

Digital Stylistics Applied to Golden Age Spanish Poetry

Is Fernando de Herrera Really a Transitional Poet between Renaissance and Baroque?

Laura Hernández-Lorenzo 

Abstract This paper applies Digital Stylistics methods to Golden Age Spanish poetry, one of the most important literary periods of Spanish literature, and to Fernando de Herrera's poems, who has been considered a transitional writer between the Renaissance style of Garcilaso de la Vega and the Baroque of Luis de Góngora. The aim of this study is to analyze Herrera's role in the stylistic evolution from Renaissance to Baroque and to verify if the posthumous edition of his poetry, *Versos* (1619), is more Baroque, as some critics have suggested. For this purpose, a stylometry technique (Zeta), different features (words and PoS n-grams) and parameters (PoS bigrams and trigrams) have been used. Results point to the transitional role of Herrera's work in general, with the detection of a more Baroque component in *Versos* edition through some of the analyses.

Keywords stylometry, poetry, Baroque

1. Introduction

1.1 Golden Age as a Period in Spanish Poetry

The Golden Age—*Siglo de Oro* in Spanish—is a very well established and distinguished period in the history of Spanish literature. According to Spanish literature scholars, it covers literary works from the beginning of the sixteenth century to the end of the seventeenth century, including works from Renaissance and Baroque literature in Spain.¹

1 For more information on the emergence of this concept, see Rozas' chapter (Rozas 1983).

This period is so well established that it counts a large number of studies, academic associations, such as the *International Association Siglo de Oro* (AISO),² the *Society for Renaissance and Baroque Hispanic Poetry* (SRBHP)³ or the *International Association of Spanish Drama of the Golden Age* (AITENSO);⁴ research groups, thematic conferences and journals, etc.⁵

From a traditional point of view, literary scholars have distinguished two main and opposite periods—each of them having a very different style from the other—in Golden Age Spanish poetry: the Renaissance and the Baroque. In the sense of style evolution in this period and how the change from the first to the second style is produced, there are some relevant studies, especially the book by Begoña López Bueno (2000), and another one she coordinated (2006).

1.2 Stylometry Applied to Golden Age Spanish Poetry

It is well known that, although stylometric methods have been widely applied to English texts, research in other languages is not as extensive. In the case of Spanish texts, they suffer from few resources and repositories. Since it is necessary to have machine-readable texts available in order to enable computational literary studies, Spanish scholars have focused on first creating the required resources. As a consequence, digital humanities projects with Spanish texts mostly revolved around digital editions, digital libraries, and databases, while stylometric studies were not very frequent.

However, there has been a notable increase in stylometric research in recent years. In this sense, the most controversial anonymous Spanish works have already been analyzed with these techniques (de la Rosa and Suárez 2016; Rišler-Pipka 2016a; 2016b; Blasco 2016), as well as plays attributed to Cervantes (Calvo Tello and Cerezo Soler 2018), and other authors (García-Reidy 2019; Ulla Lorenzo, Martínez Carro, and Calvo Tello 2021), Spanish novels of the Silver Age (Calvo Tello 2019; 2021), Middle Ages works, and contemporary narrative (Fradejas Rueda 2016; 2019), among others.

2 Website of the *International Association Siglo de Oro* (AISO): <https://aiso-asociacion.org/> (accessed: 31/10/2019).

3 Website of the *Society for Renaissance and Baroque Hispanic Poetry*: <https://srbhp.org/> (accessed: 31/10/2019).

4 Website of the *International Association of Spanish Drama of the Golden Age*: <https://aitenso.net/> (accessed: 7/11/2019).

5 Some examples for journals are *Studia Aurea* (<https://studiaaurea.com/>), *Edad de Oro* (<https://revistas.uam.es/edadoro>), *Caliope* (<https://srbhp.org/caliope/>), or *Hipogrifo. Revista de literatura y cultura del Siglo de Oro* (<https://www.revistahipogrifo.com/index.php/hipogrifo>) (accessed: 12/10/2022).

In the case of Golden Age Spanish poetry, there have been some applications of stylometry and quantitative analysis. It is worth mentioning the studies on metrical and semantic aspects in the ADSO project (Navarro-Colorado 2017; 2018), the automatic detection of enjambment in the POSDATA project (Ruiz Fabo et al. 2017), studies on the mythical fable and on Luis de Góngora's style (Rojas Castro 2017; 2018; Les-casse 2019; Rišler-Pipka 2019), an evaluation study on the use of metrical annotation in several poetic corpora and, among them, in Golden Age Spanish poetry (Plecháč, Bobenhausen, and Hammerich 2018), a paper and a dissertation on the authorship of a poetic work attributed to Fernando de Herrera (Hernández Lorenzo 2019a; 2020), a study on size constraints and strength of the stylometric signal applied to a corpus of Golden Age Spanish poets (Hernández Lorenzo 2019b), and a paper on stylistic change on Golden Age Spanish poetry through network analysis (Hernández-Lorenzo 2022). It is easily noticed that all this research is fairly recent, and definitely, there is still much work to be done.

2. Our Research Case:

Fernando de Herrera as a Transitional Poet

Fernando de Herrera (1534–1597), also known as *The Divine*, is considered as one of the most important writers in Golden Age Spanish poetry. According to respected Spanish literature scholars, his poetry represents or acts as a bridge between Renaissance and Baroque writing (Vilanova 1951; Valbuena Prat 1960; Ruestes 1986; López Bueno 2000).

In addition, this view of Fernando de Herrera as a transitional poet between these two styles is essentially related to the authorship problem suffered by his poetic works, which is known as the *textual drama*. In life, Herrera published only one edition of his poetry, titled *Algunas obras* (1582), and known as *H*. It includes a selection of his poetic texts prepared by himself. However, some years after his death, the painter Francisco Pacheco (1564–1644)—teacher and father-in-law of the great Spanish painter Diego Velázquez (1599–1660)—published a new edition of Herrera's poems, titled *Versos de Fernando de Herrera* (1619) and known as *P*. It included new poems and different versions of the ones published in *Algunas obras*.

The debate started when the famous writer Francisco de Quevedo (1580–1645) noted numerous and significant differences between the two editions. Since then, and especially since the start of the twentieth century, academics and experts on Herrera's poetry have discussed the style and authenticity of *Versos* for decades without reaching an agreement. On the one hand, erudite Italian academics (Battaglia 1954; Macrí

1959; 1972; Pepe Sarno 1981; 1982; 1986; 1998) defended Herrera's full authorship and the probability of an evolution of Herrera's style toward Baroque and the poetry of Góngora. On the other hand, recognized Spanish philologists (Blecua 1958; 1975; Kossoff 1957a; 1957b; 1965; 1966; Cuevas 1985) were against Herrera's full authorship of *Versos* and suspected another writer's hand on the text, presumably Pacheco's, who was also a poet as well as an admirer of Herrera's writing.

The application of stylometric methods to this authorial problem supports the authenticity of *Versos* (Hernández Lorenzo 2019a). This is not the focus of the present study, though. In spite of the authorship outcome, the relevant point is that different positions on the controversy regarding the full authorship of the posthumous edition are the result of different views on Herrera's role in Spanish poetry. More specifically, those scholars supporting Herrera's full authorship defend that his style became closer to the Baroque aesthetic, whereas the ones rejecting *Versos* authenticity do not believe in this stylistic change and conceive *The Divine* as a Renaissance poet. Notwithstanding the different opinions on *Versos*' authenticity, scholars from both sides of the debate seem to reach an agreement on the more Baroque component of this edition's poems. This would be the most important difference between the poems published in life and those published after Herrera's death. Salvatore Battaglia, José Manuel Blecua and Cristóbal Cuevas particularly stressed this distinctive Baroque component of *Versos* (Battaglia 1954, 87; Blecua 1958, 391; Cuevas 1985, 99). For a more detailed account on Fernando de Herrera as a transitional writer from literary scholars' points of view, see Hernández-Lorenzo 2022.

2.1 Aims of This Study

To this point, we have reviewed some concepts of key importance for our study. On the one hand, the interest in the period known as Golden Age Spanish poetry as well as the state-of-the-art of stylometric applications to its texts and on the other hand, the case of Fernando de Herrera as a transitional poet in this period, related to the controversy about the posthumous edition of his poetry.

This provides us with a solid ground, contextualization and research questions for our stylometric study on Fernando de Herrera's poetic texts from the point of view of its role in the fascinating and rich period of Spanish poetry of the Golden Age. Hence, this study aims to answer the following questions:

- If we consider the first printed edition H, is Fernando de Herrera really a transitional poet between Spanish Renaissance and Baroque?
- What is the role of P in this? Is it as transitional as Herrera's earlier edition? Or is it more Baroque, as some critics have suggested?

3. Stylometric Analysis

In this section, a stylometric analysis is presented to answer the previous questions. It is divided into three main parts: firstly, the description of the dataset used in the experiment—with some necessary preliminary steps and information on corpus building; secondly, a brief explanation of the methodology applied in this study; and thirdly, the discussion of the results obtained.

3.1 Dataset

In order to carry out a quantitative textual project on Spanish texts, the first obstacle that the researcher must face is the unavailability of textual resources and the consequent necessity to digitize some of the textual material on their own. Herrera's entire poetic works were—the undoubted and doubted—not available in a suitable digital format. Thus, they were digitized through the application of optical character recognition (OCR) software to the most authorized annotated edition (Herrera 1975). The resulting text was revised and OCR mistakes were corrected manually. However, a parallel version with modernized standard orthography was created, with the aim to enable some of the computational analyses that cannot be done on the version with historical orthography. On the basis of the original digitalized version, the modernized one was prepared through manual and computer-assisted adaptation of the text to standard Spanish orthography.⁶ This way, it was ensured that spelling differences between the two Herrera's editions were not an issue.⁷

In addition, more Spanish texts of the same period were needed in order to answer the previous research questions, serving as a contextualization of Herrera's role and place in the poetic transition from Renaissance to Baroque. For this purpose, some authors were highlighted as referents for these styles. On the one hand, Garcilaso de la Vega (1501–1536), Juan Boscán (1490–1542) and Juan de Almeida (1542–1572) are considered important referents for Renaissance style by literary critics; on the other hand, Luis de Góngora (1561–1627) and Francisco de Quevedo (1580–1645) are considered referents for Baroque style by literature scholars. Their texts were extracted from the Corpus of Spanish Golden Age Sonnets, also known as

6 In order to speed out the process, some systematic changes, such as diacritics removal, were carried out using the “search and replace” function in the text editor used (UltraEdit). Microsoft Word's Autocorrect feature was also of great assistance in this process. The final version was revised through a careful reading of the text.

7 For example, we find *del* in *H* and *d'el* in *P*; and they both stand for the same word ('of the').

ADSO, (Navarro-Colorado, Ribes Lafoz, and Sánchez 2016). However, this corpus was used with some changes:

Firstly, the ADSO corpus provides some of Herrera's sonnets. In spite of this, in this study our own digitized texts of Herrera's works were used—selecting only sonnets—, since the ADSO texts were not as complete and, most importantly, combined the doubted and undoubted compositions, regardless of the particularities and authorial problems presented by the posthumous poems. In the case of *P*, the analysis was restricted to its unique poems, that is, the new ones, which were not published in *H*. This sub-corpus was called *P2*.⁸

Secondly, the ADSO texts were contrasted with the digitized texts of Herrera and Pacheco in order to ensure that there were no orthographic differences which could interfere in the analysis.⁹ This was done automatically through the extraction of keywords and the application of the *oppose* function in the *stylo* package in R (Eder, Rybicki, and Kestemont 2016).

As sonnets are very short, the poems written by each of the authors were collected together in one or two files per author, depending on the size of the resulting text. In terms of corpus balance, all authors are from Spain and male. It is well balanced in terms of period, since it contains only Golden Age poets, starting from the early Renaissance and the beginning of the sixteenth century, embodied by Garcilaso de la Vega, to the Baroque climax depicted by Góngora and Quevedo's poems; and literary genre, as it only includes poetic texts, and even from only one sub-genre, as all are sonnets. Also, if one considers that the main goal of this study is to establish Herrera's role, who is a Sevillian male writer, the resulting corpus, albeit not perfect, seems adequate enough to answer the research questions.

3.2 Methodology

As mentioned previously, stylometric techniques are used with the aim of answering the research questions. The next step was, then, to choose which was the most accurate for our purpose. Despite being less popular than Delta (Burrows 2002), Zeta (Burrows 2007; Craig and Kinney 2009) has revealed itself as a powerful tool for comparing and contrasting corpora with the aim of finding which words are unusually more frequent

8 With the aim of avoiding possible biases created by poems that appear in both editions, the analyses are restricted to the new poems of *P*.

9 Spelling and orthographic differences are one of the features that emerge when comparing corpora. Using the *oppose* function in *stylo*, one of the preferred words for Herrera and Pacheco's texts was *solo* ('only'), whereas one of the avoided words—and preferred by ADSO corpus—was *sólo*. When the orthography of this word was standardized to *solo*, both *solo* and *sólo* disappeared from the preferred and avoided wordlists.

in one corpus than others (Schöch 2017; 2018). As the goal of this paper is to mark out the role of Herrera's editions in the change of style from the Renaissance to the Baroque in Spanish poetry, Zeta will assist us in answering this question in two ways: firstly, determining which are the main features that typical poets of these periods possess, and, secondly, using these features as a reference point to establish the place of both *H* and *P*₂.

The texts are analyzed across different features, in order to test consistency of results: words and part-of-speech (PoS) tags. The analysis of word tokens is one of the most effective in stylometry to this date, whereas the examination of PoS n-grams is of great interest for the periods under study, as literature scholars have claimed important syntax differences between Renaissance and Baroque Spanish poetry. For this reason, a parallel version of the corpus was annotated with PoS information using the software Freeling (Padró 2011; Padró and Stanilovsky 2012). In order to keep only the information of the morphological category, Freeling tags were shortened to the two first characters (i.e. NC, that is, common noun, instead of NCMS, common noun in masculine singular form). PoS bigrams and trigrams were chosen for this first approach, with the possibility of using other n-grams in future studies. PoS bigrams and trigrams were generated for each file using *stylo* and a script in R (see Appendix). Finally, all the analyses were carried out using the *stylo* package in R (Eder, Rybicki, and Kestemont 2016).

3.3 Results

This section presents the results obtained with Zeta. As mentioned previously, all the analyses are restricted to the typical authors for each style, plus the case study, consisting of Herrera's editions. Poems from other Golden Age Spanish poets are not used since their role in the change of style could not be as clearly established as with the typical authors. In addition, since the interest here is in the more Renaissance or Baroque component of the studied collections, and not in the authorial signal, using more than one typical author for each style may be beneficial. Poems by the classic Renaissance authors, as selected above, were collected in a first dataset (primary set), while poems by typical Baroque authors were gathered in another one (secondary set). This way, the two sets are contrasted for the more characteristic words of each of them and to extract Renaissance and Baroque markers, applying Craig and Kinney's idea of authorial markers (Craig and Kinney 2009) to different stylistic trends. Lastly, Herrera's editions *H* and *P* were placed in a third set (test set) in order to see if, according to the selected features and resulting markers, each of them was closer to the Renaissance poets or to the Baroque ones. For this purpose, a two-dimensional plot was produced

for every kind of analysis, carried out through the application of Craig's Zeta on 1,000 text slices.¹⁰

The first experiment uses the untagged corpus. In the resulting graph (see Figure 1), Renaissance poets form a pentagonal shape at the top left, while Baroque ones form another shape at the bottom right. *H* and *P2* appear at the center of the graph, between the Renaissance and the Baroque groups, but, most interestingly, some of their markers enter the Baroque shape created by Baroque markers and some are close to them. This seems to suggest that both editions are indeed in a middle ground between Renaissance and Baroque, albeit closer to the latter. In this sense, *P2* markers go in greater quantity and more deeply into the Baroque markers zone, implying a more Baroque component of *P2* poems.

Regarding the underlying features for this analysis, a plot confronting the list of *preferred* words by Renaissance against the Baroque and vice versa is at the Appendix (Figure 4), completed with tables which include English translations of top *preferred* 15 words for Renaissance (Table 1 in Appendix) and Baroque (Table 2 in Appendix). Words *preferred* by Renaissance are focused on unrequited love and how the poet experiences it through his pain, thoughts and feelings (*me, I feel, feelings, torment, thoughts, sad, love, hope, die*), whereas Baroque *preferred* words are far more open to the outside world. In this sense, we find terms related with metaphors and images to describe the woman's beauty (*gold, stars*), terms related with religion (*sin, piety, pilgrim*), political power (*king, Spain, tyrant*) and *tempus fugit* (*smoke, ashes*).

Besides that, special significance has been given to syntax as a distinguishable feature between these two stylistic trends, and even some Herrera's experts pointed out that in syntactical terms, *Versos* would be much closer to Baroque than *Algunas obras*. For this reason, the PoS tagged version of the corpus was also analyzed through the same method and parameters.

Firstly, the PoS bigram corpus was analyzed. As a result, a list of PoS-tag bigrams *preferred* by the primary set authors and *avoided* by the secondary set authors was produced, besides another list, in this case, of bigrams *avoided* by the primary set authors and *preferred* by secondary set authors. Thus, including typical Renaissance authors in the primary set and Baroque authors in the secondary set, the first list contains the PoS bigrams *preferred* by Renaissance authors and *avoided* by Baroque ones—in other words, it consists of the most characteristic Renaissance bigrams—, whereas the second list incorporates the PoS bigrams *preferred* by Baroque authors and *avoided* by the Renaissance—featuring the most characteristic Baroque bigrams. The top 15 PoS bigrams of each list can be found at the Appendix at Tables 3 (Renaissance) and 4 (Baroque), completed with examples of use. The top PoS bigrams of Renaissance and Baroque are fairly different. When comparing them, Renaissance seems to favor simpler structures:

10 As poems are very short texts, this small value was selected in order to enable the analysis.

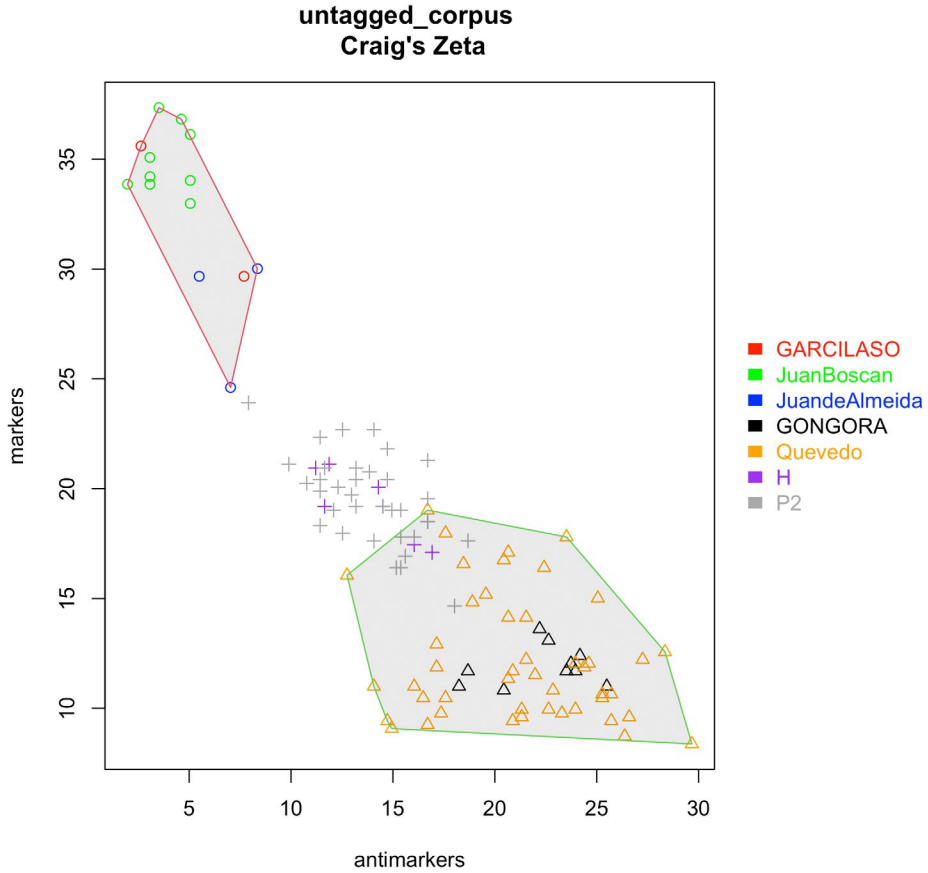


Fig. 1 Oppose (Craig's Zeta) using typical Renaissance authors (Garcilaso, Boscán and Juan de Almeida) in the primary set, typical Baroque authors (Quevedo and Góngora) in the secondary set, as well as *H* and *P2* in the test set (Hernández-Lorenzo, CC BY).

i.e., subordinating conjunction + demonstrative pronoun. In this sense, Baroque bigrams seem to suggest a more complex syntax: i.e. subordinating conjunction + adjective. It is also remarkable that most *preferred* Baroque bigrams include proper names, suggesting that these are more frequent in typical Baroque authors: i.e., proper noun + adjective, which comes out as the most characteristic Baroque PoS bigram structure.

Apart from the analysis of concrete features, *H* and *P2* were included in the test set, as in the previous analysis with the untagged corpus, and a visualization plot was generated (see Figure 2).

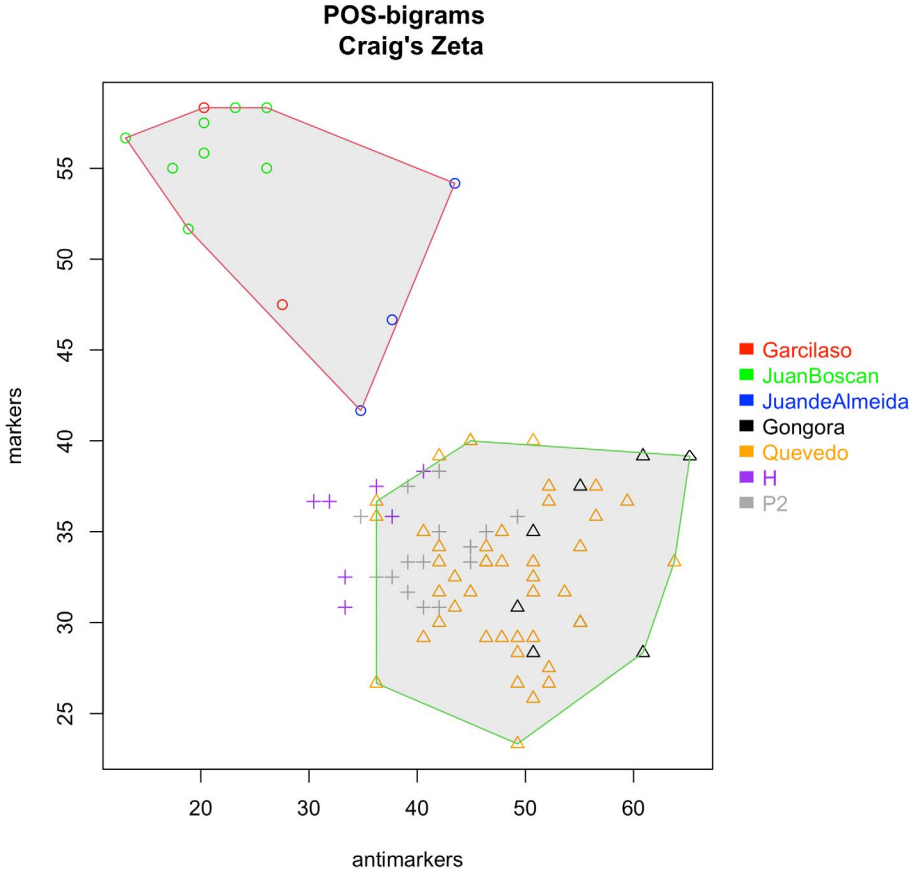


Fig. 2 Zeta on PoS bigrams (Hernández-Lorenzo, CC BY).

The results obtained are of great interest. When considering the PoS bigrams annotation, Herrera's editions *H* and *P* are not only stylistically close to Baroque, as we found out previously through lexical information (compare with Figure 1), but also syntactically. As a matter of fact, when their markers go into the Baroque zone, only a few of *H* get into the Baroque shape, whereas most of *P* markers appear there. Thus, in terms of PoS bigrams, *P* comes out as more Baroque than the edition published by Herrera.

After the previous analysis with PoS bigrams, the PoS trigram corpus version was analyzed. Once again, a list with *preferred* words by typical Renaissance authors (see top 15 at Table 5 in Appendix), and another one with the *preferred* ones by characteristic Baroque authors (see top 15 at Table 6 in Appendix) were produced. Top Renaissance

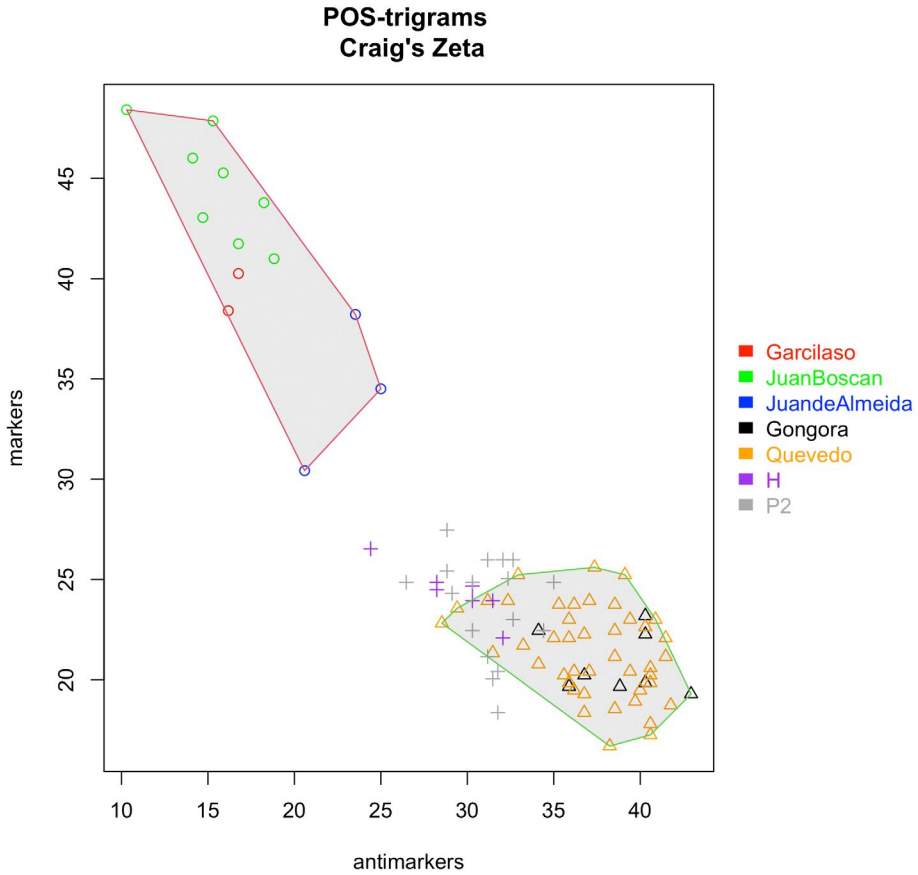


Fig. 3 Zeta on PoS trigrams (Hernández-Lorenzo, CC BY).

ones feel more natural and harmonious for a Spanish speaker: i.e., preposition + personal pronoun + personal pronoun. As for Baroque trigrams, as with bigrams, proper nouns are extremely frequent: i.e., main verb + article + proper noun, which is the preferred trigram by Baroque authors. They also include much more complex and artificial syntactic constructions than Renaissance ones: i.e., common noun + common noun + adjective.

Besides the analysis of concrete features, *H* and *P2* were added to the test set in order to analyze their closeness to Renaissance and Baroque markers, as done before with the untagged and the PoS-tag bigrams corpus, producing the following plot (see Figure 3).

As shown by Figure 3, once more the Renaissance authors and texts formed a shape on the top left of the graph, whereas the Baroque authors formed another one at the bottom right, smaller than in the previous one generated with bigrams (compare with Figure 2). *H* and *P* markers appear at the center of the graph between both clusters, as in previous analyses, but some of them go into the Baroque shape. The situation is perhaps not as clear as in the case of PoS bigrams, but again *P* markers increase and move toward the Baroque shape. Therefore, the Zeta result obtained with the PoS trigrams agrees with the outcome obtained through the comparison of lexical features and PoS bigrams.

4. Conclusions and Future Work

This paper presents a first exploratory analysis, applying methods of digital stylistics and stylometry to questions of periodization and style evolution in Golden Age Spanish poetry through the case of Fernando de Herrera's poems. A brief introduction on Golden Age Spanish poetry was presented, as well as the discussion about Herrera's transitional role between the Renaissance and the Baroque. With the aim of placing his poetic printed editions in the Golden Age period, some preliminary analyses have been conducted after carefully preparing the corpus of his poems and of typical Renaissance and Baroque Spanish poets. Using Zeta and across different features (words and PoS *n*-grams) and parameters (PoS bigrams and trigrams), the results seem to confirm the transitional role of the poems included in the editions published by Herrera, although both editions would be closer to Baroque typical style, as depicted in Góngora and Quevedo. Regarding the unique poems of the edition published after Herrera's death, contained in *P*₂ sub-corpus, results unanimously point to even a stronger Baroque component in them against *H* poems.

Naturally, this is a first approach to this question and future work would be needed before drawing definite conclusions. In this sense, further exploration of these first attempts and results is required, as well as a more comprehensive study and interpretation of the decisive features for Renaissance and Baroque obtained with Zeta and their relation to Herrera's position in the change of period and style. Nevertheless, the present paper serves as an example of applications of stylometric techniques to the exploration of style evolution in poetry across different literary movements, and especially on the change from the Renaissance to the Baroque.

Finally, the results obtained in this study on Herrera's poems show that it is worthwhile to apply techniques from digital humanities and stylometry to literary historical questions in general, and studies of poetic and Spanish texts in particular, and that they open up fascinating venues of research.

Appendix

Complementary materials to this study, such as the corpus, tables with *preferred* words / PoS-tag n-grams of each period, and code used, can be found at this GitHub repository: <https://github.com/lamusadecima/Digital-Stylistics-Applied-to-Golden-Age>

Acknowledgments

The idea for this project came up during my research stay at Julius-Maximilians University in Würzburg (Germany) in fall 2018. I thank Fotis Jannidis and José Calvo for their helpful comments and suggestions, as well as the anonymous reviewers for their valuable insights to improve this paper.

Funding

As previously stated, this project benefited from a research stay at the University of Würzburg, supervised by Fotis Jannidis and supported by an Erasmus Traineeship Fellowship. Last stages of this study were carried out within the project *Hacia la Institucionalización Literaria: Polémicas y Debates Historiográficos (1500–1844)* (RTI2018-095664-B-C22), funded by the Spanish Ministry of Science (*Ministerio de Ciencia, Innovación y Universidades*).

ORCID®

Laura Hernández-Lorenzo  <https://orcid.org/0000-0003-3489-2193>

References

- Battaglia, Salvatore. 1954. "Per Il Testo Di Fernando de Herrera." *Filologia Romanza* 1: 51–88.
- Blasco, Javier. 2016. "Avellaneda Desde La Estilometría." In *Cervantes. Los Viajes y Los Días*, edited by Pedro Ruiz Pérez, 97–116. Madrid: Prosa Barroca y SIAL Ediciones.
- Blecua, José Manuel. 1958. "De Nuevo Sobre Los Textos Poéticos de Herrera." *Boletín de La Real Academia Española* XXXVIII: 377–408.
- Blecua, José Manuel. 1975. "Introducción." In *Obra Poética*, by Fernando de Herrera, 11–78. Madrid: Boletín de la Real Academia Española.
- Burrows, John. 2002. "'Delta': A Measure of Stylistic Difference and a Guide to Likely Authorship." *Literary and Linguistic Computing* 17 (3): 267–87.
- Burrows, John. 2007. "All the Way Through: Testing for Authorship in Different Frequency Strata." *Literary and Linguistic Computing* 22 (1): 27–47.
- Calvo Tello, José. 2019. "Delta Inside Valle-Inclán: Stylometric Classification of Periods and Groups of His Novels." In *Theorien von Autorschaft und Stil in Bewegung: Stilistik und Stilometrie in der Romania*, edited by Nanette Rißler-Pipka, 151–64. München: AVM edition.
- Calvo Tello, José. 2021. *The Novel in the Spanish Silver Age. A Digital Analysis of Genre Using Machine Learning*. Bielefeld: transcript.
- Calvo Tello, José, and Juan Cerezo Soler. 2018. "La Conquista de Jerusalén ¿ de Cervantes ? Análisis Estilométrico Sobre Autoría En El Teatro Del Siglo de Oro Español." *Digital Humanities Quarterly* 12 (1): 1–10.
- Craig, Hugh, and Arthur F. Kinney, eds. 2009. *Shakespeare, Computers, and the Mystery of Authorship*. Cambridge: Cambridge University Press.
- Cuevas García, Cristóbal. 1985. "La Cuestión Textual." In *Poesía Castellana Original Completa*, edited by Cristóbal Cuevas García, 87–99. Madrid: Cátedra.
- Eder, Maciej, Jan Rybicki, and Mike Kestemont. 2016. "Stylometry with R: A Package for Computational Text Analysis." *R Journal* 8 (1): 107–21.
- Fradejas Rueda, José Manuel. 2016. "El Análisis Estilométrico Aplicado a La Literatura Española: Las Novelas Policiacas Históricas." *Caracteres. Estudios Culturales y Críticos de La Esfera Digital* 5 (2): 196–246.
- Fradejas Rueda, José Manuel. 2019. "Estilometría y La Edad Media Castellana." In *Theorien von Autorschaft und Stil in Bewegung: Stilistik und Stilometrie in der Romania*, edited by Nanette Rißler-Pipka, 49–74. München: AVM edition.
- García-Reidy, Alejandro. 2019. "Deconstructing the Authorship of *Siempre Ayuda La Verdad*: A Play by Lope de Vega?" *Neophilologus* 103: 493–510.
- Hernández Lorenzo, Laura. 2019a. "Fernando de Herrera y La Autoría de Versos. Un Primer Acercamiento al Drama Textual Desde La Estilometría." In *Theorien von Autorschaft und Stil in Bewegung: Stilistik und Stilometrie in der Romania*, edited by Nanette Rißler-Pipka, 75–90. München: AVM edition.
- Hernández Lorenzo, Laura. 2019b. "Poesía Áurea, Estilometría y Fiabilidad: Métodos Supervisados de Atribución de Autoría Atendiendo al Tamaño de Las Muestras." *Caracteres. Estudios Culturales y Críticos de La Esfera Digital* 8 (1): 189–228.

- Hernández Lorenzo, Laura. 2020. *Los Textos Poéticos de Fernando de Herrera: Aproximaciones Desde La Estilística de Corpus y La Estilometría*. Sevilla: Universidad de Sevilla. <https://idus.us.es/handle/11441/93465>.
- Hernández Lorenzo, Laura. 2022. "Stylistic Change in Early Modern Spanish Poetry Through Network Analysis (with an Especial Focus on Fernando de Herrera's Role)." *Neophilologus* 106: 397–417.
- Herrera, Fernando de. 1975. *Obra Poética*, edited by José Manuel Blecua. Madrid: Boletín de la Real Academia Española.
- Kossoff, David. 1957a. "Algo Más Sobre *Largo-Luengo* En Herrera." *Revista de Filología Española* XLI: 401–10.
- Kossoff, David. 1957b. "Algunas Variantes de Versos de Herrera." *Nueva Revista de Filología Hispánica* XI: 57–63.
- Kossoff, David. 1965. "Another Herrera Autograph: Two Variant Sonnets." *Hispanic Review* 33 (3): 318–25.
- Kossoff, David. 1966. *Vocabulario de La Obra Poética de Herrera*. Madrid: RAE.
- Lescasse, Marie-Églantine. 2019. "Góngora Hors Norme? Étude Stylométrique d'un Motif Gongorin." In *Theorien von Autorschaft und Stil in Bewegung: Stilistik und Stilometrie in der Romania*, edited by Nanette Rißler-Pipka, 91–116. München: AVM edition.
- López Bueno, Begoña. 2000. *La Poética Cultista de Herrera a Góngora*. Sevilla: Alfar.
- López Bueno, Begoña, ed. 2006. *La Renovación Poética Del Renacimiento al Barroco*. Madrid: Síntesis.
- Macrí, Oreste. 1959. "Autenticidad y Estructura de La Edición Póstuma de 'Versos' de Herrera." *Filología Romanza* VI: 1–26 and 151–84.
- Macrí, Oreste. 1972. *Fernando de Herrera*. Madrid: Gredos.
- Navarro-Colorado, Borja. 2017. "A Metrical Scansion System for Fixed-Metre Spanish Poetry." *Digital Scholarship in the Humanities* 33 (1): 112–27.
- Navarro-Colorado, Borja. 2018. "On Poetic Topic Modeling: Extracting Themes and Motifs From a Corpus of Spanish Poetry." *Frontiers in Digital Humanities* 5. <https://www.frontiersin.org/article/10.3389/fdigh.2018.00015>.
- Navarro-Colorado, Borja, María Ribes Lafoz, and Noelia Sánchez. 2016. "Metrical Annotation of a Large Corpus of Spanish Sonnets: Representation, Scansion and Evaluation." *Proceedings of the 10th Edition of the Language Resources and Evaluation Conference (LREC 2016)*, 4360–64.
- Padró, Lluís. 2011. "Analizadores Multilingües en Freeling." *Linguamática* 3: 13–20.
- Padró, Lluís, and Evgeny Stanilovsky. 2012. "FreeLing 3.0: Towards Wider Multilinguality." *Proceedings of the 12th Language Resources and Evaluation Conference (LREC 2012)*, 2473–2479.
- Pepe Sarno, Inoria. 1981. "Bianco Il Ghiaccio, Non Il Velo: Ritocchi e Metamorfosi in Un Sonetto Di Herrera." *Strumenti Critici* XLVI: 458–71.
- Pepe Sarno, Inoria. 1982. "Se Non Herrera, Chi? Varianti e Metamorfosi Nei Sonetti Di Fernando de Herrera. I Parte." *Studi Ispanici*: 33–69.
- Pepe Sarno, Inoria. 1986. "Se Non Herrera, Chi? Variante e Metamorfosi Nei Sonetti Di Fernando de Herrera. V Parte." *Studi Ispanici*: 21–59.

- Pepe Sarno, Inoria.** 1998. "La Negazione Del Colore: 'Oh, Soberbia y Cruel En Tu Belleza'". In *Signoria Di Parole. Studi Offerti a Mario Di Pinto*, edited by G. Calabrò, 393–402. Napoli: Liguori Editore.
- Plecháč, Petr, Klemens Bobenhausen, and Benjamin Hammerich.** 2018. "Versification and Authorship Attribution. A Pilot Study on Czech, German, Spanish, and English Poetry." *Studia Metrica e Poetica* 5 (2): 29–54.
- Rißler-Pipka, Nanette.** 2016a. "Digital Humanities und die Romanische Literaturwissenschaft – Der Autorschaftsstreit um den *Lazarillo de Tormes*." *Romanische Forschungen* 128 (3): 316–42.
- Rißler-Pipka, Nanette.** 2016b. "Avellaneda y los problemas de la identificación del autor. Propuestas para una investigación con nuevas herramientas digitales." In *El otro Don Quijote: La continuación de Fernández de Avellaneda y sus efectos*, edited by Hanno Ehrlicher, 27–51. Augsburg: Institut für Spanien-, Portugal- und Lateinamerika-Studien (ISLA).
- Rißler-Pipka, Nanette.** 2019. "In Search of a New Language. Measuring Style of Góngora and Picasso." In *Theorien von Autorschaft und Stil in Bewegung: Stilistik und Stilometrie in der Romania*, edited by Nanette Rißler-Pipka, 117–150. München: AVM edition.
- Rojas Castro, Antonio.** 2017. "Luis de Góngora y La Fábula Mitológica Del Siglo de Oro: Clasificación de Textos y Análisis Léxico Con Métodos Informáticos." *Studia Aurea* 11: 111–42.
- Rojas Castro, Antonio.** 2018. "¿Cuántos 'Góngoras' Podemos Leer? Un análisis contrastivo de la poesía de Luis de Góngora." *E-Spania* 29: 1–19. <https://doi.org/10.4000/e-spania.27448>.
- Rosa, Javier de la, and Juan Luis Suárez.** 2016. "The Life of Lazarillo de Tormes and of His Machine Learning Adversities. Non-traditional authorship attribution techniques in the context of the Lazarillo." *Lemir* 20: 373–438.
- Rozas, Juan Manuel.** 1983. "'Siglo de Oro': historia y mito." In *Historia y Crítica de La Literatura Española 3. Siglos de Oro, Barroco*, edited by Aurora Egido, 64–67. Barcelona: Crítica.
- Ruestes, María Teresa.** 1986. "Introducción." In *Poesía*, by Fernando de Herrera, ix–lxiv. Barcelona: Planeta.
- Ruiz Fabo, Pablo, Clara Isabel Martínez Cantón, Thierry Poibeau, and Elena González-Blanco.** 2017. "Enjambment Detection in a Large Diachronic Corpus of Spanish Sonnets." *Proceedings of the Joint SIGHUM Workshop on Computational Linguistics for Cultural Heritage, Social Sciences, Humanities and Literature*, 27–32.
- Schöch, Christof.** 2017. "Topic Modeling Genre: An Exploration of French Classical and Enlightenment Drama." *Digital Humanities Quarterly* 11 (2). <http://www.digitalhumanities.org/dhq/vol/11/2/000291/000291.html>.
- Schöch, Christof.** 2018. "Zeta für die kontrastive Analyse literarischer Texte – Theorie, Implementierung, Fallstudie." In *Quantitative Ansätze in den Literatur- und Geisteswissenschaften: Systematische und historische Perspektiven*, edited by Toni Bernhart, Sandra Richter, Marcus Lepper, Marcus Willand, and Andrea Albrecht, 77–94. Berlin, Boston: De Gruyter.
- Ulla Lorenzo, Alejandra, Elena Martínez Carro, and José Calvo Tello.** 2021. "Las Comedias de Dudosa Atribución de Agustín Moreto: Nuevas Perspectivas Estilométricas." *Neophilologus* 105: 57–73.
- Valbuena Prat, Ángel.** 1960. *Historia de La Literatura Española*. Vol. I. Barcelona: Gustavo Gili.
- Vilanova, Antonio.** 1951. "Fernando de Herrera." In *Historia general de las literaturas hispánicas II: Pre-renacimiento y renacimiento*, directed by Guillermo Díaz-Plaja, 689–751. Barcelona: Barna.