	0.923	0.929	0.963	0.971	0.987	0.975	0.991
	Ovid	1.335	1.259	1.224	1.243	1.229	1.214	1.227	1.196	1.183	1.195	1.209	1.221	1.216	1.230
	Sallust	0.872	1.096	1.060	1.082	1.104	1.057	1.074	1.085	1.072	1.077	1.114	1.106	1.091	1.094
	Seneca	1.239	1.048	1.033	1.091	1.066	1.049	1.045	1.025	1.030	1.040	1.054	1.057	1.046	1.027
Final Results		25	50	75	100	125	150	175	200	225	250	275	300	325	350
Figures 3 & 4	C_Oratoria	1.394	1.273	1.333	1.235	1.191	1.124	1.136	1.101	1.056	1.033	1.056	1.029	1.003	1.014
	Livy	0.871	1.043	1.028	1.071	1.054	1.037	1.034	1.027	1.013	0.987	1.023	1.021	1.016	1.044
	Ovid	1.486	1.475	1.414	1.376	1.318	1.322	1.275	1.241	1.231	1.205	1.243	1.255	1.267	1.302
	Sallust	1.123	1.293	1.240	1.201	1.205	1.138	1.129	1.112	1.123	1.110	1.150	1.150	1.126	1.161
	Seneca	1.351	1.172	1.229	1.199	1.135	1.102	1.096	1.055	1.023	1.030	1.063	1.062	1.048	1.062

Bibliography

- von Albrecht, M. 1989. *Masters of Roman Prose from Cato to Apuleius: Interpretative Studies*, trans. Neil Adkin. Leeds: Francis Cairns.
- Bliss, F. 1951. *Valerius Maximus and his Sources: A Stylistic Approach to the Problem*. PhD dissertation: University of North Carolina, Chapel Hill.
- Bloomer, M. 1992. *Valerius Maximus and the Rhetoric of the New Nobility*. Chapel Hill: University of North Carolina Press.
- Burrows, J.F. 2002. “‘Delta’: A Measure of Stylistic Difference and a Guide to Likely Authorship.” *Literary and Linguistic Computing* 17(3): 267-287.
- Davies, J. 2003. Review of *Roman Religion in Valerius Maximus*, by Hans-Friedrich Mueller, *The Journal of Roman Studies* (93), November 2003: 400.
- Eder, M. 2011. “Style-Markers in Authorship Attribution: A Cross-Language Study of the Authorial Fingerprint.” *Studies in Polish Linguistics* (6): 59–66.
- Evert, S., et al. 2017. “Understanding and Explaining Delta Measures for Authorship Attribution.” *Digital Scholarship in the Humanities* 32(2): i4-ii16. DOI: <https://doi.org/10.1093/llc/fqx023>
- Field, A. 2016. “An Automated Approach to Syntax-based Analysis of Classical Latin.” *Digital Classics Online*, 2(3): 57-78.
- Johnson, K., et al. 2017. CLTK: The Classical Language Toolkit. <http://cltk.org>
- Kestemont, M. 2014. “Function Words in Authorship Attribution: From Black Magic to Theory?” in *Proceedings of the 3rd Workshop on Computational Linguistics for Literature (CLfL) @ EACL 2014*, (Gothenburg): 59–66.
- Laramée, F. 2018. “Introduction to stylometry with Python,” *The Programming Historian*, accessed 10 Dec. 2018. <https://programminghistorian.org/en/lessons/introduction-to-stylometry-with-python>
- Leeman, A. 1963. *Orationis Ratio: The Stylistic Theories and Practice of the Roman Orators, Historians, and Philosophers*. Amsterdam: Hakkert.
- Moore, F., trans. 1943. *Livy. History of Rome, Volume VII: Books 26-27*. Loeb Classical Library 367. Cambridge: Harvard University Press.
- Mueller, H-F. 2002. *Roman Religion in Valerius Maximus*. Routledge.
- Oglivie, R. 1965. *A Commentary on Livy: Books 1-5*. Oxford: Clarendon Press.
- Skidmore, C. 1996. *Practical Ethics for Roman Gentlemen*. Exeter: University of Exeter Press.

- Steele, R. 1906. "The Gerund and Gerundive in Livy." *The American Journal of Philology* 27(3): 280-305.
- Watts, N., trans. 1923. Cicero. *Pro Archia. Post Reditum in Senatu. Post Reditum ad Quirites. De Domo Sua. De Haruspicum Responsis. Pro Plancio*. Loeb Classical Library 158. Cambridge: Harvard University Press.
- Welch, T. 2013. "Was Valerius Maximus a Hack?" *The American Journal of Philology* 134: 67–82.