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Fruchtbringende Gesellschaft (1617–1680) Member Publication Patterns in the VD17

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Abstract

This paper presents the first results of a larger project that draws on large-scale data analysis to investigate the publication patterns and networks of the 890 members of the Fruchtbringende Gesellschaft (1617–1680), or Fruitbearing Society, the first and largest cultural society in early modern Central Europe. First, we elucidate the major steps, including data wrangling, evaluation, clean-up, and algorithmic enrichment, necessary to transform the already high-quality VD17 bibliographic database into research data. Then, we relate the first results of our investigation of the publication patterns of Society members over time. This analysis brings more nuance to the existing narrative of a society that shifted from focusing on the literary and linguistic aspects of its agenda in the first period (1617–1650) to a more courtly one in the later periods (1651–1662/67) of its existence.

Keywords

Societies, academies, early modern Germany, cultural history, computational bibliography, bibliographic data science

1. Introduction

This paper presents preliminary results of a project that draws on large-scale data analysis to investigate the publication patterns and networks of the 890 members[1] of the Fruchtbringende

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[1]Throughout, we adhere to the common practice in the scholarly literature of including the member's consecutively assigned membership number. According to the Society's membership registers and armorial book (Wappenbuch), it admitted 890 members. Our analysis, however, considers the publications associated with one additional person, Johann Friedrich Scharff (FG 881A), who was a member for all practical purposes, aside from the official step of being assigned a number in the membership list and included in the Wappenbuch. His request to be admitted and draft letter of admission under the Society name "Der Unverachtete" from the head of the Society, Duke August of Sachsen-Weißenfels (FG 402), are preserved in the Society archive (Erzschrein). This draft is the only official reference to his admission, but additional published evidence shows that Scharff almost certainly received the letter, because he both regarded himself as a member and was recognized as such in Society circles. *Society Membership Database; Deutsche Akademie* 1991–2019 Halle I, pp. 171–172: May 27, 1678, Johann Friedrich Scharff to Duke August; ibid., p. 186: January 20, 1679, Duke August to Scharff.

Gesellschaft (1617–1680), or Fruitbearing Society, the first and largest cultural society in early modern Central Europe. Our interdisciplinary project team[2] is analyzing a bibliographic data corpus of over 312,000 records and 35 million subfield values, mainly derived from the *Verzeichnis der im deutschen Sprachraum erschienenen Drucke des 17. Jahrhunderts* (VD17).[3]

Below, we elucidate the major steps, including data wrangling, evaluation, clean-up, and algorithmic enrichment, necessary to transform the already high-quality VD17 bibliographic database into research data. Then, we relate the first results of our investigation by offering a quantitative overview of member publication patterns over time and addressing several data points of significance for Society studies. This work also facilitates identifying issues in the datasets we are using and formulating approaches for overcoming them. The quantitative overview provides the foundation for investigating additional research questions related to genre, translations, and patronage networks in the future.

Better understanding member publications that are related to the Society's agenda is compelling because the Society exercised considerable influence on the development of early modern central European thought and culture in the 17th century. It dedicated itself to two main goals: the cultivation of virtue, and the development of the German language. In particular, it played a pivotal role in the promotion of German as a literary and scholarly language and served as a model for several other 17th-century German language societies (Ball 2010, 519).[4]

The Society existed during a time of great upheaval in the Holy Roman Empire, a decentralized patchwork of over 350 territories and one of the great European cultural crossroads. It was international, multi-confessional, and informal in character, in the latter two respects offering a progressive approach for its time[5]. Some of the most prominent scholars, authors, and translators of the German Baroque were among the Society's members. The most productive of them in terms of publication were mainly non-noble or ennobled in their lifetimes on the basis of their literary and scholarly achievements.[6] Additionally, a host of central and northern European princes and nobles were members. They included literati as well as well-known political and military figures who were well-networked on the European level and well-positioned to promote the Society's agenda, if they so chose.[7]

[2]The project team includes researchers from the University of Helsinki and University of Colorado Boulder, with input from scholars and professionals associated with the Herzog August Bibliothek Wolfenbüttel.

[3]The VD17 is the retrospective national bibliography of titles published in German or in the German-speaking countries from 1601 to 1700, based mainly on the collections of a group of partner libraries (http://www.vd17.de/projekt/partner). The database continues to grow.

[4]The Society's literary and linguistic interventions were broadly construed. In addition to literature, lexicography, and grammar, its program encompassed orthography, translation, and poetics, new forms such as literary and linguistic criticism and the essay, as well as historiography, diplomatics, courtly-political conduct, and epistolography. Further, it encouraged books written in German in all areas of knowledge, which contributed to regulating administrative language and standardizing pronunciation (Conermann, Herz, and Schmidt-Glintzer 2017, 67; Ludscheidt 2017, 225–226).

[5]Membership was not limited by social rank, nationality, confession, or profession, with the exception of clergy due to the Society's irenic stance (Ball et al. 2017, 64). The Society's size, lengthy existence, and early establishment also contributed to its impact. It was founded well before the Académie Française and the Royal Society (Ball 2008, 389).

[6]Examples include Sigmund von Birken (FG 681), Augustus Buchner (FG 362), Georg Philipp Harsdörffer (FG 368), Martin Opitz (FG 200), and Philipp Zesen (FG 521), all of whom feature in our analysis.

[7]Examples of the former include Prince Ludwig of Anhalt-Köthen (FG 2) and Duke August of Braunschweig-Wolfenbüttel (FG 227), and of the latter Elector Johann Georg II of Saxony (FG 682), Swedish Chancellor Count

Scholars have long recognized the Society's significance and the importance of member publications in disseminating their ideas to a broader audience.[8] Our project is the first that takes a computational approach to Fruitbearing Society research, by analyzing members' collective publication output, and provides a clear complement to existing literary and philological studies of individual members' works. Additionally, our work illuminates, from the perspective of member publication, the Society's understudied middle period, the Weimar period (1651–1662/67).[9]

Our project aims to answer several research questions designed to address knowledge gaps and salient scholarly interests related to the Society by extracting meaning from the VD17 data about members' publishing patterns and outputs. Our hope in doing so is to shed light on the use of the VD17 as a data source, on the intellectual reach of early modern societies, and on European book, publishing, and cultural history more generally.

The primary research question this paper investigates is if and how the volume of member publications related to the Society's agenda changed over its three major phases: the Köthen period (1617–1650), Weimar period (1651–1662/67), and Halle period (1667–1680).[10] To undertake this work, it was important to identify the publications linked to members that also are related to – or can reasonably be associated with – the Society's agenda.

We approached this task from various angles.[11] First, given the Society's focus on developing the vernacular, we limited the data set to works in or including the German language. Second, we targeted publications to which the Society member was a primary contributor or creator (author, editor, translator, etc.). Third, we identified publications to which catalogers assigned generic terms (Gattungsbegriffe) that align with major aspects of the Society's mission, such as literature and ethics.[12]

Axel Oxenstierna (FG 232), and Imperial Field Marshal Prince Ottavio Piccolomini (FG 356).

[8] Despite this, no comprehensive bibliography of members' Society-aligned publication output exists, though several existing works bring us closer to this goal: Dünnhaupt 1990–93; Bulling 1965; Bircher 1992; *Deutsche Akademie* 1991–2019; Conermann 2017.

[9] The Köthen period (1617–1650) and the Halle period (1667–1680) have received more scholarly attention due to the voluminous work of the long-running Society research and documentary edition project that concluded in 2020, Die deutsche Akademie des 17. Jahrhunderts: Fruchtbringende Gesellschaft (*Deutsche Akademie* 1991–2019).

[10] The periods are named after the location of the Society's seat, which changed with its heads: Prince Ludwig of Anhalt-Köthen (FG 2); Duke Wilhelm of Sachsen-Weimar (FG 5); and Duke August of Sachsen-Weißenfels (FG 402).

[11] This was necessary as members operated within overlapping spheres of influence that linked them to a wide range of publications of varying intentions. For instance, a princely member in the role of ruler could be linked to a variety of official publications, including decrees, treaties, and laws, in addition to any works related to the Society's agenda to which he substantively contributed.

[12] The generic terms used in the VD17 are from the Arbeitsgemeinschaft Alte Drucke genre list. They include literary genres, textual types, and other specialized terms. For more, see Sommer 2010. Using these terms is not unproblematic, not least because they apply modern concepts that did not necessarily exist in the 17th century (Gittel, n.d., 242). They still, however, serve as an important point of reference for navigating the complex intellectual space represented in 17th-century publications (Sommer 2010, 62). We hope to refine this approach in the future, for instance, by analyzing of the occurrence of concepts indicating genre in the titles and subtitles of the works themselves.

2. Data wrangling

2.1. Data and problem space

The two main datasets used in this work are first, the VD17, currently containing over 312,000 records and 35 million associated metadata values coded according to stringent cataloging standards.[13] The second dataset is the database of Society members created by the aforementioned research and documentary edition project.[14]

Given these two datasets, the rational approach, on the surface, to identifying member output would have been to:

- Extract the GND[15] IDs from the society member dataset,
- Use these to identify member-linked records in the VD17, which also uses these IDs,
- Use VD17 actor role metadata to retain records only with substantive member contributions,
- Use VD17 generic term and language metadata to filter to publications related to the Society's agenda, or purpose, and
- Evaluate changes in publication patterns within this set over time.

However, four issues arose with this approach.[16] First, we are interested in a reasonable measure of publication production and consumption, such as distinct works or printings. However, the VD17, following rare book cataloging standards, records every variant of a book in library collections, down to single-character adjustments. In the handpress era, it was common for such variants to arise within a single print run, and for in-depth bibliographic study, the granular recording of these variants is important. From the viewpoint of quantifying distinct works or printings, however, these variants represent an external confounder. Further, multi-volume works have both a collective entry for multi-volume publications as a whole, as well as records for each related volume.

In the VD17, multi-volume publications are relatively easy to correct for, as the cataloging standard explicitly links the individual parts to the collective record, making it possible to disregard the collective records in favor of the more granular related volume records in our analysis. Unfortunately, the same is not true of variants, where no formal cues exist indicating which records are variants of each other, apart from the occasional free-form note stating that one record is **not** identical to another.

Second, the cataloging standards used in the VD17 require GND links to be recorded only for certain actor relationships, as seen in Table 1. When trying to find member-linked publications, the main issue that arises is lack of other collaborator GNDs in 028C (Other associated people

[13] The version used for this analysis was downloaded from the K10Plus SRU endpoint on May 9th, 2023. Information on the SRU endpoint at http://www.vd17.de/en/about-the-vd-17-online-catalogue/sru. Download and transformation code available at https://github.com/hsci-r/vd17-data-pipeline.

[14] Available at http://www.die-fruchtbringende-gesellschaft.de/index.php?category_id=15&article_id=15. The version used is a JSON dump obtained via private communication on September 12th, 2023.

[15] Gemeinsame Normdatei, the German Integrated Authority File, https://www.dnb.de/EN/Professionell/Standardisierung/GND/gnd_node.html.

[16] As is common when using sources not originally created for research purposes (Mäkelä et al. 2020; Tolonen et al. 2019).

Field	With GND link	Without GND link
Primary author (028A)	220,262	6,863
Secondary and additional authors (028B)	58,086	3,457
Collaborators (028C)	171,654	**241,326**
Other associated people (028G)	35,598	485,945

Table 1
Number of actor links with and without explicit GND ids

in 028G are not that interesting to our current use case). When a GND link is not recorded, various name forms often exist, complicating string matching, as exemplified in Table 2.

Georg[∅] Philipp[∅] Harsd**ö**rffer[∅]	Georg**ius** Philipp**us** Harsd**oe**rffer**us**
Ec**k**städt	Ec**h**städt
Ge**i**smar	Ge**y**smar
Burgs**d**or**f**	Burgs**t**or**ff**
Rudol**f**	Rudol**ff**/Rudol**ph**
…	…

Table 2
Examples of variant spellings of actor names in the VD17

Third, actor roles are often missing (Table 3), making it difficult to filter between connections where the member has a substantive role in creating a publication's content (e.g. as a translator), and where not (e.g. as a dedicatee).

Field	**With role**	**Without role**
Primary author (028A)	8,726	218,399
Secondary and additional authors (028B)	19	61,524
Collaborators (028C)	271,929	**141,051**
Other associated people (028G)	494,701	26,842

Table 3
Actor links in the VD17, with and without actor role designations

Finally, fourth, generic terms in the VD17 may be missing or uninformative for our purposes, potentially hindering efforts to compare Society purpose-related publications and other publications: 47,345/310,821 = 15% of VD17 records lack generic terms or the term is only a format indicator such as "pamphlet" (Flugschrift) or "broadside" (Einblattdruck).

2.2. Solutions

It was necessary to develop methods to address each of these four problems, which are illuminated in turn in the following sections.

2.2.1. Identifying printing variants

For merging variants, we use (1) notes in the VD17 catalog explicitly indicating that a printing is "not identical" to another, (2) the fingerprint information that catalogers use as a basis for these determinations,[17] and (3) an algorithm based on matching metadata (titles, places of publication, extents, printers, and publication years).

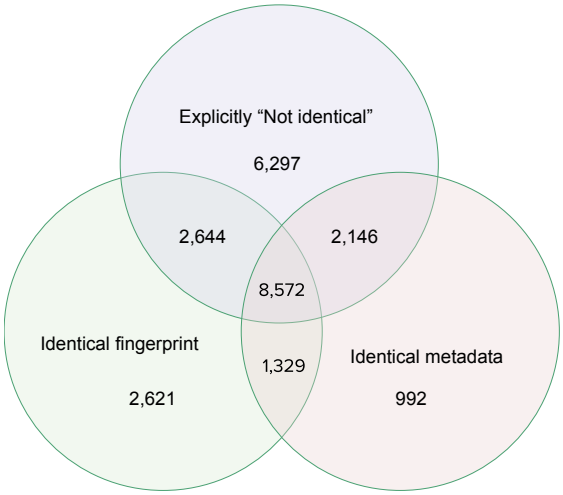

Figure 1: Overlaps in variants identified by the three different methods

In evaluating these methods, we discovered that each one picks up a significant set of variants that the others do not (Figure 1). To measure the quality of these different methods, thus far we have only done a preliminary validation on a small test set of 200 records, which focused only on records not explicitly noted as "not identical". We took this approach due to the fact that manual variant verification is labor-intensive, and we considered the explicit cataloger notes in the database a gold standard. Thus, their precision can be evaluated to be 100% a priori, but to evaluate their recall would have required a larger evaluation set than we had labor available. Our evaluation, therefore, instead targets the two other methods and seeks to discover how well they complement the explicit notes recorded in the VD17.

Set	Precision	Recall	F-measure
Identical fingerprint only	82%	55%	65%
Identical fingerprint & pages	**100%**	52%	68%
Identical metadata	86%	73%	79%
Union of last two	87%	**79%**	**83%**

Table 4
Precision, recall and F-measure of different variant identification methods

[17] Fingerprints are created by noting which letters appear at prescribed positions on prescribed pages, and combining those with the year of publication. For a technical description of the practice, see Beyer 2019, while for a historical perspective, see Harris 2006. For related work using fingerprints to reconstruct networks among early modern printers, see Valleriani et al. 2022.

In our evaluation, we verified that indeed a better F-measure is obtained by utilizing both methods simultaneously (Table 4.)[18] An interesting finding is that *only* an identical fingerprint is not a reliable way to identify identical books. Due to fingerprints being sourced from the first 13–17 pages at most, identical fingerprints can also arise when content is only revised or added in the middle or at the end of a subsequent edition, but does not significantly alter the beginning of the book. In our evaluation data, one-fifth of pairs having identical fingerprints turned out not to be variants of the same printing. Adding a (loose, +-3 pages) page number filter remedied this source of error, leading to 100% precision on the evaluation set. At the same time, in only 55% of the cases of printing variants *were* the fingerprints identical. This validates the need to use complementary means in their identification.

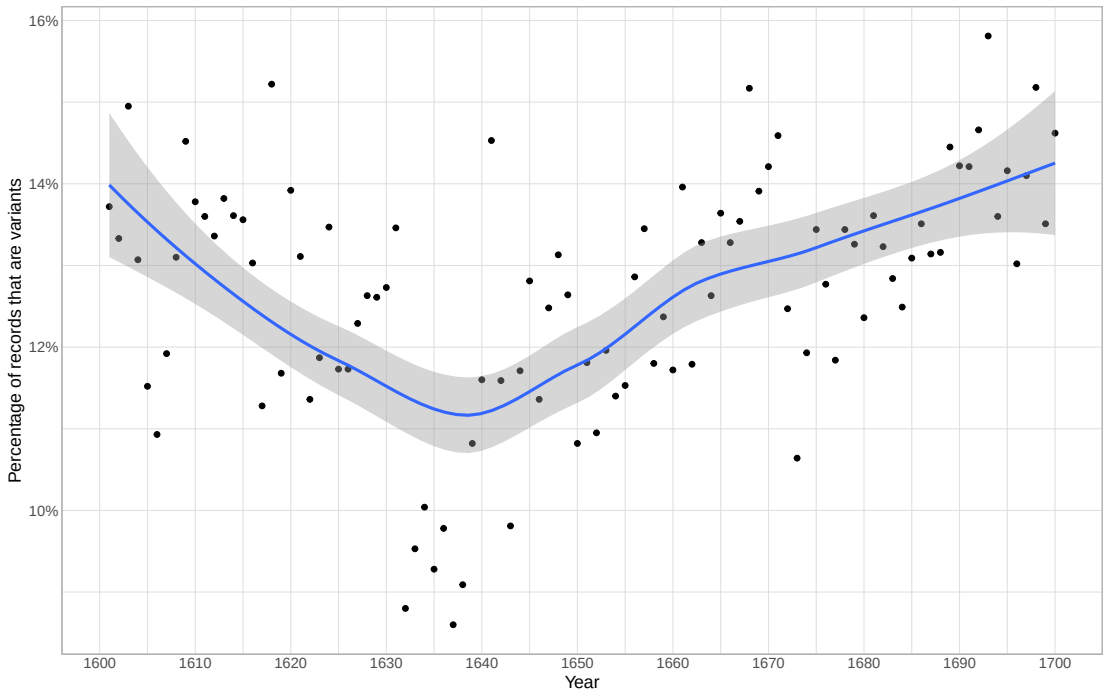

Figure 2: Percentage of records that are flagged as variants in the VD17 through time

So, does the presence of variants, though plentiful, affect results? Was their removal worth the effort? Overall, our methods flag 13% of the records in the VD17 as variants. Further, as shown in Figure 2, the percentage varies significantly through time. When looking at different genres of works (based on the generic terms), the percentage of variants varies even more markedly, ranging from just 2% to nearly 60%. We can therefore conclude that variant removal is required for temporal analyses and analyses targeting genres at minimum, but will probably be necessary for all.

[18]Note also that recall and precision across the full dataset is likely to be higher than what one sees here when the records explicitly identified as “Not identical to” are included

2.2.2. Matching actors where GND links are unavailable

As noted above and exemplified in Table 2, when trying to match Society members in fields where explicit GND ID links are not available, the problem is one of spelling variation: in the early modern period, the spelling of names was not standardized, and the same name can be spelled in a multitude of different ways in different publications.

To overcome this problem, we utilize an approach where we first gather as many variant forms of names for each member as possible, and then further apply normalization rules to the names to generate more robust match keys. These match keys are then used to link records to actors.

To extract name variants, we utilize three approaches. First, we extract the names as they appear in the member database. Second, one of the purposes of the Gemeinsame Normdatei is to record variant names under a unified record. Thus, from the GND we extract a further 4,139 variant names for 481 of the 891 members we are considering.[19] As a final measure, we utilize the fact that each GND link in the VD17 also records the authoritative name for the actor. While one might expect that the name form that is linked would be equivalent to the authoritative name recorded in the authority file itself, this is in fact not always the case; thus, we can also source additional variant name forms from here.

After sourcing our name variants, we further seek to improve recall by normalizing the varied orthographies into match keys. For normalizing the Early New High German used in this period, we first considered an existing solution, Norma (Bollmann 2012), but found it lacked both precision and recall in our personal name data because it had been more tuned to running text. Thus, we instead adopted a two-pronged approach. First, we implemented the normalization rules used in the main index of historical German names "Ahnenstammkartei des Deutschen Volkes" (Edlund 1995) explicitly to match Early New High German surnames[20]. Second, to account for any particularities of our data not caught by these general rules (e.g. due to our data containing both Latin and German forms of the names), we employed an unsupervised method (Janicki 2019) for discovering potential transformation rules from the data itself. These were then manually evaluated to amend our ruleset. To improve precision, we finally remove all match keys (homonym names) that are linked to more than one individual (as identified by GND ID) across the entire VD17.

Again, as visualized in Figure 3 each of these methods bring us differing results, with their combination being the most accurate. Evaluating the result, 12,782/27,253 = 47% of member-linked publications would not have been found based solely on GND linking. However, when we apply further filtering based on generic terms and roles (described further below) to extract Society purpose-aligned publications, only 574/12,782 = 4% of these would not have been found. The reason for this discrepancy can be attributed to the fact that GNDs are often not recorded in particular fields, particularly 028C and 028G, where roles such as dedicatees, censors, and minor contributors (e.g. author of a preface) reside. These roles are already grounds for ruling people out from the core Society purpose-aligned dataset, which requires at least one member contributing substantively to the publication. In the end, therefore, omitting this expansion

[19] See n. 1

[20] We used the summary table condensing the rules given at https://feefhs.org/resource/germany-ahnenstammkartei-soundex.

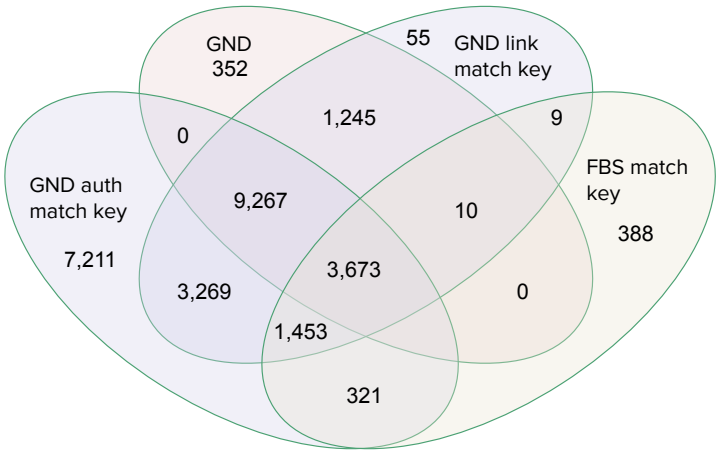

Figure 3: Overlap between the Society purpose-related publications each method discovers

step would actually not have changed the results substantially in answering the main research question of this paper. However, when we turn to analyzing to whom the members dedicated their publications later in the project, this will prove crucial.

2.2.3. Addressing missing roles

In terms of missing roles, we were similarly able to work around them, due first to the way they are distributed among the four main fields containing contributors (Primary author in 028A, Secondary and additional authors in 028B, Collaborators in 028C, and Other associated people in 028G), and second to which roles are reliably recorded in 028C.

As previously mentioned, everyone linked in fields 028A and 028B can already be assumed to have a substantive role in the printing, and we are not currently interested in the Other associated people in 028G. Thus, the missing role problem concerns exclusively field 028C. Recalling Table 3, about 34% of the links in that field do not have role information for the linked actor. However, it turned out that one of the major non-substantive roles for our current analysis, that of dedicatee, *was* reliably tagged in this field. It was therefore possible to make significant progress simply by filtering out records where this role was specified, and assume that when no role was specified that it denoted a substantive contribution.

The place where this heuristic broke down was with regard to members who were princes and other high nobility, who may have numerous publications linked to them to which they did not substantively contribute content. And, while almost all of these links are in reality in non-substantive roles, such as honoree, often these roles are not explicated in the VD17 records, leading to a significant number of false positives being pulled into our core dataset. To counteract this, in our final analysis for this paper we included an additional filter that

disregarded all unknown role relationships in the 028C field for members whom we knew through metadata to be high nobility (princes, dukes, and counts). We plan to refine this approach going forward.

2.2.4. Addressing missing generic terms

Finally, for publications lacking usable generic terms (47,345/310,821 = 15% of VD17 records overall have either no generic term or only format-related terms like "pamphlet" or "broadside" assigned), we have been experimenting with training machine learned classifiers to predict them based on publication titles. The performance of these classifiers varies by category, but overall shows promise, with most terms achieving over 80% precision and recall, and some approaching a 95% F-measure. However, as we have not yet sufficiently evaluated the robustness of the results across different sections of our data, we instead opted for a manual approach for this paper. Going through the affected printings by hand was possible here because within the society purpose -related subset, there were only 885 such records (10% of the 8,909 records overall).

3. Analysis of publications related to the Society's agenda

The work described above laid the basis for the following first-result graphs and analyses, which aim to elucidate: (1) the overall landscape of Society members' publications related to its agenda across the 17th century; and (2) how their publishing patterns developed as a collective across the three periods of its existence.

As an organization, the Society was largely dependent on its headquarters to organize the internal intellectual exchange (Herz 2018, 93) that might influence the works its members put into print. Scholars generally see a trend from more central direction and attention to the Society's original programmatic agenda under Prince Ludwig (1617–1650), to less under his successors Duke Wilhelm (1651–1662) and particularly Duke August (1667–1680). The Society progressively evolved toward becoming a courtly order that bestowed reputation and social prestige, but no longer actively fostered collective literary, linguistic, and scholarly achievement. In this scenario, member publications are regarded as the contributions of individuals who also happened to be Society members (Conermann, Herz, and Schmidt-Glintzer 2017, 77).

We wondered, is this apparent in the member publications related to the Society's agenda recorded in the VD17? How does this trend play out across the three phases? Were the members themselves more or less "productive" with less central direction and cohesion?

As a baseline, Figure 4 charts both the number of members and number of Society purpose-related publications per year over time. One can immediately see that the majority of members were admitted in the Society's first phase (527, by Prince Ludwig), with the number admitted during its latter two phases (262 and 101[21] by Duke Wilhelm and Duke August, respectively) remaining relatively stable once the 1662–1667 lapse in headship is taken into account. The annual number of Society purpose-related publications mostly tracks with the number of active members and does not reveal much about the effect of central direction.

[21] 102 including Scharff.

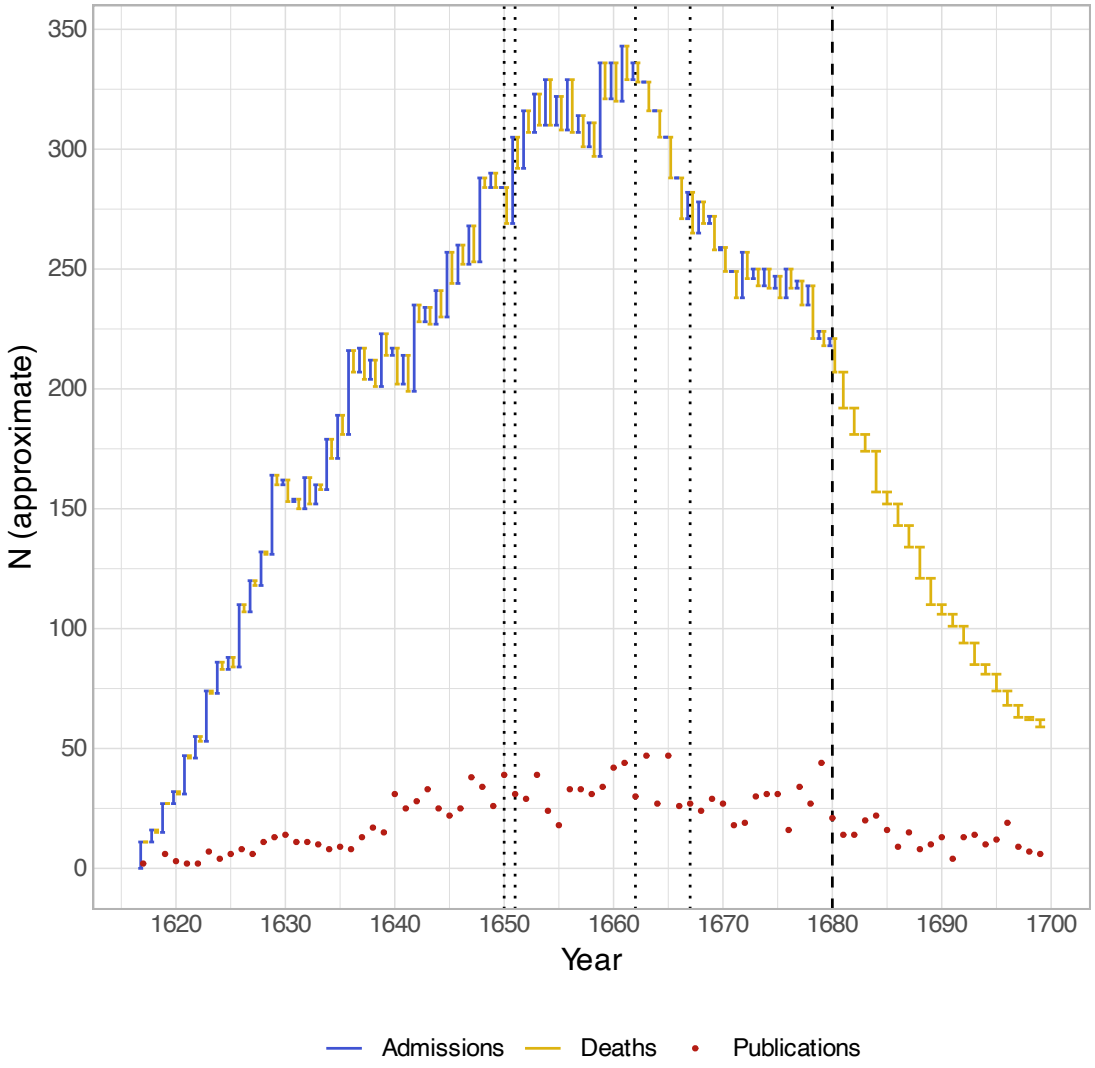

Figure 4: Number of Society purpose-related publications and members by year, with the latter showing annual admission and member death counts. Events marked are (1) Prince Ludwig's death in 1650, (2) Transfer of headquarters to Weimar in 1651, (3) Duke Wilhelm's death in 1662, (4) Transfer of headquarters to Halle in 1667, and (5) Duke August's death and cessation of the Society in 1680. Member counts are approximate due to incomplete information.

To get an alternative view into these trends, our next analysis looks at the publication records of members admitted at different times. Our theory is that if the Society was giving less attention to its agenda and becoming a more courtly order, this shift would be directly reflected in the publication profiles of admitted members. To test this, we total the Society purpose-related printings associated with each member, and group them based on the member's year of admission into time intervals that fall into one of the Society's main periods. The timeframe

1663–1666, during which there was no head or new members admitted, is not included. This calculation does not account for when members published or whether they were members at the time, but instead seeks to act as a heuristic summarizing their aptitude for Society-aligned work in the eyes of those who admitted them.

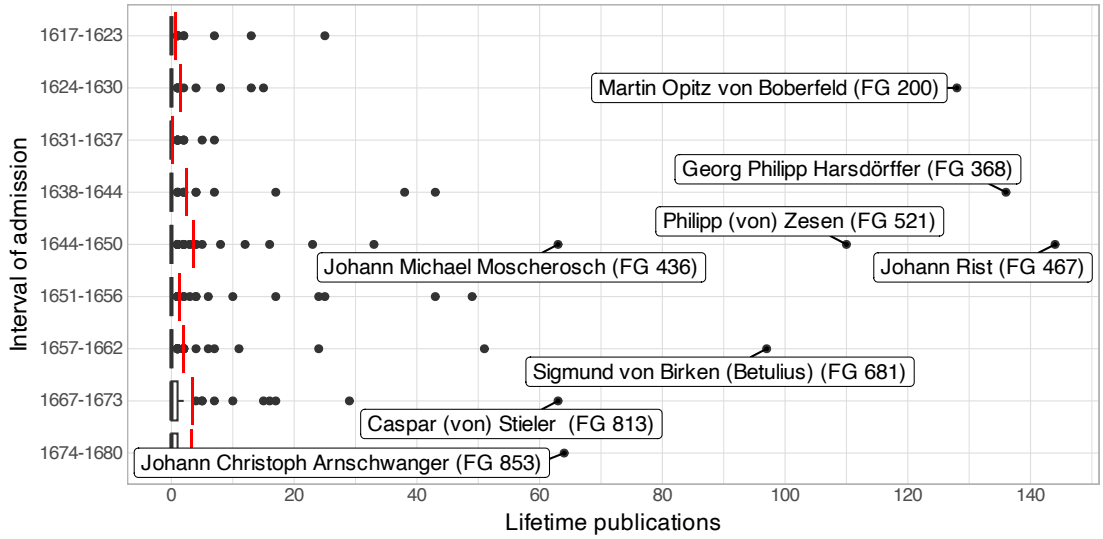

Figure 5: Boxplots of lifetime publication activity per member, grouped by year of admission into time intervals. Red line denotes mean number of publications. In all intervals except the last two, the 75th percentile is zero (meaning at least 75% of members joining in that time interval published no Society purpose-related works), resulting in the plot showing few visible boxes and mostly outliers.

Visualised in Figure 5, this approach reveals much more. First, it shows that in all Society periods, the majority of members admitted were *not* involved in publication activity related to its agenda. Instead, most Society purpose-related publications flowed from the pens of a small minority of extremely productive members. The ten members with the most printings – all well-known early modern German authors – are, in descending order: Johann Rist (FG 467, 1647), 158; Georg Philipp Harsdörffer (FG 368, 1642), 136, Martin Opitz (FG 200, 1629), 128; Sigmund von Birken (FG 681, 1658), 113; Philipp Zesen (FG 521, 1648), 110; Johann Christoph Arnschwanger (FG 853, 1675), 64; Kaspar Stieler (FG 813, 1668), 63; Johann Michael Moscherosch (FG 436, 1645), 63; Andreas Gryphius (FG 788, 1662), 51; and Georg Neumark (FG 605, 1653), 49. The works of the first three were published over the longest 17th-century timeframe, 75 years.

To give a different perspective on these members' productivity, we calculated the mean publication output annually during their lifetimes: Opitz (5.8), Rist (4.1), Harsdörffer (4.0), Birken (3.1), Moscherosch (2.1), Zesen (1.9), Gryphius (1.7), Stieler (1.6) Arnschwanger (1.4), and Neumark (1.4). Opitz rises prominently to the top in this scenario. The majority of these prolific authors were admitted during the Köthen period; but it was also the longest, and high-producing new members appear in the other two Society periods, as well. Thus, this analysis, while interesting, does not help us to differentiate between them.

Clear differences finally arise when we turn our attention to the distribution of member

publication profiles (summarized in Figure 5 as red means and black boxplots). First, the highest mean number of publications per member appears in the last admission interval of the Köthen period, 1644–1650. This distribution, however, is heavily skewed by individual publication activity, as over 75% of members did not publish at all – the mean is raised by the extensive output of a small number of heavy hitters, particularly Rist, Zesen, and Moscherosch. The two admission intervals associated with the Halle period (1667–1680) also see a higher mean number of publications, but here the boxplot finally takes shape, indicating that more than 25% of members admitted during this period substantively contributed to Society purpose-related publications.

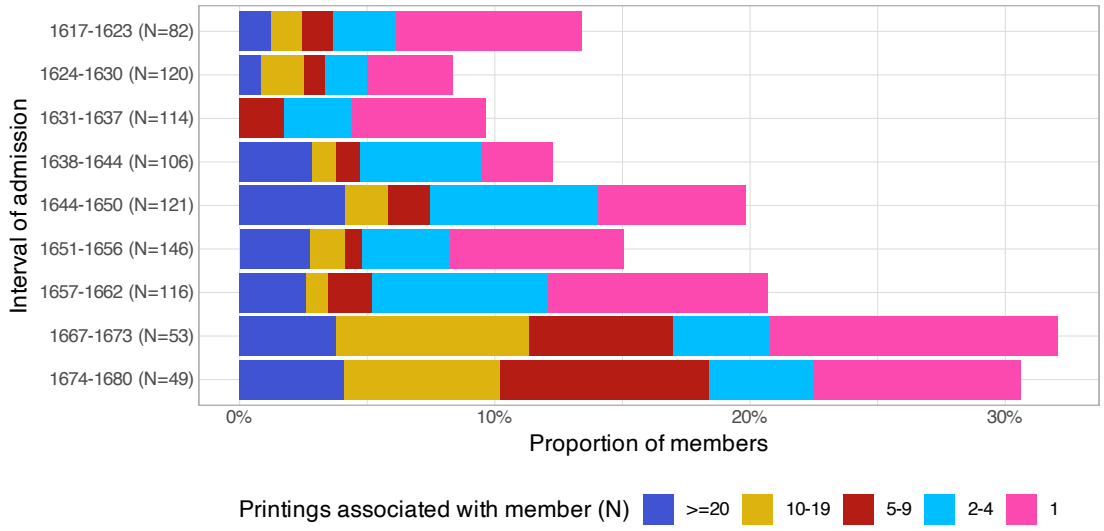

Figure 6: Proportion of members substantively contributing to Society purpose-related publications, grouped by time interval in which the member was admitted

To shed more light on these trends, in Figure 6 we explicitly plot the percentage of members in each admission interval and partition them by number of publications. The figure shows that the proportion of members associated with at least one such publication increased rather than decreased in the Weimar and Halle periods, which were less driven by centrally organized critique and intellectual exchange. The second interval of the Weimar period 1657–1662 (20.7%) surpassed all intervals of the Köthen period, even 1644–1650 (19.0%). Both Halle intervals, 1667–1673 and 1674–1680 (32.1% and 30.6%, respectively), clearly eclipse those of the two previous Society periods.

This same general pattern holds true when the threshold for the number of publications increases to 2–4, 5–9, or 10–19, with some minor shifts and the notable exception that the proportion for the Weimar 1657–1662 admission interval drops progressively below that of Köthen 1644–1650 as the threshold increases. Additionally, the Köthen 1638–1644 interval buoys to the level of some of the Weimar ones. When the threshold for the number of publications increases to 20+, the proportion of the Köthen 1644–1650 interval (4.1%) for the first and only time meets or rises above the two standout 1667–1673 (3.8%) and 1674–1680 (4.1%) intervals of

the Halle period.

On the flip side, the earlier Köthen admission intervals 1617–1623, 1624–1630, and 1631–1637 appeared quite consistently at the bottom proportionally, regardless of the threshold number. This holds particularly true for the 1624–1630 interval – 93% of the members admitted during this timeframe did not contribute substantively to publications found in the VD17. The Weimar intervals hovered in the middle in all categories, neither at the top nor the bottom.

These more nuanced perspectives underline a basic difference between the Köthen 1644–1650 and Weimar 1657–1662 admission intervals, which the graph represents at similar overall proportions – that comparatively more members with exceptionally strong Society purpose-related publishing records were admitted in 1644–1650, and a much larger group of members with more modest publishing records were admitted in 1657–1662. In fact, the latter interval recorded the highest proportion (16.4%) of admitted members with up to five publications across all admission intervals and Society periods. The Halle intervals, on the other hand, far outstrip the others due to a higher proportion of productive members amongst the lower total number of members admitted (about half of the number of the Köthen and Halle periods, when their length is taken into account).

Despite these caveats, overall these outcomes point to the conclusion that members admitted in later phases who worked independently or who solicited feedback from colleagues without the intervention of Society headquarters constituted a larger group proportionally that made substantive contributions to publishing in genres related to the Society's stated agenda. This indicates that centrally organized intellectual exchange was not a significant factor in their productivity.

4. Conclusions and future work

Our team has reached several conclusions from the work we have carried out thus far, which focuses on the overall landscape of members' Society-aligned publications and the development of their collective publication patterns over the three main periods of the Society's existence. From a technical perspective, if we had had a better sense of the data and our needs at the outset, we could have taken a more direct route for this purpose and sidestepped developing more general and involved methods to bridge gaps in the data. On the other hand, because we did take the time to develop them, we now have reasonable methods to identify (1) variants and (2) non-normed actor links in the entire VD17, as well as the means to project generic terms from work titles. These methods may be more broadly applicable to other retrospective bibliographic datasets, as well.

From a content perspective, we determined that members' Society-aligned publication productivity does not appear to be strongly correlated to central guidance from headquarters, as the trend in the Halle period clearly shows. Strong individual performers and groupings of individual performers, most of whom were non-noble or recently ennobled for their literary and scholarly achievements, drove many of the trends we saw in the data. This finding is in line with the prevailing narrative, but contributes new perspectives and questions to the scholarly conversation about the Society and its members' publication activity.

In many ways, our work thus far has raised as many questions as it gives answers. Some

patterns emerged that bear further exploration, for instance, determining why the earlier Köthen admission intervals 1617–1623, 1624–1630, and 1631–1637 appear so consistently at the bottom proportionally, and exploring the diversity of the members publishing at a more modest level who were admitted during the Weimar 1657–1662 interval. In fact, looking at this population more closely across all admission intervals may yield insights that add nuance to the Society "canon" that could prove quite interesting, particularly as the data about pseudonymous and anonymous contributions is continuously improved in the VD17.

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