

Among the Founding Fathers, Who Was Primarily Responsible for Writing the American Constitution?

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Summary

In order to measure the influence of the drafters of the American Constitution written during the Constitutional Convention of 1787, accepted on March 4, 1789, and currently in force, our stylometric analysis compares the fundamental law of the USA to the corpus of the *Federalist Papers* which comments on this constitution, written anonymously under the common pseudonym *Publius* by three Founding Fathers of the United States: Alexander Hamilton, John Jay, and James Madison. Of the three Founding Fathers who participated in the emergence of the Constitution, historians have noted Madison's relevant role in the organization of the writing of the Fundamental Law.

We chose barycentric rolling stylometry for the analysis of the Constitution, a method we previously used successfully to authenticate the anonymous QAnon texts. Our QAnon results were validated by an independent stylometric analysis of another stylometric group. Both concordant QAnon attribution results were used to determinate for media the authors of the conspiratorial QAnon corpus in 2022.

The *Federalist Papers* corpus allows us to evaluate the precision of our stylometric analysis used in this particular project. The barycentric rolling stylometry in the space of sign trigrams is calibrated by the 70 texts from the two divergent historical lists of common attribution of the authors of the 85 chapters of the *Federalist Papers*: Hamilton's and Madison's lists. Only the attribution of 15 texts diverges between the two lists. The result of our barycentric rolling stylometry exclusively attributes these 15 disputed texts to Madison's style. Thus, our author attribution corresponds to Madison's list used to designate the author of each of the 85 chapters of the *Federalist Papers* in the 1818 Gideon edition, reviewed and corrected by Madison before publication. The efficiency rate of our stylometry approach, calibrated by 31 texts, is estimated at 53/54 texts: 98.1%.

The comparison by barycentric stylometry of the three styles of the authors of the *Federalist Papers* to that of the US Constitution and the Bill of right reveals that only the Madison's style is similar to that of the Federal Constitution and the Bill of Rights. Our result confirms the historical analyses: Madison is named by specialists as the *Father of the Constitution*. He played a decisive role in writing a constitution, one of whose main aims was to prevent the United States federal government from drifting into tyranny. The executive, legislative, and judicial powers are separated and controlled by checks and balances.

This stylometric analysis of the US Constitution reveals for the first time that the dry text of a nation's fundamental law can bear the style of its contributors.

Introduction

Can we find a personal writing style in a formal text like the American Constitution written in 1787? To answer this question, the writing style of the Constitution is compared to those of the authors involved in the writing of the *Federalist Papers* commenting this fundamental law.

The 85 texts of the Federalist Papers were written between 1787 and 1788 to explain the American Constitution to the voters of the State of New York, who had to ratify this fundamental law by popular vote. The first 77 texts were initially published individually as letters in New York newspapers, and then they were grouped with the last 8 texts into the first edition (1788) in two volumes of the *Federalist Papers* published by J&A McLean.

Two lists of chapter author contributing to the Federalist Papers

These 85 chapters were all published under the pseudonym *Publius*. Readers quickly identified three authors likely to have participated in writing the *Federalist Papers*: Alexander Hamilton (first Secretary of the Treasury under Washington), John Jay (first Chief of Justice under Washington), and James Madison (Secretary of State under Jefferson and 4th President of the USA). These supposed authors refused to publicly confirm or deny their participation in the *Federalist Papers* until Hamilton's death on July 12, 1804, which occurred one day after his duel with the sitting Vice President Aaron Burr. A first list of the authors of the *Federalist Papers* began to circulate after Hamilton's death. This list, hastily written by Hamilton, was hidden two days before the duel in the law office of Egbert Benson (Adair, 1944a, p 102).

The Hamilton's list attributed the authorship of the 85 chapters of the Federalist Paper as follow: 5 to Jay (2-5, 54; 54 for 64, an error that may be explained by nervousness or stress prior to the duel), 14 to Madison (10, 14, 37-48), 3 written jointly by Madison and Hamilton (18-20), all the other chapters to Hamilton. Also called Benson's list, the Hamilton's list was firstly used in the 1810 edition of the *Federalist Papers* by Williams and Whiting, New York City (Adair 1944 a, p. 102).

This Hamilton's list was corrected by Madison who claimed 15 articles previously attributed to Hamilton or to cooperation between Hamilton and Madison (Adair 1944 a, p. 104, Adair1944b, p. 249, Madison, 1818a: letter to Gideon). This second list is known as the Madison's or the Rush's list (Rutland et al, 1977), Richard Rush was attorney general and secretary of state under Madison. The differences between Hamilton's and Madison's list are as it follows. Three articles (18 to 20) presented in Hamilton's list as the product of cooperation between Madison and Hamilton, while they actually draw from Madison's manuscript essay "Of Ancient & Modern Confederacies" (Madison 1786). Next, the authorship of 12 articles (49-58, 62-63), claimed first by Hamilton and next by Madison, designated later as the *disputed papers*.

The Madison's list of the authors of the Federalist Papers was used in the 1818 Gideon edition of the *Federalist Papers*, which included texts of Madison edited by Madison. Consequently, Hamilton's and Madison's lists converge on the authors of 70 articles of the Federalist Papers: 51 articles written by Hamilton (1, 6-9, 11-13, 15-17, 21-36, 59-61, 65-85), 14 by Madison (10, 14, 37-48), and 5 by Jay (2-5, 64). These two lists diverge for 3 articles (18-20) attributed either to Madison and Hamilton jointly or exclusively to Madison, and for 12 disputed articles (49-58, 62-63) attributed either to Hamilton or to Madison.

Which list is the right one?

The uncertainty over these 15 articles poses the following challenge: with which style can we associate the style of these 15 articles? Hamilton's or Madison's style? To answer this, different approaches have been applied: historical, content, and stylistic analyses. The thorough historical and content analyses by Douglass Adair (1944a, p. 104) attribute the 15 disputed articles to Madison. These results are supported by the stylometric analyses of Mosteller and Wallace (1963, 1964), validated by Bayesian probability quantification.

The aim of this analysis is to examine the corpus of the Federalist Papers texts to validate the stylometric approach used to authenticate the texts of the QAnon conspiracy corpus, in order to measure its effectiveness for the analysis of the US Constitution.

Materials and Methods

Texts

The text is from the Jacob Gideon 1818 (Publius 1818) corrected by Madison and available at the following site (Publius, 1818): <https://oll.libertyfund.org/titles/jay-the-federalist-gideon-ed>.

Text preparation

Separated by chapters, the chapters are normalized into 27 different types of characters where words are written in Latin characters separated by blank spaces. Then, similar to our successful analysis of QAnon (Orphanalytics 2022, Kirkpatrick 2022), the texts are reduced into elementary trigrams: e.g., 16 trigrams constituting a 18-character sequence of signs (to_be_or_not_to_be: 1) to_, 2) o_b, 3)_be; 4)...). For each chapter, a trigram usage profile is constructed, allowing the 85 chapters to be positioned in a 27^3 -dimensional trigram space where each dimension represents the frequency of a type of trigram.

Barycentric rolling stylometry

Reference, validation and questioned texts

Three types of texts are necessary to establish a barycentric rolling stylometry as illustrated in Fig.1. First, for the calibration of the 3 styles, the reference texts common to both Hamilton's and Madison's lists: 12 texts selected at regular intervals among the 51 of Hamilton to stabilize the reference style, 14 of Madison, and the 5 of Jay. Then, 54 validation texts are selected to measure the effectiveness of the stylometry: the other 39 of Hamilton and the disputed 15 claimed by Hamilton or Madison. Finally, the 2 questioned texts: the US Constitution and the 10 first article of the Bill of Rights. The details of the text distribution are described in the legend of Figure 1.

Barycentric distances

The barycentric rolling stylometry measures for each reference, validation, or questioned text, the Euclidean distance to the three barycenters of the reference text clusters. For each text, the shortest distance to a barycenter, normalized to the three barycenter distances, is used to build the bar chart and the text bar is colored according to the color of the closest cluster as described in the legend of Figure 1.

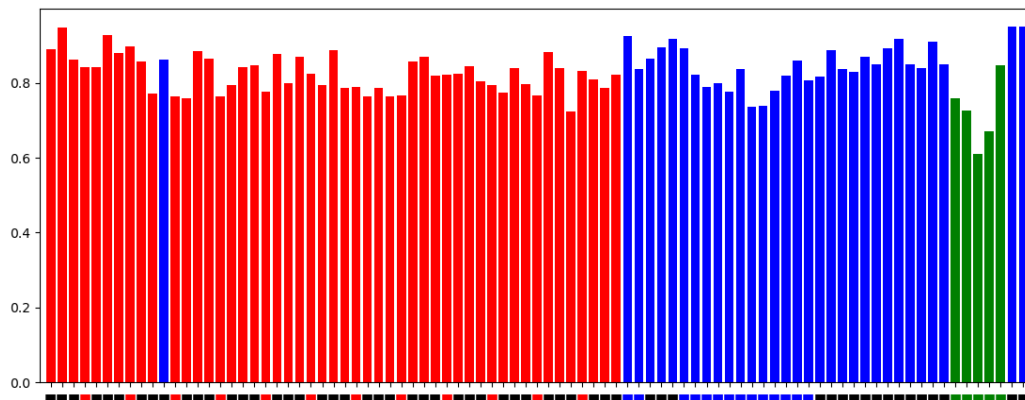
An efficiency rate of the barycentric rolling stylometry is established on the 54 texts of common attribution to both lists that were not used for the calibration of the clusters.

Machine Learning

Our approach used the Machine Learning server available at info@orphanalytics.com

Results

The barycentric rolling stylometry approach illustrated by Fig. 1 is that of our author attribution of QAnon corresponding to the independent attribution of an academic stylometry group (OrphAnalytics 2022, Kirkpatrick 2022).



Attribution of the chapters according to the list of:

Madison / H / M / M / M / M / J / Q
Hamilton / H / M / C / M / H / J / Q

H: Hamilton in red, M: Madison in blue, J: Jay in green, C: in purple, cooperation between Hamilton and Madison?

Figure 1 Barycentric rolling stylometry of the Federalist Papers compared to the US Constitution and the Bill of Rights:

Each bar of the histogram represents a text. The texts are grouped 1) by author according to the author attribution of the 1818 Gideon edition and 2) according to their order of appearance in this edition. First, 51 articles attributed to Hamilton (H: articles in order 1, 6 to 9, 11 to 13, 15 to 17, 21 to 36, 59 to 61, 65 to 85), then 29 to Madison (M: 10, 14, 37 to 58, 62, 63), followed by 5 attributed to Jay (J: 2 to 5, 64), and finally the two questioned texts (Q) of the fundamental law: the US Constitution and then the concatenate of the first 10 articles of the Bill of Rights.

A colored square (H, red; M, blue; J, green) on the horizontal axis indicates the 31 texts common to both lists used to calibrate the clusters of the three styles (H: 8, 13, 21, 25, 29, 33, 59, 66, 70, 74, 78, 82; M: 10, 14, 37 to 48; J: 2 to 5, 64). A black square indicates the 54 texts used either to evaluate the Machine Learning with the texts common to both lists not used for the style calibration (39 of Hamilton's articles: 1, 6, 7, 9, 11, 12, 15-17, 22-24, 26-28, 30-32, 34-36, 60, 61, 65, 67-69, 71-73, 75-77, 79-81, 83-85; and 15 of Madison's articles: 18-20, 49-58, 62, 63) or the 2 questioned texts (the Constitution and the Bill of Rights).

The height of each text bar corresponds to the shortest Euclidian distance in the trigram space between this text to the three barycenters (H, J, M), normalized by the distances to the 3 barycenters of this text. The color of each text bar is determined by the color of the closest style cluster to the text.

The Figure reveals that calibrated by 31 texts of three authors common to both lists, Madison's list almost perfectly corresponds to the results of this barycentric rolling stylometry of the challenged text (54 chapters: 39 of Hamilton and 15 disputed chapters classified as Madison in Madison's list). An efficiency rate of 98.1% (53/54) of the texts used to evaluate this stylometry as a single mismatch occurs: the Madison's style in blue is assigned to the chapter 17 written by Hamilton according both attribution lists.

The styles of the texts of the Federal Constitution and the Bill of Rights are compared to the three styles of the contributors of the Federalist Papers is of Madison's according to this barycentric rolling stylometry.

First the stylometric calibration is established with 31 chapters respectively of Hamilton (12), Jay (5), and Madison (14). The stylometry is then evaluated with 54 test chapters (39 from

Hamilton, 15 disputed): 53 texts (98.1%) were recognized according to the styles defined by Madison's list (38 from Hamilton and 15 from Madison).

According to the barycentric rolling stylometry of Figure 1, the 15 disputed texts are exclusively from Madison and are not at all or in part from Hamilton. This result from our Machine Learning perfectly corroborates the conclusions of Adair (1944a, p.104) which attributed these 15 chapters to Madison: the 3 considered cooperative seems to be completely rewritten by Madison (18, 19, and 20) and the 12 that were all attributed either to Hamilton or Madison (49-58, 62-63). Consequently, the Machine Learning based on barycentric rolling stylometry almost perfectly obtains the Madison's list of authors of the chapters of the Federalist Papers according to the Gideon 1818 edition.

Our stylometric results are also confirming the attribution by Bayesian probabilities calculated by Mosteller and Wallace (1963, 1964) who were able to show that the 15 disputed chapter were from Madison.

The barycentric rolling stylometry, as we can observe in Figure 1, shows the results concerning the US Constitution. Madison's style is found in the US Constitution. For control, the first 10 amendments of the Bill of Rights are analyzed: Madison's style is also found as expected by historians.

Stylometric Conclusion

If the style of the two fundamental laws is very likely that of Madison, defined by his contributions to the Federalist Papers, this style does not correspond very likely to that of Hamilton (heavily involved in the writing of the *Federalist Papers*), nor to that of Jay.

If another legal text had been produced under the same writing conditions of the US Constitution (authors, period), the style of this text would very likely (efficiency rate 98.1%) present a style different from the style of Hamilton or Jay as defined by our stylometry analyses.

If another legal text had been produced under the same writing conditions of the US Constitution (authors, period), the style of this text would very likely (efficiency rate 98.1%) present the style of Madison as defined by our stylometry analyses.

Importance of the style attribution:

James Madison was a man of his time who, like the great political philosophers of the 18th century, cherished the rule of law as well as the control and balance of powers. His imprint is therefore to be found not only in stylistic elements of the US Constitution, but also in the fundamental principles by which it is shaped. Among the Framers, James Madison undoubtedly had the greatest influence on the design and ratification of the supreme law that founded the modern American nation.

He was decisive at every stage of the process (Klarman 2016). James Madison belongs to the handful of visionaries who were bold enough to convene the Constitutional Convention in Philadelphia. He almost single-handedly set the ambitious initial agenda. He helped ensure the participation of the tutelary figure of George Washington. He was virtually the only delegate who systematically thought about the weaknesses of the Articles of Confederation

(which the new Constitution replaced) and offered solutions to address them. He devised the Virginia Plan, which served as the basis for the deliberations. He was one of the most active delegates during the debates.

Moreover, James Madison played a crucial role in the ratification of the proposed Constitution by Virginia, the most populous and important state at the time. As co-author of the *Federalist Papers*, he shed light on the intentions of the Legislator. The *Federalist Papers* remain today as an excellent reference to understand the original meaning of the Constitution and are very frequently cited in Supreme Court decisions. Finally, James Madison conceived the Bill of Rights, which led to the first ten amendments to the Constitution adopted by Congress.

In his contributions to the *Federalist Papers*, James Madison explained, among other things, the meaning of the first three articles of the Constitution, which established the key principle of separated powers (the legislative, executive and judicial branches) as an "*essential precaution in favour of liberty*" (Madison 1818b). He described a model of checks and balances where "*the interior structure of the government*" is "*so contrive(ed)*" "*as that its several constituent parts may, by their mutual relations, be the means of keeping each other in their proper places.*" (Madison 1818c). In this self-enforcing system, healthy competition between the holders of the three powers would prevent authoritarian collusions resulting in government of men, not of laws. Other countries have drawn inspiration from the United States Constitution. Such is the case of the Swiss federal state and its bicameral system.

The message of the Framers relayed by James Madison to future generations is crystal clear: in order to preserve the fundamental values of the United States "*Ambition must be made to counteract ambition. The interest of the man, must be connected with the constitutional rights of the place*" (Madison 1818d).

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