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A Quantitative Approach to Book-Printing in Sweden and Finland, 1640–1828

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ABSTRACT

Several cities in Sweden have been providing book-printing facilities since the 1640s. In our quantitative and explorative analysis of library catalogs from the National Library of Sweden and the National Library of Finland we identify the general trends in publishing, how book-printing has been affected by political events, and how printing developed at different paces in different parts of the realm. We have developed a new method for analyzing the totality of publishing through extensive data harmonization and comprehensive statistical analysis, and by treating library catalogs not as an endpoint of bibliographic research but as an inherently rich source of information. This facilitated the quantitative assessment of printing in the Swedish realm based on the metadata contained in library catalogs. Our data-driven approach to the transformation of public discourse demonstrates that whereas the amount of printed material grew steadily, political ruptures affected the development of printing. We also suggest that the culture of books and printing is best understood through the dynamics of competing intellectual hubs consisting of the university cities and the political center in Stockholm. This perspective further challenges the dominant, nationally delineated approach in book history.

KEYWORDS

Book history; computational history; digital humanities; library catalogs; publishing history; public discourse; qualitative approach

Introduction


Book history is one of the most vibrant and intellectually stimulating fields of historiography. Our aim in this article is to contribute to current knowledge of the historical changes in book history in Sweden and Finland. We use library catalogs as a source to reveal large-scale developments in the history of print. We test how the use of large-scale quantitative methods and digitized datasets can qualify earlier findings and provide valuable new background information for the qualitative analysis of books, printing and public discourse in the early-modern era. Our work is explorative as the methods used are new and the quantitative scope in our analysis demands a higher level of generalization than what has been customary in book history.

Library catalogs, a greatly underestimated source of knowledge, are the product of systematic efforts in different libraries to facilitate information retrieval and to chart publishing in any given field, country or period. In this sense they are the end products of large-scale projects carried out to identify specific documents and other external sources of information. They have traditionally been used as a tool to search for particular books. The point of interest is reversed in this article, however, as we study the catalogs of the National Library of Sweden (*Kungliga biblioteket*) and the National Library of Finland (*Kansalliskirjasto, Nationalbiblioteket*) as datasets in their own right that encapsulate the totality of book publishing in Sweden and Finland.¹

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*Tolonen has been responsible for planning the project and the historical analysis and writing the article, Lahti has been responsible for handling and cleaning up data, and producing statistical analyses, Roivainen has cleaned up data and produced statistical analyses, and Marjanen has been responsible for writing the article and the historical analysis. All the participants have been involved in editing the final version. This article builds on a previous paper presented at the ADHO Digital Humanities 2016 conference in Kraków, 11–16 June 2016. Tolonen and Lahti have agreed on shared first authorship.

Color versions of one or more of the figures in the article can be found online at www.tandfonline.com/vhim.

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An important discussion within digital humanities concerns the construction of different digital collections (McGann 2006; Mak 2014, Kaplan 2015) as well as digital collections and datasets in terms of the construction of editions (Bode 2017; Fyfe 2016; Cordell 2017). We hope to participate in this discussion by bringing the relevance of comprehensive, harmonized datasets to the central stage in digital scholarship (for other work along similar lines, see Towsey et al. 2015). A huge part of studies in the digital humanities is naturally based on large, digital libraries such as Google Books, HathiTrust collections and Eighteenth-Century Collections Online (Hockey 2005; Michel et al. 2011; Bohannon 2010; <https://www.linguisticdna.org/tag/ecco/>; for an example of recent research on such datasets, see Underwood et al. 2018; Recchia et al. 2016). Our work on national bibliographic metadata collections differs because the mentioned digital repositories do not form integrated publication records of their period. For example, Eighteenth-Century Collections is approximately 54 percent of the material included in English Short-Title Catalogue, HathiTrust collections are large but not comprehensive in the scope of nineteenth-century publishing and Google Books is an extensive collection of works without actual knowledge of what is included. Searching “A LOT OF BOOKS” (in capital letters) does not satisfy the needs of careful book historical study. While there is an obvious downside in our approach in the lack of full-text documents, the aim for comprehensiveness based on the bibliographic record is a clear strength. Thus, this article does not form an attempt to model the published texts or conceptual changes within them, but instead it can demonstrate the effective use of metadata of the bibliographic records.²

The use of quantitative methods in historical research on bibliographies is a rapidly emerging field of digital humanities. Examples of quantifying fiction in the fashion of Franco Moretti (2013, 179–210) have led the way. Jockers (2013, 35) refers to bibliographies and their metadata as “some of the lowest hanging fruit of literary history.” Book historians have also turned to bibliographies for statistical analyses of printing (Suarez 2009; 2015; Bell and Barnard 1992; Weedon 2009; see also Laine 1996, 22–33; for French cases, see St. Onge 2014, 71–72; Barbier 1996; Vaillant 1992). In Scandinavia, Horstbøll (1999) in particular used several different Danish bibliographies in his detailed analysis of Danish book production. Nevertheless, library catalogs have seldom been deployed as digitized resources for studying questions stemming from historical research. In a recent study, Lahti, Ilomäki and Tolonen (2015) used the English Short-Title Catalogue (ESTC) to trace publishing trends in the English-speaking world, whereas Myrdal

and Söderberg (2012) analyzed secularization and the rise of economic interest in Sweden and Britain based on the catalog of the National Library of Sweden and the ESTC. Although Myrdal and Söderberg’s study is innovative in the use of large-scale quantitative data in library catalogs to analyze major trends in modernity, their use of the catalog is limited to regular searches relying on keywords, which considerably limits the level of detail that can be achieved in the analysis. Our study takes a step further, the aim being to take full advantage of the information that is contained in bibliographic data collections. These have hitherto been difficult to utilize given the lack of harmonization that is required to compare information across vast numbers of manually provided data entries. Our analysis is based on extensive and largely automated data-cleaning operations that yield detailed, comprehensive and commensurable bibliographic information.

To us it seems evident that study of book history will change due to the availability of computational methods and large datasets. Digital or computational history will also have some other consequences for this kind of studies. The presentation of methods is necessarily more technical and historical processes are often analyzed through the measurement of proxies. Regardless of the new possibilities to quantify historical materials, the interest in historical processes does not change when using digitized materials. The questions in digital history stem from the same tradition of evaluating sources critically in order to reach plausible conclusions. (See *Arguing with Digital History Working Group* 2017; Tolonen and Lahti 2018.)

Our use of the category “book” in this article comprises of different types of objects. What are included in the bibliographic records used in this study are books, leaflets, pamphlets, legal and governmental documents, news-books, newspapers, and other serial publications among other early-modern printed documents.³ One of our main interests in this article is the development of printed documents as material objects. Thus, often when we discuss book-printing in general, we also include pamphlets and the like in this general use. If we focus particularly on some types of documents, we naturally use appropriate phrases accordingly. We have also made considerable efforts to study the volume of paper consumed in the documents so that we can differentiate between actual books and shorter pamphlet-like materials that also include for instance governmental documents. At times, we also use the expression “printed documents” to refer to the whole data used in this analysis. We also use the

terms print and publication interchangeably in the text to refer to any type of documents in our data.

In our analysis of long-term developments in book-printing we rely on the varied information that is contained in the catalogs concerning especially titles, authors, publishers, publication places, page counts, document format, and the language of the publications, although we analyze also other metadata. This information has not been reliably or efficiently available to the research community through simple searches in the catalogs since they are – for good reasons – designed to provide the information in the title page, even if it is inconsistent or includes misspellings. For our purposes harmonization is required to match the metadata information to allow for quantitative analyses and reliable comparisons over long periods of time.

Our approach thus enables us to confirm and qualify hypotheses about long-term developments in publishing in the Swedish realm, and after 1809 in Sweden and the Grand Duchy of Finland, and thereby to overcome two previous obstacles. First, using the national bibliographies enabled us to build on the foundations laid down by book historians who studied the material and cultural conditions of books. We were therefore able to paint a clearer picture of the overall developments in book-printing, and whenever the metadata allowed also to zoom in on interesting cases for analysis. Second, harmonizing the datasets allowed us to go beyond previous attempts in digital humanities that have either been based on smaller bibliographies or have been limited in their analyses due to inconsistencies in the data. Analyses of page counts, document formats and publication places have not thus far been possible on this scale and accuracy in studies based on digitized datasets.

Of particular importance in this article is to discuss how changes in publishing associate with ruptures in political history and to show how a quantitative approach can make this possible in new ways. Quantitative analyses of the extent, location, publishers and other fundamental aspects of book-printing provide new means of characterizing the publishing landscape. Furthermore, the study highlights the need to understand publishing and its temporal dynamics from the perspectives of different intellectual hubs in the Swedish realm, which challenges the tradition of assuming the unified development of a national public sphere. Although books and other printed documents were not bound to their site of production and traveled through various dissemination networks (something on which the catalogs do not provide information on), the quantitative assessment of book production from the

perspective of competing towns still shows how different the intellectual conditions were in different parts of the Swedish realm. (See Laine 2006.)

On a more general level, the study points towards patterns in book production that may, in the end, entail qualification of Habermasian notions of structural transformation in the public sphere. Whereas Jürgen Habermas (1989) was famously interested in structural transformation – a breakthrough of a bourgeois public sphere as opposed to a representative public sphere and a further regression back to representative elements – our study traces developments in public discourse through the concrete analysis of a small section of public discourse, namely publishing. This study is concurrently more detailed and more overarching than Habermas's classic formulation of sociological ideal types: it is encompassing given the quantitative long-term perspective, and yet detailed because changes are analyzed on a year-to-year basis. Structural changes affected the long-term development of publishing and public discourse, but the detailed analysis shows how the concrete political ruptures in history and the imperial setting in Sweden – including competition between nations and cities – are reflected in the printing of books and other documents. Political practices had concrete results in terms of how debate developed through printed materials, and the debates further affected how politics could be conducted. From this perspective, the transformation of public discourse appears to have been a more open-ended process than Habermas suggests.

When more thorough metadata on newspapers, associations and other public institutions are available for computational analysis, research should yield further empirical data to qualify Habermas's theory. However, data-driven statistical analysis will not be sufficient to grasp complex historical processes that correspond to Habermas's theory or to qualitative historical research: it will only provide analyses that can be used as a basis for further theorizing. The advantage of using a quantitative approach in this context lies in the possibility of using library catalogs or other rich metadata sources from the whole of Europe, and of applying similar methods to provide analyses that cover a geographically broader area and go beyond a nationally delineated perspective on studying the public sphere. As such, quantitative analysis can provide essential support to complement qualitative conclusions.

Material and Methods

The Finnish national bibliography (FNB) contains metadata for 71,919 documents printed between 1488

and 1955, of which 19,904 were printed between 1640 and 1828 (Häkli, Laine, and Nyqvist 1996; Nuorteva and Tammi 1987). In total, 28 raw data fields were parsed from the MARC raw data files obtained from the National Library of Finland. These fields provided information on the document language, author's name and lifetime, publication title, publication place, publisher, publication time, page count, volume and parts information, physical dimensions, publication frequency (for series), publication intervals, dissertation notes, topical terms, topic geography, and other notes.⁴ The raw data fields were harmonized and enriched, resulting in 96 metadata entries per document in the final data. The availability of the data entries varied by field.⁵

The Swedish national bibliography (SNB) contains metadata for 385,771 documents printed between 1488 and 1955, of which 70,977 were printed between 1640 and 1828. A total of 51 raw data fields were parsed from the MARC raw data files, including all except two of the same MARC fields as for the FNB and several additional fields.⁶ The original raw data fields in this case were also cleaned, harmonized, and enriched, resulting in 182 metadata entries per document in the final data. The availability of the data entries varied by field.⁷

We focused on the period up to 1828 because of the technological stability in printing. After that, the steam-powered cylinder printing press became common and eventually the rotary letterpress was developed. It was these technological improvements that occurred during and after the 1830s that changed the nature of printing, enabling the emergence of paperback books with sizeable editions, for example. Our focus, the hand-press period from 1470 to the 1830s, in contrast was technologically relatively uniform, and thus forms a more coherent whole for the study of the materiality of the printed documents. This is also reflected in the library catalog information: information about physical dimensions of the documents is much more constant up to the 1830s than during later periods, for example. Hence, it is more plausible to make claims about overall developments in printing in Europe based on library catalogs during the hand-press era than later when technological advancements changed the publishing landscape.

We have primarily used the information that is readily available in the bibliographic catalogs. The present work is mainly based on the publication year, publication place, book format (gatherings), title, page count, publisher, language, and topical terms (see the [Supplementary material](#) for a comprehensive overview

of the data availability and characteristics per field). Using external data sources to enrich the data on authors or publishers could yield further insights in the dynamics of the publishing landscape, and we are currently working on this in follow-up projects. Comprehensive overviews of all fields in the overall harmonized datasets are available online.⁸

The amount of information contained in the library catalogs may seem narrow at first sight, but as the raw data fields cover many different types of information on over 90,000 titles for a period of almost two hundred years, they provide ample possibilities for tracing large-scale trends in the publishing landscape across time and geography. However, some caveats related to the historical representativity and reliability of the material need to be discussed.

The library catalogs are, in essence, nationally delineated epistemological units (Häkli, Laine, and Nyqvist 1996; Nuorteva and Tammi 1987; Collijn 1927–1933, 1942–1946). They are invaluable as tools for charting published material, but they are also examples of “methodological nationalism,” which operates on the assumption that the nation state is a natural context in which to collect knowledge (Beck and Sznajder 2006; Marjanen 2009). Both catalogs were designed to include documents printed within the nation or by its nationals. This national gaze – a tendency to see the nation state as a self-evident analytical unit – is often reproduced in research on the history of the book that relies on national bibliographies. There are understandable reasons to this way of organizing knowledge in national catalogs. The national bibliography has as such been part of the nation-building process, as Horstbøll (1999, 45–49) points out, which has also made them extremely valuable for research as they are the best available datasets for printed documents in a given country.

The present study is also based on national catalogs, but in response to Robert Darnton's call for comparative book history and with a view to overcoming methodological nationalism we make three distinct but interrelated moves in the analysis (Darnton 1987; see also Suarez 2003–2004). The aim is not to downplay the role of the nation state, but to make sure we can also understand some subnational and transnational developments. First, the study relies on two different catalogs, the findings from which are used to contrast one with the other systematically. The first iteration of the FNB was put together in the 1870s to manifest the literary history of Finland and the Finns (Vasenius 1878). The SNB also collects different bibliographies produced in the course of the

nineteenth and twentieth centuries, with Collijn (1927–1933), being the most important one. In both cases, the collection of data for the period before 1809 was shaped by the aim to form a national canon, not from the perspective of early-modern multi-national Sweden. In a sense, the catalogs provide partly overlapping, supplementary perspectives on early-modern Sweden. To avoid losing data we did not combine the catalogs into a single database, but structured the analysis on the notion of [supplementary datasets](#). Second, by using the metadata on publication places and publications we move the focus from comparing Sweden and Finland as units of analysis to discussing the cities in which books and other printed materials were produced before 1828 as hubs for intellectual exchange. We regard the places of publication as particular nodes that are related to each other asymmetrically. In doing this, we have only focused on towns that were in Sweden at the time, as the collections are the best available records for publishing in those towns. As the national bibliographies respectively include published documents by Swedish and Finnish nationals abroad, our focus on towns helps exclude this perspective on nationality and rather focuses on locations. Our material does not lend itself to investigating the diffusion of books and other printed documents among the cities, a topic that would be better analyzed through ownership catalogs (see The Henrik Database 2006; Montoya 2018; Burrows et al. 2018). Third, the extensive data-processing operations for these two catalogs are largely automated and thus scalable, potentially enabling us to expand our efforts in the future to include similar publication records in other parts of the world. Hence, the aim of the project is to contribute to broadening the debate on the transformation of public discourse and print cultures in Europe from the early modern period to the present.

A major source of potential bias in the analysis concerns the duplicate entries listed in both catalogs. With a duplicate entry, we mean the same item entered in both catalogs, not reprints for example. According to our analysis, the amount of duplication of all publications is less than two percent in the SNB and five percent in the FNB, respectively, but the number of duplicates varies considerably by decade.⁹ Integration and joint analysis of national catalogs will require standardization of the key terms and units across catalogs, and identification of duplicate entries and substantial biases and gaps that may affect comparisons. After the identification and removal of the duplicate entries we were left with in total 18,544 and

70,070 records in the FNB and the SNB, respectively, for the years 1640–1828.

The long-term developments in printing come across differently depending on whether the focus is on numbers of titles, pages published or words printed. Given that we do not currently have access to digital full texts with respect to these catalogs, throughout this article we provide figures according to paper consumption rather than simple amounts of titles or page numbers, which constitutes a more informative starting point for the comparison of different documents. However, other metrics are more relevant in some of the analyses. Paper consumption was estimated as a product of document width and height, and page count, converted into the equivalent number of full sheets to allow comparison across documents of different formats. Missing page-count information was estimated and augmented for 21.7 percent of the documents, based on averages calculated from the documents for which the page-count information was readily available in the original data. Separate estimates were obtained for single- and multi-volume documents, and for different document formats.¹⁰ The overall information on print-run size is naturally sporadic, but we do know that although the sizes varied somewhat during the hand-press era (up to the 1830s), in general they remained between 750 and 1,250 copies (a maximum of 2,000) all over Europe particularly for books (Weedon 2003, 5–30; Raymond 2004, 90). Thus, for practical reasons we used an average print-run of 1,000 copies for all documents covered in this analysis. Richard Sher, for example, has shown that this “London average” (advocated most importantly by Gaskell 1972) still holds generally with respect to Scottish Enlightenment books that were published towards the end of eighteenth-century and in which case there was a rather mature market for books. Sher points that for example William Robertson’s historical works had a print run higher than 2,000 for their first editions, yet the average print run for the publishers of the Scottish Enlightenment pushes towards 1,000 copies (Sher 2007, 86–87). Similarly, a study on Württemberg in the late eighteenth-century deploy a maximum 2,500 print run for printed documents, assuming that the actual print run was lower (Wittmann 1999, 289). This means that our analyses provide a view of proportions in the production of books, although we have to be careful to make too far-fetching claims due to the lack of data regarding print-runs. It is clear that there were exceptions to this average size of the print run in cases that the demand for a particular

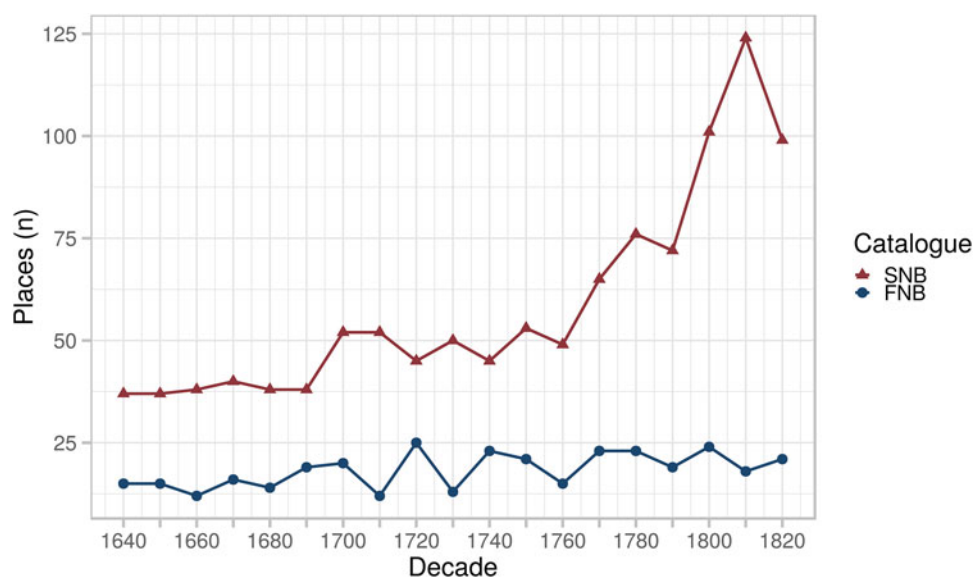


Figure 1. The number of publication locations in the SNB and the FNB per decade in the period 1640–1820.

publication was considerably higher. Such exceptions were for example certain governmental documents. With respect to Sweden, Anna-Maria Rimm has been able to show that print-runs for law texts (*förordningar* in Swedish) were much higher towards the later eighteenth-century in Sweden. At the beginning of the century they were around 1,000 copies, but from 1728 onwards they grew to approximately 5,000 copies. The information about print-runs of law texts is scarce, but Rimm (2005a, 2005b, 2007) argues convincingly that they stayed on the same level for the remainder of the eighteenth-century. Still, it needs to be pointed out that printed laws form a very small portion of the totality of books published in Sweden during the eighteenth-century and the higher print-runs in them are not crucial when assessing general trends in paper consumption. This is also a case in point about a publication type that is exceptional and where the distribution channel is established and the higher print-run size makes sense. Concurrently, we use the “London average” for early modern European printing in general, but at the same time, if more refined data on print-runs emerges later, it can be incorporated into our analysis workflow.

Moreover, the available datasets do not cover the complete publishing record of the early modern era. However, integrated catalogs such as the SNB and the FNB represent the largest coverage of documents printed in their respective geographical areas. It should nonetheless be acknowledged that there are gaps in the material due to the fact that the catalogs were built up gradually at different stages, combining different cataloging practices, and this may affect the reliability of the analyses (see Horstbøll 1999, 45–49; Häkli, Laine,

Nyqvist 1996; Mattila 1999; Collijn 1927–1933). The National Library of Sweden reports that their digital catalog covers nearly 90 percent of the published materials included in their physical catalog. The most significant omissions concern early dissertations and publications related to learned societies.¹¹ The FNB is complete up to the year 1828, after which there are several omissions that make it less reliable in terms of assessing book production during the later nineteenth-century. Obviously, there is a certain amount of publications that were never included in the collections of these libraries (clandestine books form the most famous example). To ensure reliable results we generally limited our analyses to the period before 1828, and supplemented them on the local level with information from the University Libraries in Uppsala and Lund.¹² In most cases our analyses were straightforward, but as we will point out, some specific smaller samples are problematic due to particular flaws in the data.

We have taken extensive steps to ensure data quality. For example, we combined the automated data cleaning with manual verification of the final harmonized datasets. Although the data may still contain inaccuracies and gaps, our harmonized versions are the most accurate and complete version of the catalogs currently available, and the main trends in the publishing landscape should be robust against minor variations that may still result from further improvements in data quality.

The Expansion and Advancement of Book-Printing

There was an overall trend of expansion and advancement in publishing during the period under

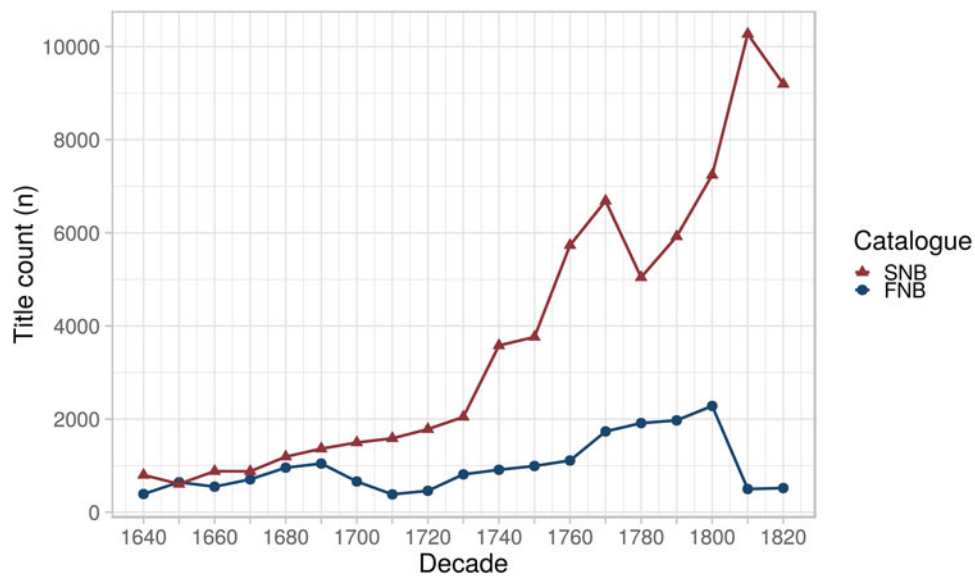


Figure 2. Titles in the SNB and the FNB per decade, 1640–1820.

investigation. This could be measured and tested in terms of the numbers of printing facilities, publishers and printed titles, as well as the shape and format of the books, their titles and appearance. The first printing houses in the Swedish realm were established in the late fifteenth-century, but the amount of printed material produced remained at a modest level (Collijn 1927–1933; Klemming and Nordin 1983). This early material is well charted, but for the purposes of statistical analysis we begin with the seventeenth-century surge of Swedish power and the consequent expansion of book-printing and intellectual life. The Swedish Crown created strong hubs of knowledge production and book-printing by establishing new universities in Tartu (Dorpat in Swedish) in 1632, Turku (Åbo in Swedish) in 1640, and Lund in 1666. The founding of these universities was directly linked to the need to consolidate the empire (especially in the case of Turku) and to integrate newly acquired areas into the Swedish realm (especially Lund and Tartu) (Klinge et al. 1987, 39–65). At the same time printing facilities became more widespread. Sweden hosted only one facility, the Royal Printing House, at the end of the sixteenth-century, but by around 1650 there were already nine active printing houses in the whole realm (excluding the Baltic and German provinces). A total of fourteen printing houses had been established by the mid-1600s, but many of them were short-lived. They all relied on commissions from the Crown, the universities or the Church, but from the very beginning they also produced and sold privately commissioned printed materials. (Ridderstad 1997, 345–349; see also Rimm 2005a, 2005b, 2007.)

Although Turku and Lund were already prominent through their bishoprics, the new universities strengthened their position and these cities continued to be among the major sites for publishing throughout the period studied in this article, together with the political center, Stockholm, and the old university city of Uppsala. This was not the case for Tartu, which ceased to be Swedish in 1721, and is also reflected in the catalogs under study.

Although Stockholm and the university towns dominated the field, the gradual expansion of publishing also happened through a geographical spread to new areas. It is not surprising that this diversification is most visible in the catalog of the National Library of Sweden, with 125 publication places in the 1810s, whereas publishing in the Finnish parts of the realm was concentrated in less than twenty-five towns during the period studied in this article (Figure 1).

Books and other printed documents certainly did not remain in the places in which they were printed, and learned persons naturally had access to them before the 1640s. Nevertheless, it is evident from the library catalogs that the mid-seventeenth-century was clearly a turning point in Sweden's book culture. Books were printed in the university cities, and groups of people who contributed to the book industry – from authors and printers to readers – emerged locally. Unsurprisingly, book production showed a growing trend from this period onwards (Figure 2).

There are 115 and 93 titles, respectively, in the catalogs of the National Library of Sweden and the National Library of Finland printed in the year 1650. The corresponding numbers for the year 1800 are 845 and 236. The cumulative growth of titles illustrates

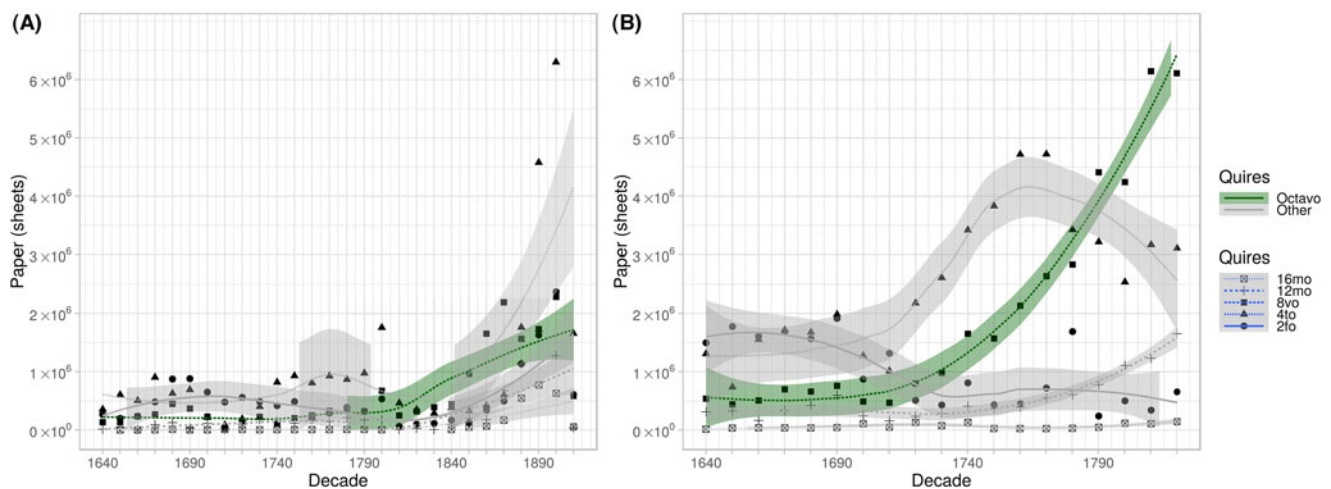


Figure 3. Paper consumption by book format in the FNB 1640–1911 (a) and the SNB 1640–1828 (b).

how the landscape of printed items changed over these 150 years. If one had access to all printed materials that are currently recorded in the catalogs, the number of titles in 1828 would be 625 times higher than in 1650 in the catalog of the National Library of Sweden, and 214 times higher in that of the National Library of Finland. The overall growth in book-printing is hardly a surprise, but the exact figures show the considerable difference in what it was like to be a person of learning at the end of the period of investigation as opposed to the early stages. The cumulative growth also indicates that book-printing in Turku, the most significant printing hub in the catalog of Finland's National Library, did not develop as rapidly at the end of the eighteenth and in the early nineteenth-century as it did in Stockholm, Uppsala and Lund. Furthermore, as the comparison reveals, the catalog of the National Library of Sweden does not include all the dissertations from the seventeenth-century: the actual level of printing in this period was higher than the catalog suggests, given that dissertations still constituted a large proportion of the publications of this period.

The period under investigation witnessed an overall transformation in public discourse. Observing this process exclusively from the perspective of book-printing shows only one aspect of print culture. For instance, newspapers and books assumed distinct features, especially during the eighteenth-century. Little by little, they were produced and read in different ways, and slowly became divorced from oral practices of public communication such as sermons and public speeches (see Skuncke 2003; Lundell 2002, 21–94, 273–283). The catalogs do not allow for systematic comparisons between newspapers and other types of publications mainly because the information about

newspapers is sporadic. However, the catalogs show that book-printing was to become more formalized during this period.

The growth in book production can be further related to changes in the reading culture over the given period. Changes in the numbers of pages published in different book formats are indicative of a decline in prominence of the larger and heavier folio and quarto format books that were read (often aloud) by a desk, as the (most often) smaller and handier, pocket-sized octavo format became most popular in the late 1700s (see Galbi 2011; Buringh and van Zanden 2009; for formats in general, see Gaskell 1972). This trend is particularly visible in the catalog of the National Library of Sweden. The trend is not as early or as noticeable in the FNB, which has a larger proportion of academic titles and reflects the more conservative traditions of the province (Figure 3).

A similar trend is also evident in the English Short-Title Catalogue (Lahti, Ilomäki, and Tolonen 2015), but further investigation is needed to show the extent to which the octavo book spread throughout Europe. It is indicative of a change in reading and publishing habits that coincided with the expansion of reading material, the rise of a literary culture, the further professionalization of publishing, the emergence of leisure reading, and the introduction of a market driven printing press (Forselles-Riska and Laine 2011). Rolf Engelsing has described a reading revolution at the end of the eighteenth-century by claiming a gradual shift from *intensive reading*, meaning the repetitive reading of a few central texts, to *extensive reading*, meaning an eagerness to read many different texts for the purpose of individual learning and enjoyment (Engelsing 1970; Engelsing 1974; Wittmann 1999). While the gradual change in book formats cannot be

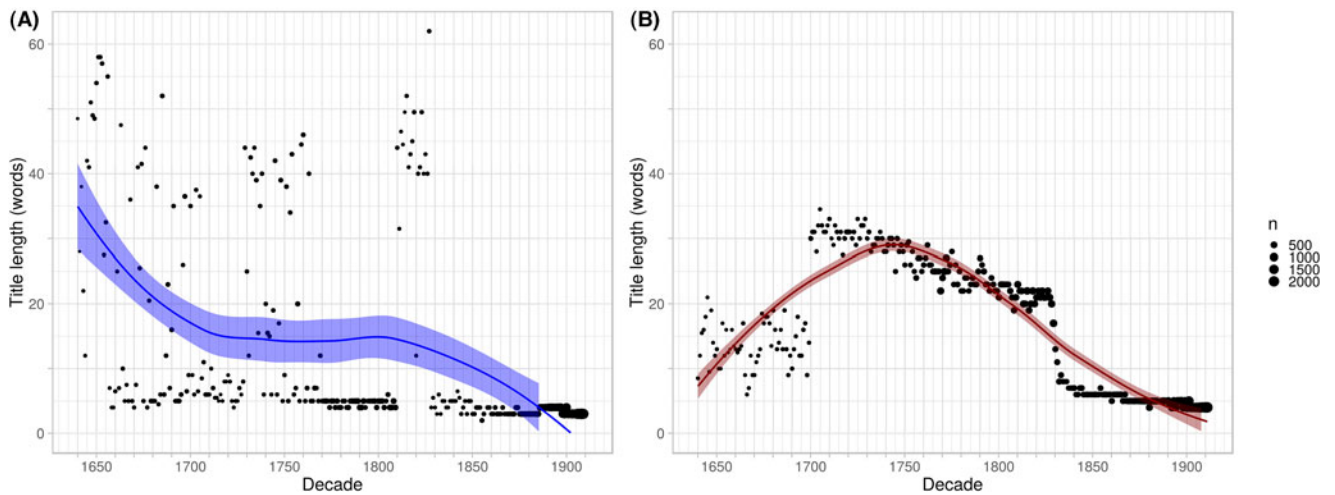


Figure 4. Average word count in titles per year in the FNB (a) and the SNB (b), 1640–1900.

seen as directly corresponding to all the shifts in reading and institutions of reading (such as societies, libraries or changes in book markets), the rise of the smaller octavo format does support the idea books being more often read in solitude and distributed in an easier way. Still, Engelsing's coupling of the French revolution and the reading revolution seems a stretch from the point of view of formats, as the change in formats was more gradual and the developments formats did not only relate to particular genres like novels or politics as emphasized by Engelsing.

The octavo books included more or less the same genres as the larger volumes, but it seems that genres that particularly suited larger markets were increasingly in the octavo format. A sample from the freedom-to-print period (1766–74) shows its prominence in published histories, speeches, hymns and administrative records. The findings in general corroborate arguments made by Horstbøll (2009, 2010) about especially histories becoming an octavo-driven genre, but also indicate that this is not the whole story. It is clear that also printing of administrative records became prominent in the octavo format in this particular period. This seems to be a result of introduction of the principle of public access to documents (*offentlighetsprincipen*) in 1766, which made it possible to make money on printing and distributing official documents. Bo Bennich-Björkman (2003). The documents in themselves were key in spurring the intensive debate in this period and suggest that the smaller octavo format was seen as particularly apt for titles, regardless of genre, that needed quick distribution.

Another approach to analyzing the changes in how books were authored, marketed and read is to look at the overall change in their titles. In his well-known study, Franco Moretti analyzed the titles of 7,000

British novels written between 1740 and 1850 and noted how the average length of the titles clearly became shorter over time. He argues that the shift from long titles that describe the content of the novels in quite surprising detail to much shorter titles such as *Emma* and *The Smuggler* related to how books were marketed, reviewed and read. In an era in which public discourse included specific forums for reviewing books it did not make much sense to have long descriptive titles: a better strategy was to use shorter and more enigmatic titles to attract the attention of potential readers (Moretti 2013, 179–210.)

The present study analyses over 90,000 titles and is thus based on a considerably larger sample than the 7,000 novels studied by Moretti, although our analysis takes into consideration also other publications than books, such as pamphlets and governmental documents. The variety of genres included in the titles, ranging from academic dissertations to political pamphlets and further to novels and publications of the state administration, is also much larger. Nevertheless, both catalogs show a decreasing trend in the average title length after the early 1700s (Figure 4). To show this more clearly we included material up to the year 1900.¹³ As expected, the trend in the catalog of the National Library of Sweden was slightly steeper and begun earlier than in the FNB. Gradually the average title length of 25 to 35 words in the early 1700s decreased to 5 to 10 words in the late 1800s in the SNB. The trend in the FNB is more dispersed, but qualitatively similar between 1700 and 1900.

Both catalogs show higher annual averages for the early eighteenth-century than for the mid-seventeenth century. Moretti's study does not cover this period and cannot help to explain why this is the case. It seems that, although very short titles appear

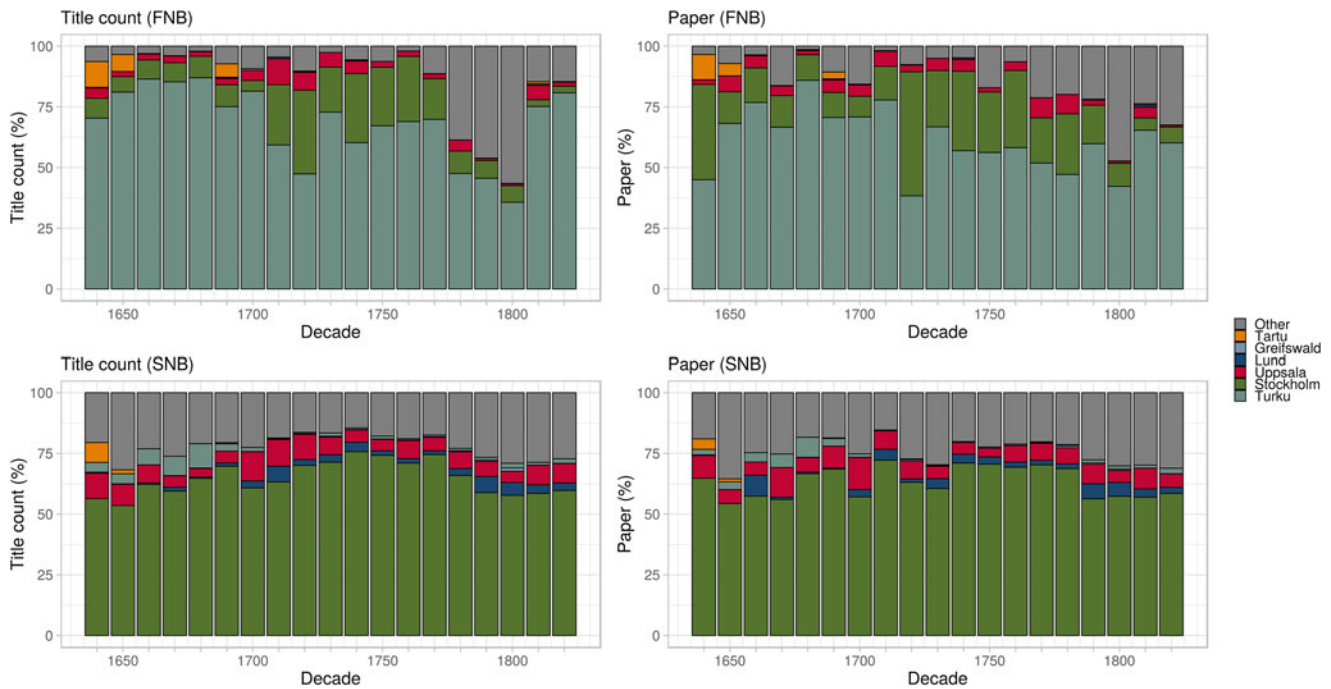


Figure 5. Annual relative book production in Swedish university towns as a percentage of all books in the FNB and SNB catalogs, 1640–1828.

throughout the period from 1640 to 1900 (e.g., the New Testament and the Catechism), there is wider dispersion in title length in the late-seventeenth and early eighteenth-century. The levels of dispersion are lower towards the turn of the nineteenth-century, and especially after 1850, by which time shorter titles had become the norm.¹⁴

One possible conjecture that the comparison between the two catalogs indicates is that the professionalization of print culture was not a universal trend that swept across Europe and the Swedish realm during the eighteenth-century, but was rather an uneven process. Our study reveals the need to look at differences between the places, languages and formats covered in the present work. To us it seems that the story of growth and advancement thus does not adequately describe the development of book production during the period under investigation.

Political Ruptures and Printing

The bird's-eye view emanating from the catalogs also shows how key events in political history of Sweden and Finland affected publishing activities. Although this is hardly surprising, zooming in on specific instances gives us a clearer picture of how this came about.

Wartime experiences naturally affected book-printing. Among the wars of the period that had the greatest regional effects on book production were the

Great Northern War with the occupation of Finland, the so-called Greater Wrath (Sw. *stora ofreden*, 1714–21), and again after the Russo–Swedish War in 1808–09 (as part of the Napoleonic Wars), occupation and the consequent formation of a Finnish Grand Duchy within the Russian Empire in 1809 (Gardberg 1948, 1957, 1–55). The occupation effectively killed local book production in Turku, as becomes clear when the extent of book-printing in Turku is compared to all the publications in the SNB and the FNB (Figure 5).

The effects of the occupations were primarily local. On the Finnish side, they were most visible in Turku, the local center of book production. The Academy was shut down during the Greater Wrath, and the library and printing facilities were moved to Stockholm (Gardberg 1957, 1–55). The so-called Lesser Wrath (Sw. *lilla ofreden*) from the autumn of 1742 until 1743, was less intense and did not seem to affect printing conditions as severely. The second half of the eighteenth-century saw a rise in book production, which corresponds well with assessments of the period from the 1770s to the 1790s as a time of economic and population growth (Eloranta et al. 2006), as well as of intensification in intellectual life (Manninen 2000; Klinge 2006, 74–140; Marjanen 2013). In that sense, the Napoleonic Wars affected Turku more than has perhaps been realized. In fact, the decline in intellectual life is often discussed in relation to the moving of the university to Helsinki

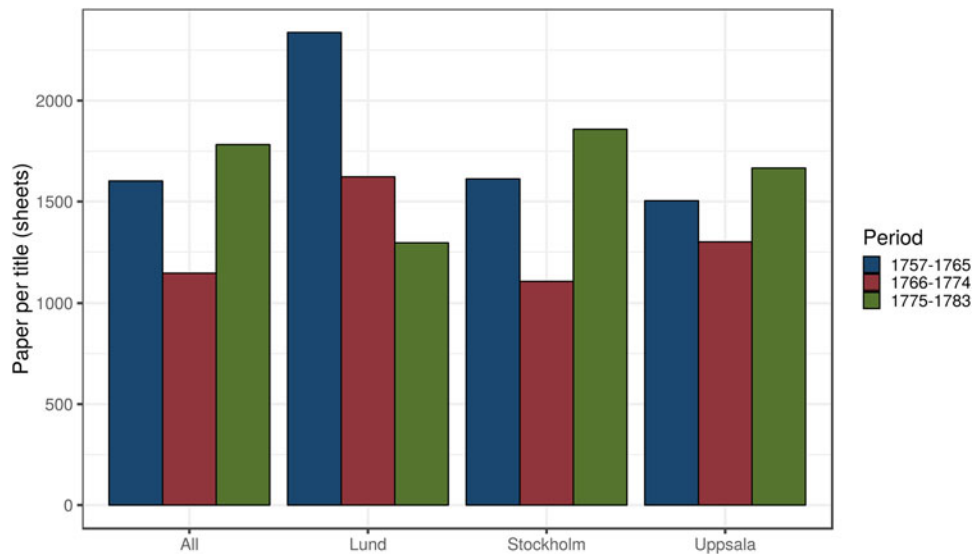


Figure 6. Average paper consumption per title in 1757–65, 1766–74, and 1775–83 in the whole SNB as well as separately in Stockholm, Uppsala, and Lund.

and the fire in Turku, but it had already started earlier. The fire and the loss of the university only prolonged the very slow recovery in Finland's biggest city. From a national point of view the recovery of book production happened (slowly) in Helsinki (Helsingfors in Swedish), and elsewhere where imperial reforms were implemented.

The catalog of the National Library of Sweden records a reduction in publications after Gustavus III's ascension to the throne in 1772 and the consequent restrictions introduced in printing laws passed in 1774. As was to be expected, the exceptional freedom-of-print period (1766–74) coincided with a peak in the title count. Earlier research has shown how this period was characterized by intensive pamphleteering, especially in the fields of politics and economy. A further source of growth was the intensive publication of administrative documents that were released for printing in compliance with the new law on public access (*offentlighetsprincipen*) (Heckscher 1949, 817; Magnusson 2001, 20–21; von Vegesack 1995, 16, 28, 39; see also Bennich-Björkman 2003). We can attest to any change in pamphleteering based on paper consumed in the documents, page counts and information about formats (and estimates of page sizes for each format) in the published documents. The average paper consumption per publication dropped during this period, and rose again when the printing was restricted again. Figure 6 compares the eight years during freedom-of-print (1766–74) to the eight years before (1757–65) and after (1775–83), implying that not only were there intensive political and economic debates during the freedom-of-print period, the new

laws also changed the way in which public debate was conducted.

There are some regional differences in this trend. Whereas average paper consumption per title decreased throughout Sweden based on the data in the SNB, the decrease was the steepest in the political center, Stockholm. It was less pronounced in the university cities of Uppsala and Lund, which suggests that pamphleteering was most prominent in relation to political debates at the Riksdag.

Although the freedom-of-print period was exceptional in terms of printing and political activity (Nordin 2003), it must be noted that parliamentary assemblies (in other words meetings of the Swedish Riksdag) clearly stimulated debate in print form. During the Age of Liberty, printing peaked in accordance with Riksdag assemblies, which usually lasted for several months but not generally for a full year. Although our data does not include the printing month, we can still state that Riksdag assemblies correlated with higher publication levels (Figure 7). This is visible in the case of particularly important or long meetings such as the assemblies of 1719 and 1720 that dealt with a new form of government and a new head of state, of 1740–41 and 1742–43 that dealt with the war against Russia, of 1751–52 during which Adolf Fredrik was crowned, of 1765–66 dealing with the new law on freedom of print, and of 1771–72 that ended with Gustavus III's revolution. However, the overall conclusion is that printing peaked locally in conjunction with Riksdag assemblies throughout the period.

The analysis also supports the established interpretation of the Age of Liberty as the age of Estate power.

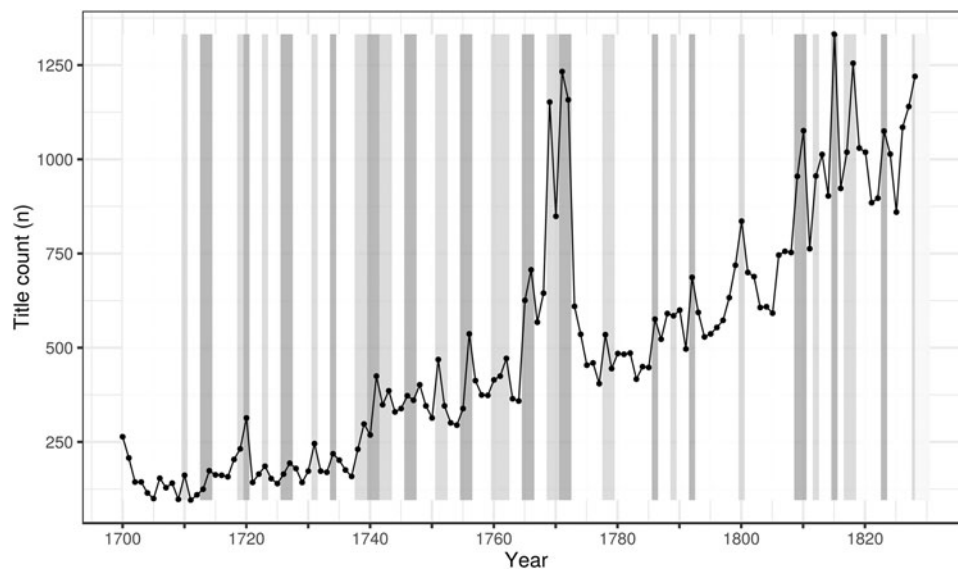


Figure 7. Annual title count and Riksdag assemblies according to the SNB throughout the long eighteenth-century.

It seems that the role of the Riksdag assemblies in provoking debate in print was stronger during this period than during the era of absolutism in the late seventeenth and early eighteenth centuries. Technological advances in printing, especially the use of steam and the rolling press, and further urbanization also played a part here, but regardless of the multiple reasons behind the growth of printed documents, it is evident that the slow transformation of public debate was underway, and that the Riksdag assemblies provided a certain rhythm in this respect. It also seems that this transformation had a long-standing effect. The correlation between Riksdag assemblies and peaks in publishing activities seemed to continue during the reign of Gustavus III (1771–92), Gustavus IV Adolph (1792–1809) and Charles XIII (1809–18). The development of parliamentary assembly as a site for public politics and the developing role of printed document as a means of affecting decision-making were apparently mutually dependent.

One could contrast the fluctuating relationship between parliamentary assemblies and public discourse with Habermas’s ideal type of bourgeois public sphere that distinguishes between the state and the market (Habermas 1989, 31–42). Habermas mainly used qualitative evidence to support his broad theory, but the detailed analysis of year-by-year publications and their correlation with Riksdag assemblies reported above (Figure 7) indicates that the space for independent bourgeois debate varied a lot during the course of the long eighteenth-century. It rather seems that the assemblies created a rhythm for potential reform and possible openings for expanded public

discourse. In this sense, the Riksdag of 1765–66 was exceptional (Nygren 2016).

Cities as Intellectual Hubs

The library catalogs used in this study were planned as national catalogs and produced by national institutions – also for pragmatic reasons. What emerges though is a national gaze that does not always provide a complete picture of the overall reading habits, book ownership or book production of people of the past. For instance, the FNB catalog provides rather accurate data on books printed in Turku before 1828, but the book culture in that city was in fact quite different from what this data implies as has been shown in studies on book ownership (see The Henrik Database 2006; Ahokas 2011). In modern terms, it was much more transnational than the nationally delineated catalog can grasp. Although this study does not rely on databases of book ownership, nor does it focus on the circulation of ideas through books, the places of publication clearly reveal that book production in Sweden and Finland was deeply uneven: some cities provided a flourishing milieu for publishing, whereas others did not.

We argue that an appreciation of the dynamics between the major publishing cities in the Swedish realm (Stockholm, Uppsala, Turku and Lund) is a crucial step towards understanding intellectual life and book publishing in this period. These cities published 74 percent of the volumes printed before 1828, but figuratively speaking it is important to understand that they were also in competition with each other.

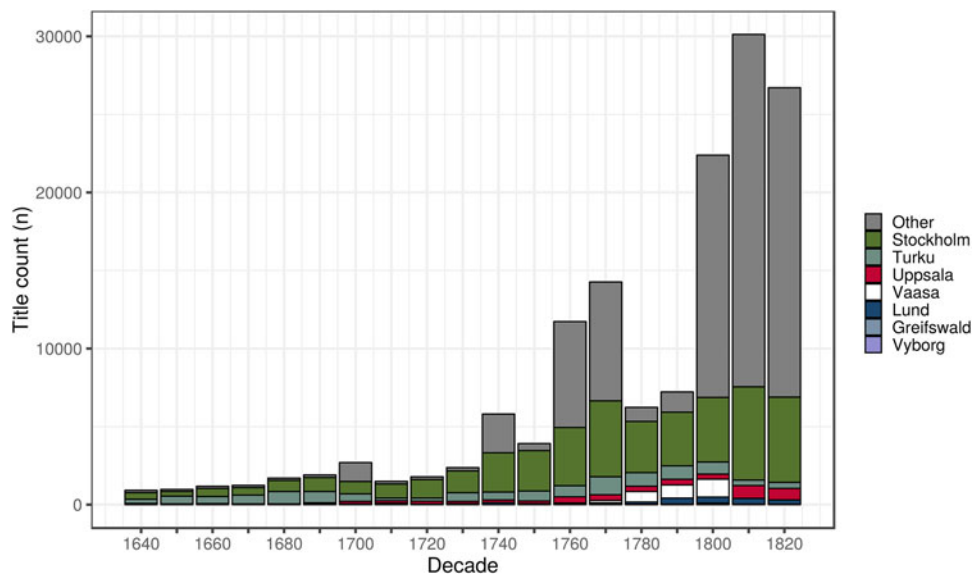


Figure 8. The number of titles in the SNB for cities in present-day Sweden and the FNB for present-day Finland (and Vyborg).

Intellectual life in one city emulated models from the other cities, and attempts to do new things with books were spurred on by these comparative practices. It was important to have your own local machinery for the production of books and other printed documents.

Overall, the period from 1640 to the early nineteenth-century was one in which Stockholm produced more and more printed documents compared to the other big cities in the Swedish realm. The growth was evident not only in titles published, but also related to the printing industry at large (including publishers, printing and distribution). It is impossible to know based on this material, especially bearing in mind uncertainties in the publisher data in the SNB, whether a higher number of publishers and printers led to specialization and competition that increased publication volume, or whether it was the growth of the city that created the demand for more publications and thus also affected the degree of specialization among publishers and printers. Still, it is remarkable that the trend in publishing went against the demographic trend. The other big cities of Uppsala, Lund, Turku and Gothenburg, for example, gained on Stockholm in terms of population growth during the eighteenth-century. From the perspective of historical demographics, this is indicative of the decentralization that occurred in the eighteenth-century (Lilja 1994). It seems that, in publishing, it was a question of centralization (Figure 8).

Often publishers from Stockholm branched out to other cities. In times when publishing was in decline, like in the 1780s and 1790s, publishing withdrew from

smaller towns and stuck to the better infrastructure and more established market in Stockholm.

Stockholm's growing population, the increasing number of publishers and the rising volume of published titles are related, but the reasons for the slower growth in the other upcoming cities are harder to pinpoint. Publishing activity in cities such as Uppsala, Lund and Turku was strongly connected with the universities, and other institutions that could have produced a more diverse book culture had not yet been established. Although Stockholm lacked a university, it hosted the Academy of Sciences (founded in 1734), the Patriotic Society (founded in 1766), a significant number of civic associations (especially in the second half of the eighteenth-century), most functions relating to the Crown, most Riksdag assemblies in the eighteenth-century, the Svea Court of Appeal (*Svea hovrätt*), the Supreme Court of Sweden (founded in 1789) and the Royal Dramatic Theatre (founded in 1788). The city was also influential in international commerce and diplomacy, thus creating an ecosystem of organizations that produced printed material or created debate, all of which facilitated a print culture. It was not necessary for a city to host a university to have a thriving book-printing business.

A flourishing organizational set-up seemed to be reflected in a more diverse book culture, as became evident when we looked at the outliers in terms of publishing. The city of Vaasa (Vasa in Swedish), for instance, gained an Appellate Court in 1775 as a result of the reforms and regional politics of Gustavus III (the Court's activities commenced in 1776) (Tandefelt 2008), but the town itself did not host enough other organizations to foster a rich book culture. Vaasa was

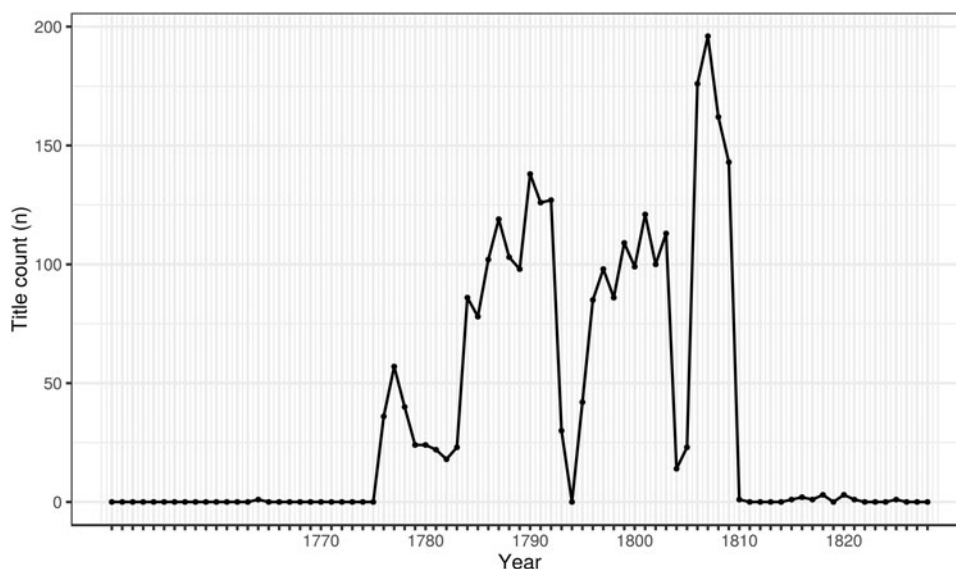


Figure 9. Publications in Vaasa mentioned in the FNB, 1760–1828.

among the cities with highest counts of printed documents during the period after the establishment of the court, but this is almost exclusively traceable to the court and other types of publications were unusual. In effect, book-printing in Vaasa started when the Appellate Court was set up, and came to an end in 1809 with the cession of Finland to Russia and the consequent stagnation of the Court. Print production was only slowly revitalized after the reorganization of the Court in the late 1810s (Figure 9).

A similar case is Linköping, which hosted a bishop's seat and thus had reason to print locally relevant material for most of the period analyzed here. A steady stream of print material emanated from Linköping during the whole period, but topic wise most of the titles seem to relate directly to the cathedral parish. The publications became more diverse towards the end of the eighteenth-century, specifically with an increase in economic literature. Local printing was still apparently dominated by the cathedral parish and the only printing house in the town. This did not mean that the Linköping publishers only focused on local affairs, or that all the books read in Linköping were printed locally. Ostrobothnian civil servant Johan David Cneiff, for instance, had his *Tanckar, huru en tilbörliq landt-hushållning skyndsammast synes kunna uphjelpas i Österbottn* published in Linköping in 1757, with the clear intention of reaching an audience in the political center and on the other side of the Baltic Sea. Linköping, like Vaasa, was a town in which no elaborate ecosystem of printing and producing books emerged in the period before 1828.

During the early modern period the publisher and the printer were naturally not necessarily the same

person. In some cases, it can be difficult to use the division between publishers and printers. At times the owners of printing houses or privileges were also publishers. Printing facilities were also sometimes used by other publishers. Nevertheless, it seems that the towns outside of Stockholm were dependent on their individual publishers and/or printing houses. For example, there was very little overlap or competition between publishers in Turku. The city had only two printing houses, one associated with the Academy of Turku and the Royal Printing House associated with Bishop Gezelius and the printer H. C. Merckell. Both of them and the different privileges for printing dissertations, religious books and literature in Finnish were firmly anchored in the Academy's domain (Gardberg 1957). Of the different publishers who used the two printing houses only a few were active simultaneously. Given the tight control over printing privileges, new publishers rather tended to take over when an old one moved away, died or ceased trading for some other reason. Whether the heavily regulated market for books could have supported more publishers was not really tested during the period, but the general opinion seemed to be that it could not (Figure 10).

The differences among the institutions that facilitated publishing in Swedish towns warrants closer examination. When we studied Stockholm, Gothenburg (Göteborg in Swedish), Turku, Uppsala, Lund and Linköping separately we soon found that gaps in the data made it difficult to obtain entirely reliable results. We could not carry out a meaningful comparison of titles from Turku, Uppsala and Lund given the omission of some dissertations in the catalog of the National Library of Sweden. The catalog of the

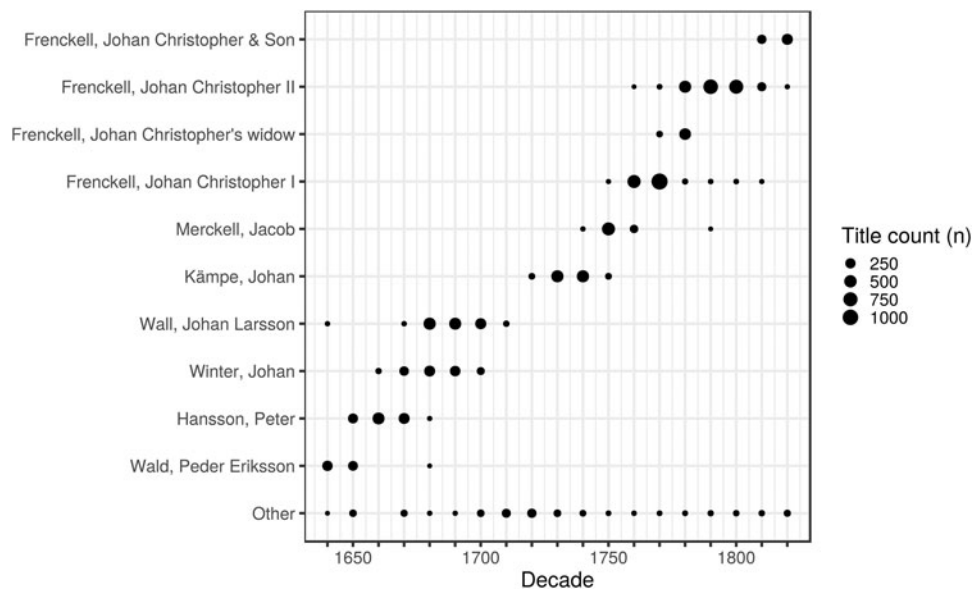


Figure 10. Individual publishers in Turku, according to the FNB.

National Library of Finland, in contrast, rigorously included dissertations, making the differences in the data evident. This skew was further highlighted when we compared the demographic figures on the towns from this period (Figures 11 and 12).¹⁵

The big picture is clear, however. Printing remained a predominantly academic endeavor, which is how the smaller university towns of Uppsala, Lund and Turku managed to produce rather large amounts of printed material with respect to their population sizes. The second largest city, Gothenburg, had a much more commercial focus and did not host many organizations that facilitated or engaged in local publication.

The material published in Stockholm stands out in almost every aspect. The city hosted far more printing houses, fostered a more rapid debating culture and encouraged greater variety in the subject matter that was addressed in the books published there. Books published in Stockholm were obviously not intended only for the local market, and were dispersed throughout the Swedish realm. In terms of modern reading habits, Stockholm again paved the way, which brings us back to the above-mentioned tests on the breakthrough of the octavo format in book publishing and the shortening of the average length of book titles: Stockholm clearly preceded the other towns (Figures 13 and 14).

Stockholm also differed in terms of the diversity of languages used in the printed material, thus showcasing an earlier process of vernacularization in publishing. Not surprisingly, the university towns produced a lot more in Latin and were linguistically more diverse in terms of publications. That the shift in the

linguistic landscape took place at different speeds in different towns may have influenced debating cultures on a structural level. Early nineteenth-century Uppsala is often portrayed as a conservative voice against the liberal and more modern Stockholm (Edgren 2005). Hence, the process of vernacularization, the breakthrough of the octavo format and shorter book titles may not only have been symptomatic of the evolving debating culture, it may also have caused it.

The question of linguistic diversity also allows for reconsideration of the differences between Sweden and Finland after the disintegration of the Swedish Empire in 1809. When Finland suddenly became a Grand Duchy of the Russian Empire it carried on a long Swedish tradition, but the vernacularization that was so evident in the case of Stockholm had not progressed as far in Turku. Rather, the published material in Turku was linguistically very diverse, which prepared the ground for further vernacularization in the new Grand Duchy in both Swedish and Finnish. It also indicates that the Finnish part of the Swedish realm had a multilingual print culture from the beginning (Figure 15).

Interestingly, there seems to have been a peak of Swedish vernacularization in Turku in the 1770s. Late eighteenth-century is of course the period that is commonly characterized as one of utility (Niemi 1998). It is sometimes claimed that this stress on utility was more prominent in Turku than in all the other Swedish university cities (Lindberg 1993). A closer look at the publications in different languages shows not only that Swedish-language publications appeared more often in the 1770s, but also that the variety of

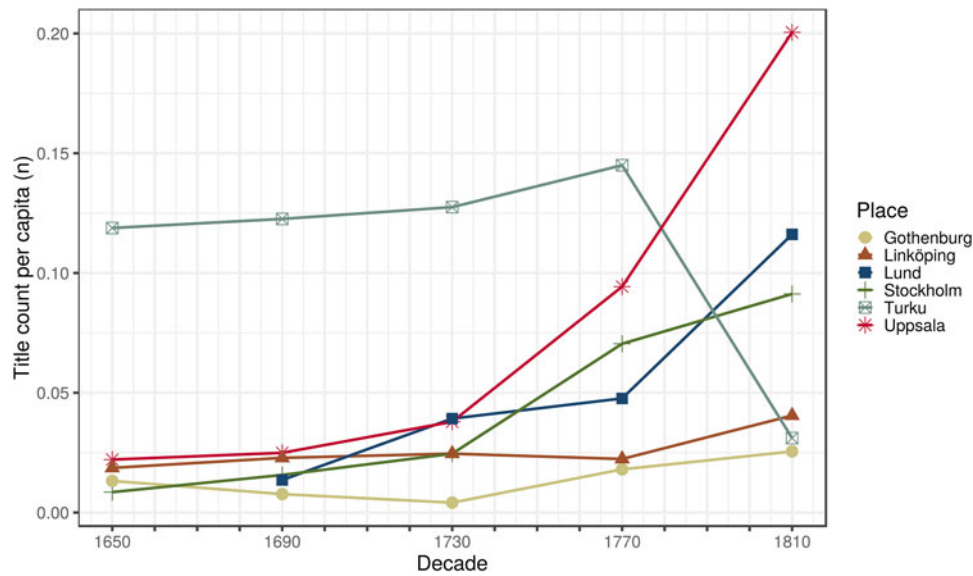


Figure 11. Title count per capita in Stockholm, Turku, Gothenburg, Uppsala, Lund, and Linköping 1640–1810 according to the SNB (with information on Turku from the FNB); there are fewer publications from Uppsala and Lund than anticipated due to gaps in the original data.

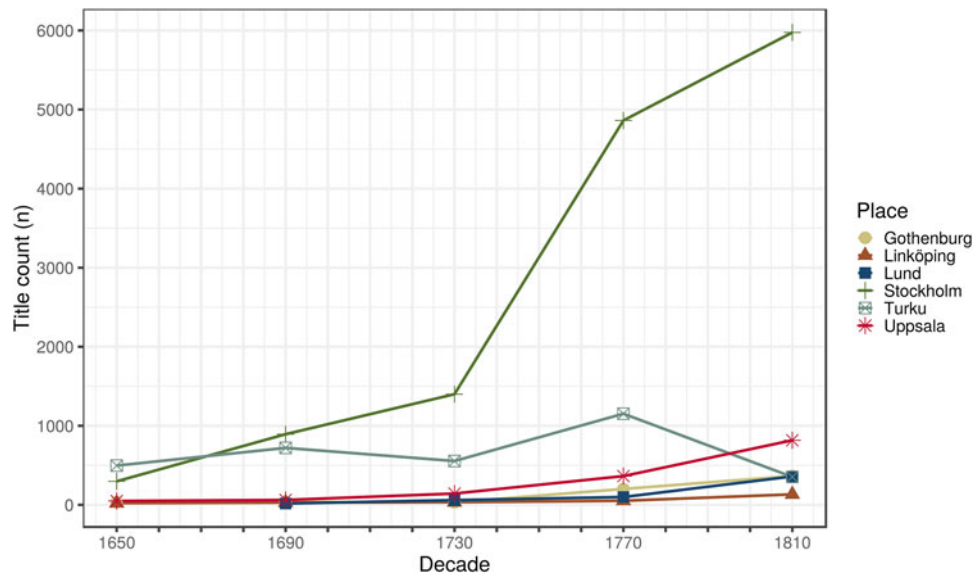


Figure 12. Absolute title count in Stockholm, Turku, Gothenburg, Uppsala, Lund, and Linköping 1640–1810 according to the SNB (with information on Turku from the FNB); there are fewer publications from Uppsala and Lund than anticipated due to gaps in the original data.

topics they dealt with nearly doubled in number. This was partly because more and more dissertations were being published in Swedish and had more of an economic focus, but it was also connected to the increase in publications that were not directly related to the Academy. These were years of burgeoning diversification and growth in Turku, which was familiar from Stockholm, but then capped by the occupation and consequent imperial reorganization in 1808–09.

Given that the catalog of the National Library of Finland is complete for the eighteenth-century, it

lends itself to more detailed analysis than both catalogs in combination. In the catalog of the National Library of Finland the information about dissertations published in Turku comes from Jorma Vallinkoski's (1962) classic study. Thus, in the case of dissertations in Turku, we have a much more reliable set of cataloged topical terms (keywords) than what is usually the case in integrated catalogs as cataloging principles have varied greatly during the long stretch of time of their compilation. We cannot assume representativity for the whole of Sweden when using cataloged topical

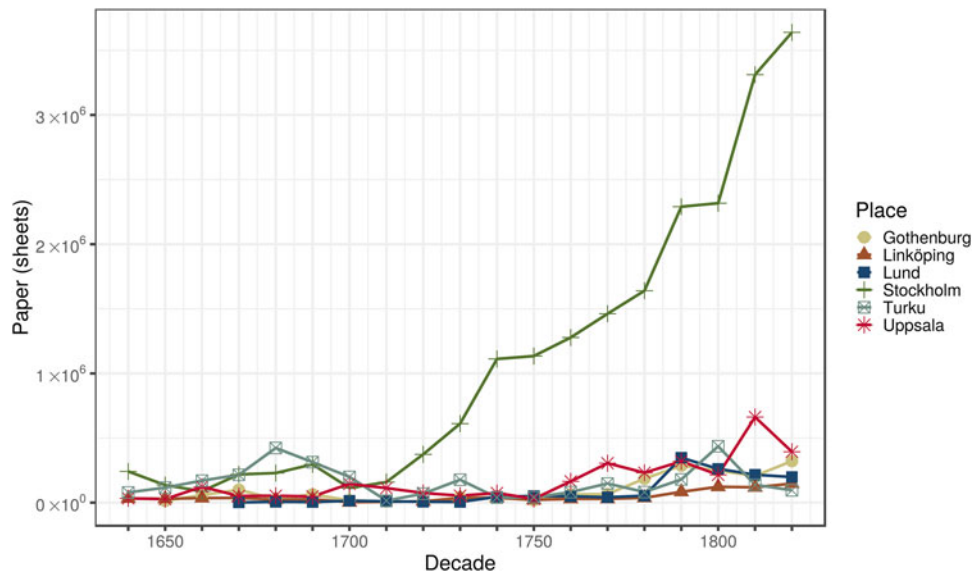


Figure 13. Paper consumption in octavo format in Stockholm and other towns in the SNB.

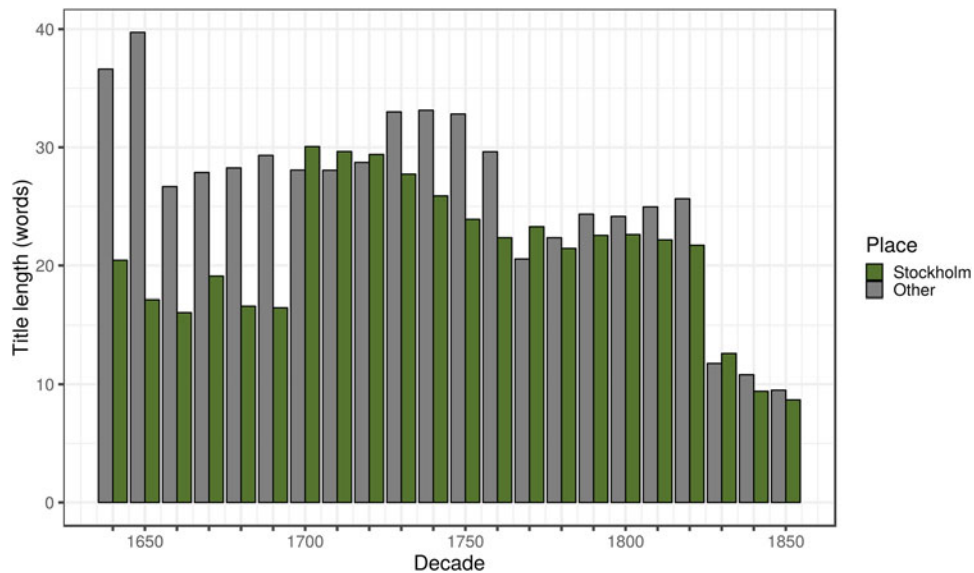


Figure 14. Average title length in words in Stockholm and other towns according to the SNB, 1640–1850.

terms, but there are indications of some trends that were present in Turku and that are relevant to the whole period. Language-specific analyses show how different genres were used in different languages. This is particularly clear in devotional literature and temporary sermons – two genres that were hugely popular and are easily isolated by topical terms (keywords) in the catalog of the National Library of Finland.¹⁶ In this case it shows how the burgeoning Finnish literature in the eighteenth-century was particularly strong on devotional matters. Religion was a primary concern among those trying to reach people who would not read Swedish, or other languages for that matter.

The temporary sermons, although religious, had a much more pronounced function in public life, however, and thus had a different linguistic profile. Previous work by Laine (1997), generally notes the language of the publications, but does not remark on this shift in eighteenth-century devotional literature (Figures 16–18).

Conclusions

Library catalogs are usually regarded as the outcome of a long bibliographic endeavor rather than as a source of quantifiable information that can be used to

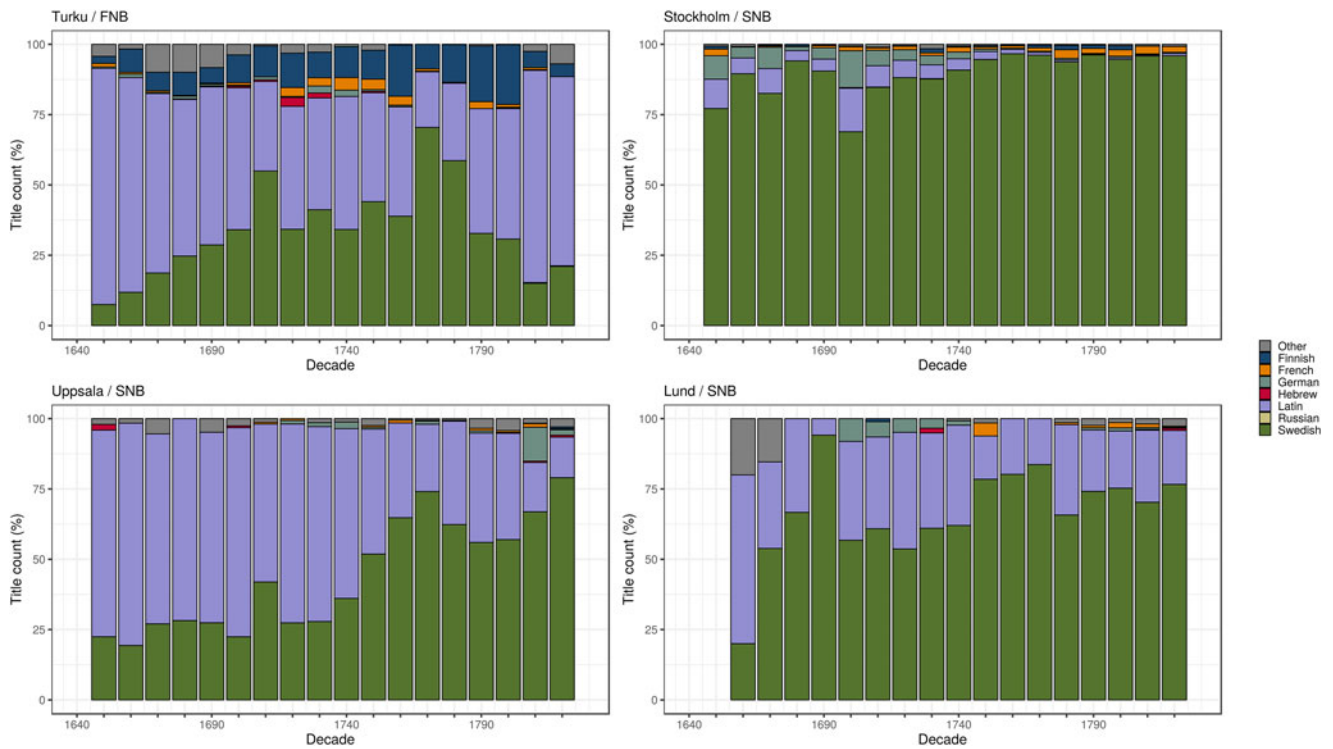


Figure 15. The most frequently used languages in Stockholm, Uppsala, Lund, and Turku according to the SNB and the FNB.

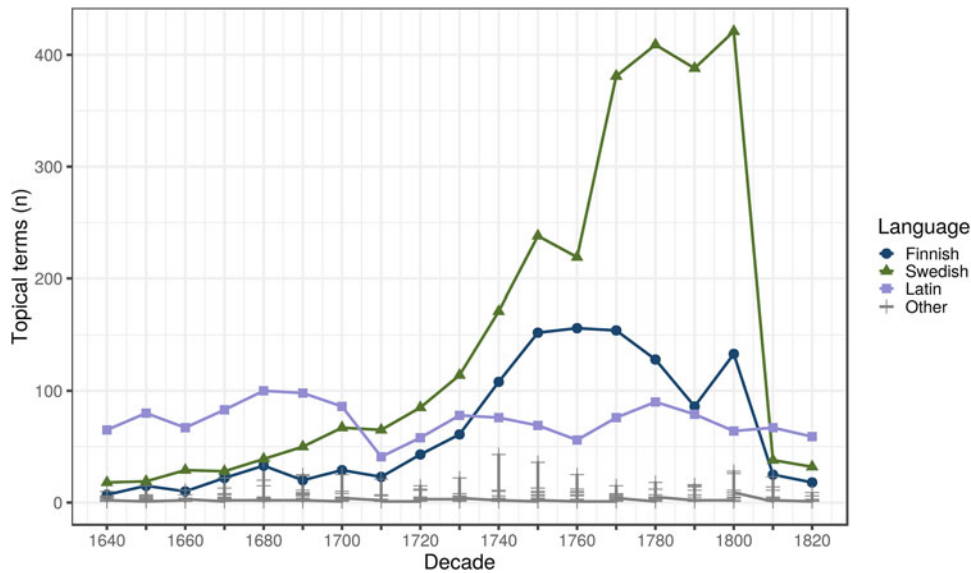


Figure 16. Topic richness in the FNB according to the language of publication.¹⁷

analyze the development of public discourse and knowledge production. This study relies on the tradition of analytical bibliography in its statistical contribution to the research on print and book culture in Sweden and Finland. The results confirm known trends about the cumulative growth of book production during the eighteenth-century, and show how uneven these trends were. For instance, the growth in book production (measured by titles, publishers, or paper consumption) was rather strong in Stockholm,

whereas in Turku it was severely hampered by occupations during the long eighteenth-century. Only in the second half of the eighteenth-century a period of rising print production could be discerned in the second city of the Swedish realm.

The main publishing towns were in competition with each other on many levels. They were hubs for knowledge production, with different profiles. Stockholm offered the most diverse milieu of print culture, whereas printing in the university cities of

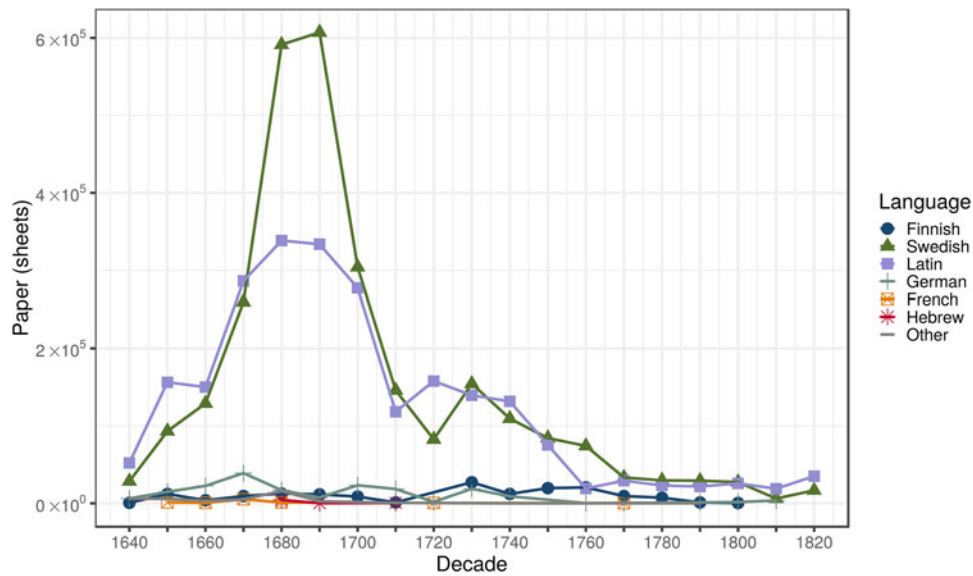


Figure 17. The languages of temporary sermons according to the FNB.

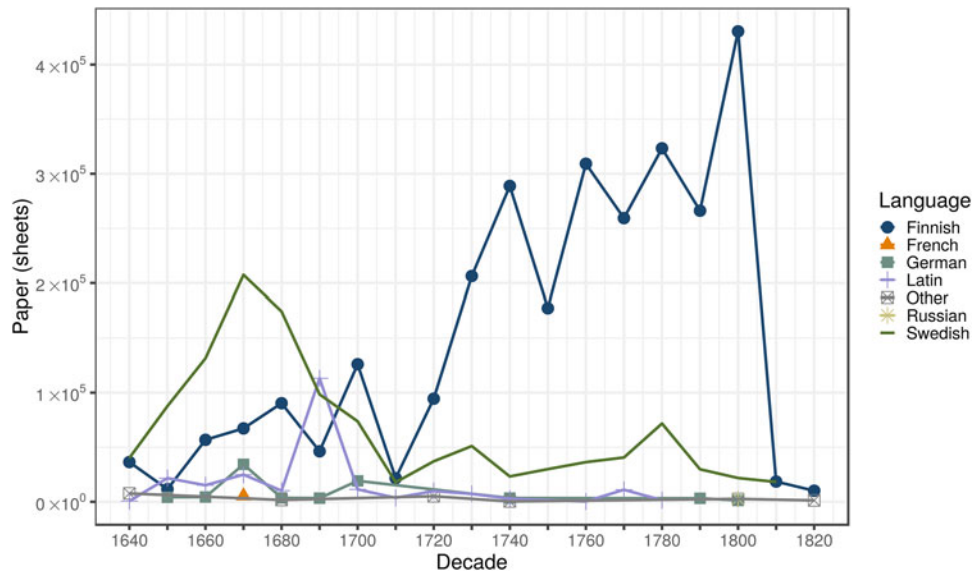


Figure 18. The languages of devotional literature according to the FNB.

Uppsala, Lund and Turku was dominated by academic material. Turku stood for much of the Finnish-language material printed in Sweden, which also made local authors more prone to emphasize utility in their academic publications than was the case in Lund and Uppsala.

Given that printing was highly regulated at the time, it is difficult to say anything conclusive about the printing ecosystem in the towns. The increase in publishers and printing houses correlated with the numbers of printed titles, but only Stockholm developed a more dispersed system of printing during the period under study. Stockholm was also where the turn towards the octavo format in book production first emerged in Sweden. The rise of this format

correlates with the broadening of book-printing: both relatively new genres from histories to pamphlets and official documents (especially in 1766–74) were most likely to be published in the octavo format.

Our analysis of individual towns was somewhat hampered by small gaps in the library catalog data. Although the catalogs of the National Library of Sweden and the National Library of Finland are the most comprehensive available for this type of quantitative study, detailed analysis on the level of towns and combining several information fields, such as language, book format and keywords, cannot give conclusive results and the results should be further verified based on other information sources. In this case, prior knowledge of the gaps in the material

allowed us to avoid erroneous analysis (as shown in Figures 11 and 12). Developing the possibility to integrate catalogs in a reliable and unbiased manner from several national as well as university libraries would be warranted so that gaps could be covered. This would require further identification of duplicates in the material, given that the merging of catalogs inevitably also entails the risk of introducing new biases into the data. Our work offers various solutions to key problems in this field and highlights the remaining challenges, thus paving the way for large-scale integration and analysis of bibliographic data resources. Ultimately, the analysis of the Swedish and Finnish library catalogs should contribute to European, and even global, analyses of the materiality of books and other printed documents, publication practices and patterns of printing that go far beyond the national gaze inherent in national bibliographies.

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