

Cluster analysis of individual authors shows the diversity of scholarly research both between and within disciplines

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Academic disciplines in the social sciences and humanities show considerable variation with regard to their publication patterns. But what of the authors within each of those disciplines? Are their publication patterns as similar as one might reasonably expect or do the same variations exist?

Frederik Verleysen discusses the diversity among experienced scholars in Flanders based on their choice of publication type, publication language and for research collaboration.



Bibliometric research on publication patterns in the social sciences and humanities (SSH) has traditionally focused on diversity at the discipline level. Such analyses have made it clear that across the spectrum of the SSH there exists a variety of styles of disseminating academic research. For instance, disciplines vary in their preference for specific publication types (articles, books or proceedings papers), publication language (English, but also other languages in many countries) or the degree of research collaboration as expressed by co-authorship. Broadly speaking, there appears to exist a divergence between most of those disciplines classified as social sciences and those classified as humanities. In the social sciences the co-authored, English-language article in a high-profile international journal is starting to predominate; while in the humanities single-authored books and articles published in national journals (i.e. journals which focus on a single country) in languages other than English remain more important.



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In two recent studies (Verleysen & Weeren, [2016a](#), [2016b](#)), we examined whether these findings at the level of academic disciplines also hold for the individual authors within them. As a method we used a cluster analysis of the publication patterns (publication type, language and co-authorship frequency) of 1828 established scholarly researchers (with 'established' being defined as having ten or more weighted peer reviewed outputs during 2000-2011, registered in the Flemish Academic Bibliographic Database for the Social Sciences and Humanities or VABB-

SHW) affiliated with the five Flemish universities (Antwerp, Brussels, Ghent, Leuven and Hasselt). Cluster analysis is an exploratory multivariate technique for [identifying groups in large data sets](#). By letting a computer algorithm independently form groups (clusters) of individual authors based on the similarity of their publication patterns and irrespective of their disciplinary affiliations, we discovered the considerable limitations of publication statistics at the disciplinary level.

The results (Figures 1, 2 and 3) show the true diversity of scholarly publication styles. Whereas we used a total of 11 variables (dimensions) for clustering the publication pattern of the 1828 authors, for visualisation purposes this number of dimensions has been reduced to two in the figures by means of a principal component analysis (as described in [Johnson and Wichern](#)) (first principal component on the X-axis; second principal component on the Y-axis). In Figures 1, 2 and 3 each dot represents one author and the position and colour of the dots show to which cluster each author belongs. The shades of red and green are indicative of a specific publication pattern: bright red dots stand for those authors who mainly target an international audience of specialised academia through the publication of co-authored English-language articles in high-profile journals indexed by the Web of Science; the bright green dots represent researchers who prefer to publish as a single author in the form of books or articles published mostly in Dutch-language national journals. As the various shades of red and green in Figure 1 show, many scholars in the SSH in Flanders have adopted a hybrid publication style, whereby in some publications they mainly target international academia and in others they do not.

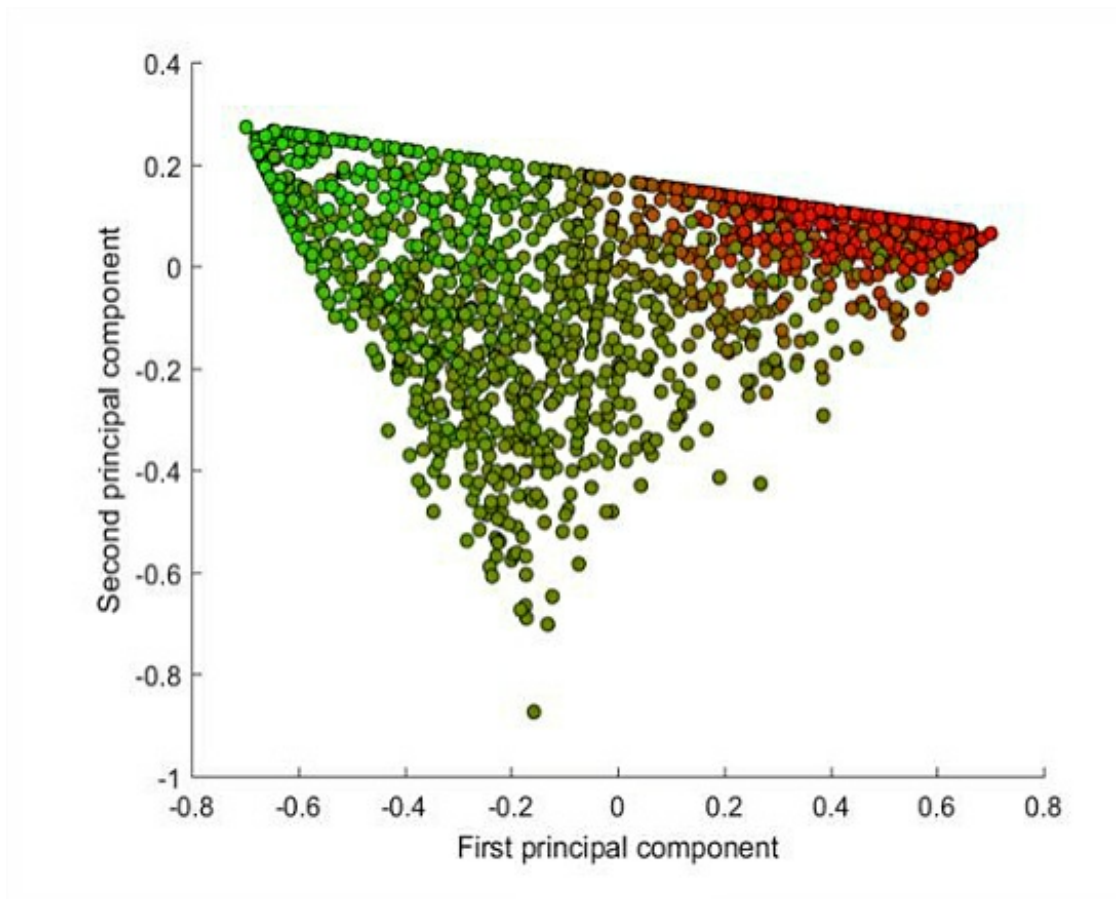


Figure 1: Fuzzy clustering of 1828 established authors in the SSH (Source: Frederik T. Verleysen & Arie Weeren (2016). [Mapping Diversity of Publication Patterns in the Social Sciences and Humanities: An Approach Making Use of Fuzzy Cluster Analysis](#), *Journal of Data and Information Science*, 1 (4), 33-59. DOI:[10.20309/jdis.201624](#). This work is licensed under a [CC BY-NC-ND 4.0 license](#))

In a next step, we performed the same analysis on the authors affiliated with one of the 16 individual SSH disciplines distinguished in Flanders. Figures 2 and 3 show our results for economics and political science respectively.

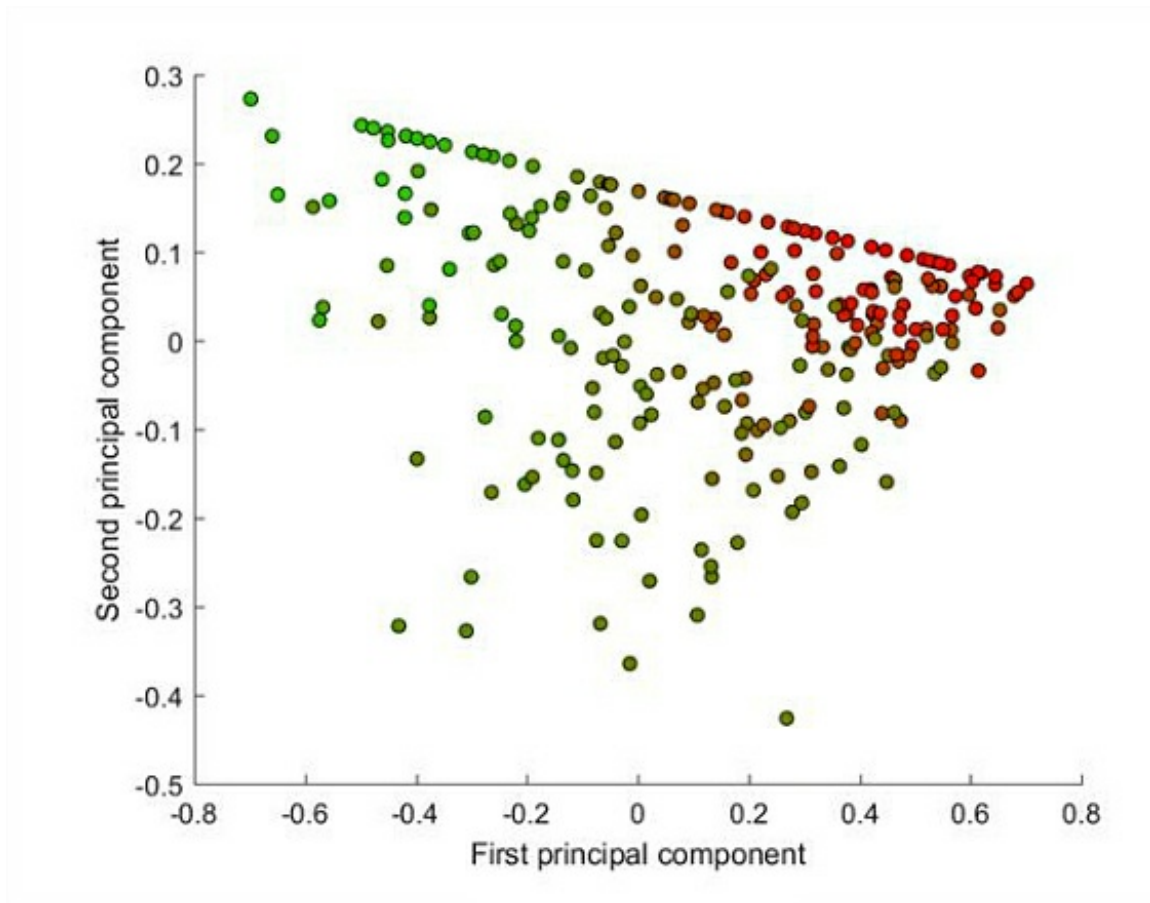


Figure 2: Fuzzy clustering of established authors in Economics (n=271) (Source: Frederik T. Verleysen & Arie Weeren (2016). [Mapping Diversity of Publication Patterns in the Social Sciences and Humanities: An Approach Making Use of Fuzzy Cluster Analysis](#), *Journal of Data and Information Science*, 1 (4), 33-59. DOI:[10.20309/jdis.201624](https://doi.org/10.20309/jdis.201624). This work is licensed under a [CC BY-NC-ND 4.0 license](#))

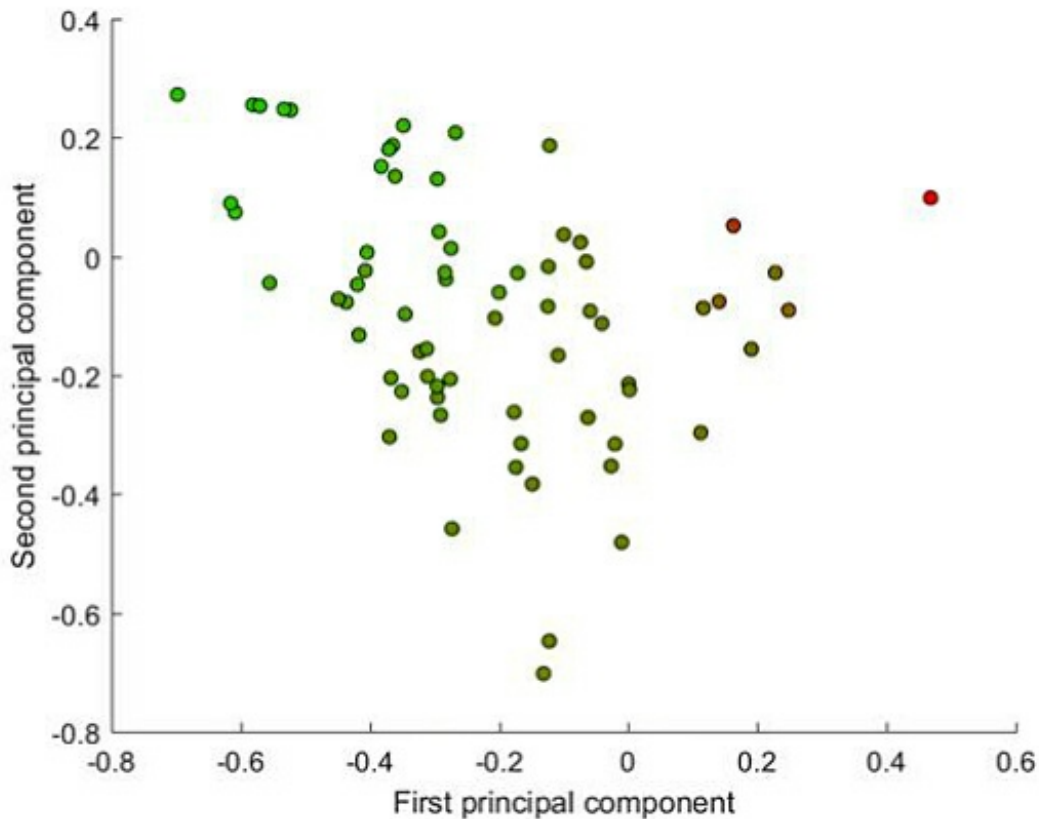


Figure 3: Fuzzy clustering of established authors in Political Science (n=74) (Source: Frederik T. Verleysen & Arie Weeren (2016). [Mapping Diversity of Publication Patterns in the Social Sciences and Humanities: An Approach Making Use of Fuzzy Cluster Analysis](#), *Journal of Data and Information Science*, 1 (4), 33-59. DOI:[10.20309/jdis.201624](#). This work is licensed under a [CC BY-NC-ND 4.0 license](#))

Both in economics and in political science, there exists among individual researchers a diversity of publication patterns. Clearly, the diversity in economics is the greatest, while relatively more political scientists adhere to a publication style reliant upon national journals and books, and closely related to that of many researchers in the humanities, such as historians, literature scholars or theologians. More in general, the great majority of the 16 SSH disciplines distinguished in Flanders show a considerable diversity of dissemination styles among its researchers (Verleysen & Weeren, [2016a](#), [2016b](#)).

This case study of Flemish publication data reveals fundamental patterns which are likely also valid for many other, especially non-Anglophone, countries. The considerable intra-disciplinary diversity of publication patterns is explained by the intrinsic diversity of many aspects of scholarly research and information dissemination. In spite of increasing collaboration, internationalisation and interdisciplinarity, many disciplines in the social sciences and humanities remain deeply fragmented with regard to their intellectual interest and approach, conceptions of standards, as well as target audience. Specialisation also relates to methodological differences, and these also have an impact on the way in which scholarly work is published.

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