First named author:

Simon Burrows
C.G. 28, Kingswood Campus,
University of Western Sydney,
Locked Bag 1797,
Penrith, NSW 2751,
Australia
Tel. +61.412.507.223
Fax: n/a
e-mail: s.burrows@uws.edu.au

Other authors and email contacts:

Dr Jason Ensor
Digital Humanities Research Group, Western Sydney University
j.ensor@westernsydney.edu.au

Dr Per Henningsgaard
English Department, Portland State University
phenni2@pdx.edu)

Dr Vincent Hiribarren
History Department, Kings College London
vincent.hiribarren@kcl.ac.uk

MAPPING PRINT, CONNECTING CULTURES

Simon Burrows, Jason Ensor, Per Henningsgaard, and Vincent Hiribarren

Abstract

This article discusses the potential of "historical bibliometric" methodologies for understanding past cultures and offers a vision for how historical bibliometric research might be conducted on a comparative and global scale. Drawing on conceptual work being undertaken at the University of Western Sydney in order to further develop and extend the widely-respected 'French Book Trade in Enlightenment Europe' database project, it explores how historians might proceed to correlate, map and analyse multiple spatially referenced datasets pertaining to the creation, publication, dissemination, ownership, consumption, reception, policing and geographic setting of texts. While the authors recognize the many dangers and limitations inherent in reducing the cultural history of text to a set of statistical data, they observe that historians frequently use the production and circulation of texts as a useful proxy for understanding the circulation of ideas. Hence historical bibliometrics can provide measurable indicators of cultural resonance. The challenge, then, is to meaningfully integrate algorithmic abstractions with qualitative-based humanities research. This paper and the suite of projects it discusses seek to provide a way forward.

Keywords: Historical bibliometrics; book history; print culture; cultural history; digital humanities; Historical GIS; FBTEE project; enlightenment

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This paper discusses the potential of "historical bibliometric" methodologies for understanding past cultures and offers a vision for how historical bibliometric research might be conducted on a comparative and global scale using digital humanities approaches. In the process, we map work already being carried out at the University of Western Sydney and discuss how we might proceed to correlate, map and analyse multiple spatially referenced datasets pertaining to the creation, publication, dissemination, ownership, consumption, reception, policing and geographic setting of texts.

Historical bibliometrics is the "bibliometric study of periodicals and books published in the framework of time and space".[1] It involves the "quantitative analysis of publications for the purpose of ascertaining specific kinds of [cultural] phenomena" and thus lends itself to computational methods of analysis in order to better understand knowledge production and diffusion.[2] Hence historical bibliometrics joins the "quantitative aspects and models of science communication", including the "storage, dissemination, and retrieval of scientific information",[3] to mediate between forms of close reading and distant reading, and provide a historical account which balances the nuances of qualitative inquiry with the assumed neutrality of quantitative procedures.

Much, perhaps most, research in the humanities attempts to measure and ascribe "influence" to texts and the ideas and discourses they contain. Traditionally, this research has been qualitative and has analysed the content and internal characteristics of text, including its semantic, symbolic and literary qualities. But humanities scholars in general and book historians in particular have

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[1]   Jean-Pierre V.M. Herubel, "Historical Bibliometrics: Its Purpose and Significance to the History of Disciplines", *Libraries & Culture* 34 no. 4 (1999), 380-88 at p. 382. See also E.W. Hulme, *Statistical Bibliography in Relation to the Growth of Modern Civilisation: Two Lectures Delivered in the University of Cambridge in May 1922* (London, Grafton: 1922).

[2]   Herubel, 380.

[3]   W. Glänzel and U. Schoepflin, "Little scientometrics, big scientometrics", Scientometrics, 30 nos 2-3 (1994), 382.

also habitually asked epistemological and ontological questions about the dissemination, ownership, consumption and reception of text in order to gauge the gravity of key discourses and to reconstruct the contours of heritage and culture in diverse societies. In this way the production and circulation of text has become a useful proxy for understanding the circulation of ideas. Indeed, book historians have kept alive the "cliometric" methods championed by the pioneers of the "new economic history" in the 1960s and early 1970s but subsequently eclipsed and marginalized in mainstream historical and literary syllabi by the rise of cultural history. We would argue therefore that digital humanities, whose lineage might be traced back in part to historical bibliometrics, has been driven by the interdisciplinary framework of "book history", whose mixed-methodologies have historically used statistical or quantitative cliometric methods to illuminate and interrogate more qualitative sources on the creation, dissemination, reception and transformative impact of printed materials.[4]

Many innovative and significant digital humanities projects map the production of text over time and space, often incorporating Geographic Information System (GIS) techniques to capture, interpret and visualize spatial data. These include the "Atlas of Early Printing", the "Atlas of the Rhode Island Book Trade", the "Mapping Colonial Americas Publishing", and the "Geography of the London Ballad Trade, 1500–1700" projects.[5] Other ventures quantify the global output of print in different societies, such as the "Global Historical Bibliometrics" project in the

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[4]   For example: "In these turbulent times, it became obvious to almost everyone that understanding economic history is useful, indeed essential, and economic historians are indispensable. And yet many economic historians have the sense that their discipline is a neglected field, a field on the margins, caught in a no man's land between two disciplines: ignored and underappreciated by economists and misunderstood, feared, and perhaps even despised by historians. Most economic historians sense that the discipline has almost always been on the margins and that this marginalization has increased appreciably since the end of a brief golden age that glimmered during the 1960s and into the 1970s." Robert Whaples, 'Is Economic History a Neglected Field of Study?', *Historically Speaking* 11 no. 2 (2010) 17-20 at p. 17. See also Ensor, J. 2010, 'Is a Picture Worth 10,175 Australian Novels?' in K. Bode & R. Dixon (eds), *Resourceful Reading: The New Empiricism, eResearch and Australian Literary Culture* (Sydney University Press, Sydney), 240-73.

[5]   *The Atlas of Early Printing* (http://atlas.lib.uiowa.ed), *Atlas of the Rhode Island Book Trade in the 18th Century* (http://www.rihs.org/atlas/), *Mapping Colonial Americas Publishing Project* (http://cds.library.brown.edu/mapping-genres/), and *Geography of the London Ballad Trade, 1500–1700* (http://ebba.english.ucsb.edu/balladprintersite/lbp_main.html). See also Eleanor Shevlin, 'Book History and Digital Humanities: SHARP at #MLA 14 #s738', *Early Modern Online Bibliography*: *EEBO*, *ECCO*, and *Burney Collection Online*, 29 January 2014 <http://earlymodernonlinebib.wordpress.com/2014/01/27/book-history-and-digital-humanities-sharp-at-mla-14-s738/> Accessed 27 October 2014.

Netherlands, or catalogue every European book produced in the first centuries of print, such as the "Universal Short Title Catalogue".[6] A third type of project, exemplified by the various national "Reading Experience Databases" and the "Australian Common Reader", catalogue and make accessible for analysis written traces of readers' responses to text or library access to books with particular periods and regions.[7] Finally, a fourth emergent area of digital humanities research is known as literary mapping. This approach, which uses spatial data to examine where fiction is located, is exemplified by "A Literary Atlas of Europe" and "Mapping the Lakes: A Literary GIS". It seeks to stimulate new understandings of literature by recording and correlating the "geographical range and horizon of fictional space", [8] including imagined places, zones of action and routes. Such sited instances of literary placemaking may not appear to directly relate to book trade history yet the geo-temporal referencing of fictional locales in texts can aid in documenting the complex relationships between narrative setting, authorial location and textual forms of cultural belonging and identity.[9]

As Q. D. Leavis in *Fiction and the Reading Public* first touched upon in 1932, narratives encode the cultural, political, economic and technological structures and values of the times they represent, including the beliefs and suppositions that shape the experience of place.[10] Freud, Lacan and Zizek refer to this as the "symbolically articulated knowledge ignored by the subject,"[11] and Peter de Bolla describes the conceptual architecture underpinning this as the

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[6]   *Global Historical Bibliometrics* (http://socialhistory.org/en/projects/global-historical-bibliometrics), *Universal Short Title Catalogue* (http://www.ustc.ac.uk/).

[7]   *Reading Experience Databases* (http://www.open.ac.uk/Arts/reading/UK/), *The Australian Common Reader* (http://www.australiancommonreader.com/).

[8]   *A Literary Atlas of Europe* (http://www.literaturatlas.eu/en/2012/03/23/ein-literarischer-atlas-europas-poster/), *Mapping the Lakes: A Literary GIS* (http://www.lancaster.ac.uk/mappingthelakes/).

[9]   For example, vast regions of Australia such as the Sydney Blue Mountains, Central Australia and the Top End of the Northern Territory have long held an important geographical and mythological place in the cultural imaginary. In settler-colonial narratives, explorers produced travelogues and speculative maps that, to quote Paul Arthur, "shadowed the course of actual discovery". In this sense, mapping was not only cartographic but also conceptual and these "virtual voyages", as Arthur terms them, provided "social commentary on the possibilities for Australia's colonial future". See Paul Longley Arthur, *Virtual Voyages: Travel Writing and the Antipodes 1605-1837* (London: Anthem Press, 2010).

[10]   Q.D. Leavis, *Fiction and the Reading Public* (London: Chatto and Windus, 1932).

[11]   Slavoj Žižek, *Event: Philosophy in Transit* (London: Penguin, 2014), 2.

"common unshareable space of culture".[12] Bolla takes the view that "concepts" or those "forms presented to us" that "culture feeds, polices and sustains"[13] can be assessed historically, that the "penetration and dissemination of specific ideas within particular cultures"[14] might be understood through the analysis of data derived from digital archives. This embedded knowledge then is often the central object of the varied research questions pursued by scholars in the humanities where GIS, as one mode of inquiry, helps to unpack the history and networks of cultural forms through spatially-aware interpretative research, to which historical bibliometrics can add measures of cultural resonance. The challenge then is to meaningfully integrate algorithmic abstractions with qualitative-based humanities research.

For sure, since the launch of Google Maps in 2005, developments in mapping technologies such as GIS have stimulated humanities research interest in spaces both real and imagined. As Bodenhammer explains:

> Within a GIS, users can discern relationships that make a complex world more immediately understandable by visually detecting spatial patterns that remain hidden in texts and tables. Maps have served this function for a long time, but GIS brings impressive computing power to this task. Its core strength is an ability to integrate, analyze, and make visual a vast array of data from different formats.[15]

But blending the research languages of humanities and GIS – that is, bringing together the mathematical topology of points, lines, pixels and polygons with the less well-defined descriptors and categories of the humanities – is not, as Bodenhammer notes, a problem-free endeavour.

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[12]   Peter de Bolla, *Architecture of Concepts: The Historical Formation of Human Rights* (New York: Fordham University Press, 2013), 14.

[13]   Peter de Bolla, *ibid.*, 13.

[14]   Peter de Bolla, *ibid.*, 12.

[15]   David J. Bodenhamer, John Corrigan, Trevor M. Harris, *The Spatial Humanities: GIS and the Future of Humanities Scholarship* (Bloomington, Indiana: Indiana University Press, 2010), loc: 80 [Kindle Edition].

One project that has attempted this is the "French Book Trade in Enlightenment Europe" or FBTEE project. Originally based at the University of Leeds, FBTEE is now housed at the University of Western Sydney. The FBTEE suite provides geo-temporally located statistical data about the movement of books, connecting times and places of production, exchange and consumption (calibrated down to individual days, towns and clients) in order to chart the movement of books between a publisher and its wholesale and retail client partners across Europe. In particular, it maps the movement of books produced by a single Swiss publishing house, the Société typographique de Neuchâtel (STN). There are also facilities for grouping and analysing the distribution of STN books (and by proxy ideas) by subject, genre, author, original language, publication origins and place settings; and for creating customized subsets to sample sections of the book trade or compensate for biases in the data. As a result FBTEE's tools offer a detailed, transferrable digital method for studying the transfer of ideas and cultures across the entirety of a bounded print era, enabling researchers to map, visualize, compare, analyse and correlate trends and patterns in the production, dissemination and reception of printed works. Authors, literary tropes, genres and ideas can all be analysed in these ways across time and space.

The distribution patterns and trade networks visible on the FBTEE maps provide compelling analytical tools for scholars studying the history of authorship, reading and publishing. For example, the sales of books to different parts of Europe in the eighteenth century can be represented precisely by showing where the buyers received their goods. The volume of data contained in the archives that were mined for the FBTEE project enabled us to know the destination of sales at town-level or even sometimes at street-level. As the STN was located in Neuchâtel, we obtained a particularly detailed map of book sales in the regions surrounding Neuchâtel, which enabled us to assess the local influence of the publishing house. However, the data was not limited to Switzerland but included places located throughout Europe. As the books published were in their majority written in French, it is not surprizing that most STN customers were located in French-speaking areas. Nonetheless, as French was the language spoken by the European elite in the eighteenth century, books were sold throughout Europe, from Lisbon to Saint-Petersburg. We were, as a result, able to create maps that confirmed the existence of a European market for STN books. This in turn triggered research questions on the real scale of the STN trade. In particular, how far was their business a regional phenomenon, or was it as international as Robert Darnton first suggested?[16]

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[16]   See Robert Darnton, *The Forbidden Best-Sellers of Pre-Revolutionary France* (London and New York: Norton, 1996). For consideration of the STN's Swiss dimension see: Simon Burrows, and

While it is clear that the analysis of raw book trade data is productive for understanding historical trends, it would have been difficult to comprehend the actual dissemination of sales in modern-day Switzerland or Europe using only a series of numbers on a spread-sheet.[17] Additionally, maps were used to flatten on the same Cartesian space a large quantity of information, making it more easily accessible and comparable. Of course, these scholarly advantages existed before the invention of GIS systems. What changed in the 1990s and 2000s, however, was the fact that researchers were able to manipulate their mapping tools to align with their own research questions and not the other way around. Maps were no longer illustrations but generative representations for reading as well as producing historical data.[18] In addition, contemporary mapping tools can yield "live" maps that are quickly updated with only a few intervening clicks. This type of visualisation can augment book history in general by introducing dynamic maps covering various time sequences. As B.H MacDonald[19] and Ian Gregory[20] have argued, GIS can be used to represent data at different points in time and interrogate changing patterns. The maps created for the FBTEE visualisation gallery[21] demonstrate the potential of

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Mark Curran, 'How Swiss Was the Société Typographique de Neuchâtel? A Digital Case Study of French Book Trade Networks', *Journal of Digital Humanities* 1 no. 3 (2012) <http://journalofdigitalhumanities.org/1-3/how-swiss-was-the-stn-by-simon-burrows-and-mark-curran/> [accessed 16 April 2014]. The debate over how to interpret the FBTEE data and the drawbacks of using Darnton's own methods is ongoing. See Robert Darnton, review of *The French Book Trade in Enlightenment Europe, 1769-1794*, (review no. 1355), http://www.history.ac.uk/reviews/review/1355, date accessed: 10 June, 2016 and Simon Burrows' 'Author Response' at the same address. See also Mark Curran, 'Beyond the Forbidden Bestsellers of Pre-Revolutionary France', *Historical Journal* 56 (2013), 89-112, and Darnton's essay on 'Literary Demand: Sources and Methods' available as a PDF at his website, http://robertdarnton.org/literarytour/booksellers. A extensive discussions will appear in the first two companion volumes arising from the FBTEE project, which are due to appear in early 2017, Mark Curran, *Selling Enlightenment* and Simon Burrows, *Enlightenment Best-Sellers*.

[17]   Burrows, and Curran, 'How Swiss Was the Société Typographique de Neuchâtel?'

[18]   For an extended discussion on this point, see Bodenhamer et al.

[19]   B. H. MacDonald, 'Using GIS for Spatial and Temporal Analyses in Print Culture Studies: Some Opportunities and Challenges', *Social Science History* 24 (2000), 505–36.

[20]   Ian Gregory, and Paul S. Ell, *Historical GIS: Technologies, Methodologies and Scholarship* (Cambridge University Press, 2007) and Gregory, Ian N., and Richard G. Healey, 'Historical GIS: Structuring, Mapping and Analysing Geographies of the Past', *Progress in Human Geography* 31 no. 5 (2007), 638-53.

[21]   Vincent Hiribarren, *The French Book Trade in Enlightenment Europe Database Visualisations, 2012* (http://fbtee.uws.edu.au/stn/interface/gallery/) [accessed 10 April 2014].

this approach by showing how, among other observations, the STN illegal trade shifted from Western to Eastern Europe in the 1780s.[22] Obviously, mapping technologies will not reveal the motives behind such a dramatic change. However, they can indicate the practical impacts of policy measures such as the book trade decrees enacted on 30 August 1777 and 12 June 1783. The 1777 decrees tightened policing of the pirate book trade, while the 1783 decree forced foreign booksellers to send their books to Paris for inspection. Together these measures made it more expensive for the STN to sell books on the French market, and increased the risks of trading in pirated and clandestine editions. Graphs and maps of the STN's trade at this time show steep drops in the volume of their French trade, and a reorientation towards other markets thereafter.[23]

These maps thus help us to test and confirm previous hypotheses. They can also contribute to the re-ignition of ancient debates. For example, pioneers of Atlantic history such as Jacques Godechot analysed the circulation of revolutionary ideas on both sides of the Atlantic Ocean in the eighteenth century.[24] They argued that revolutions should not be studied as purely national events but as the product of a shared Atlantic will to reform governments. This point of view, which is widely accepted among historians, should have been confirmed by the STN maps. However, the low sales figures for books dealing with the American Revolution perhaps contradict such a statement. More surprisingly, as Simon Burrows details, subsequent research by the FBTEE team has revealed the striking importance of religious books sold throughout Europe. Instead of an Atlantic Revolution, the maps portray a form of European religiosity. Of course, no-one would question the assertion that eighteenth-century Europe was deeply religious: nevertheless, the extent of the religious market suggests that the degree of secularisation occurring in the period can be exaggerated.[25] It is clear, then, that the FBTEE maps can also contribute to the formulation of new research questions.

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[22]   Vincent Hiribarren, *The French Book Trade in Enlightenment Europe Database Visualisations, STN sales per year, 2012* (http://fbtee.uws.edu.au/stn/interface/gallery/slider/slider.php) [accessed 10 April 2014].

[23]   Simon Burrows, 'In Search of Enlightenment: From Mapping Books to Cultural History' in *The Digital Turn* special issue of the *Journal for Early Modern Cultural Studies* 13 no. 4 (2013), 3-28 at p. 22.

[24]   Jacques Godechot, *La Grande Nation: l'expansion révolutionnaire de la France dans le monde de 1789 à 1799* (Paris: Aubier, 1956).

[25]   Simon Burrows, 'Charmet and the Book Police', *French History and Civilisation* 6 (forthcoming, 2015).

However, even as there are strengths to merging quantitative and qualitative methods, there are weaknesses too. While qualitative analysis examines the "depth, complexity and richness of phenomena by investigating the structural connections rooted in philosophical, sociological and cultural grounds",[26] the objective mathematical treatment of research evidence that mapping technologies seek to visualize can be tripped up by the "natural difficulty in retrieving information from disorderliness".[27] And by "disorderliness" we mean the "fuzziness" of historical data, or what Bodenhammer refers to as the "complexity, ambiguity, multiplicity, and contingency" of Humanities-based scholarship.[28] For example, faithfully representing eighteenth-century Europe became a challenge in FBTEE due to the complexity of Ancien Regime Europe with its different administrative regions, enclaves, ecclesiastical lands and specific rights, which was an obstacle for the creation of readable and historically accurate maps. It is our view that the intricacy of political units lacking contiguous territories prevents cartographers from producing clear maps representative of a past period. Even worse, space as it was conceived during the eighteenth century cannot always be neatly mapped via points, lines and polygons only. As a consequence, the choices made by cartographers are of prime importance.

This concern is reflected by the inventive and flexible treatment of geopolitical space in the FBTEE database. First, Burrows conceptualized three different layers: the first two were political (sovereign states and lower administrative units) and the last one cultural (geographic zones).[29] The first political layer displayed the political borders existing between the different European sovereign states. What proved to be relatively easy for territorially-integrated nation state such as France or Spain became much more difficult for the Austrian Habsburg lands and regions located in modern-day Italy, Switzerland and Germany. The example of Neuchatel itself shows the complexity of such an endeavour as officially, during the period in question, the principality of Neuchatel was ruled by the King of Prussia, whose main territories were in North Eastern Germany and not contiguous with his Swiss and Rhineland possessions. As we created geographical heat maps, we might have attributed values for Neuchatel to the kingdom of Prussia

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[26]   Manuela Castro e Silva and Aurora A. C. Teixeira, "Methods of Assessing the Evolution of Science: A Review", *European Journal of Scientific Research*, 68 no. 4 (2012), 616-35 at p. 628.

[27]   *Ibid*.

[28]   Bodenhamer et al., loc: 107.

[29]   For more details see Burrows, 'In Search of Enlightenment', 9-10.

and vice-versa, but the map would have been visually misleading. This explains why Burrows and Hiribarren chose to dissociate Neuchatel from Prussia in the FBTEE maps, despite technically being an inaccurate historical representation of eighteenth century sovereign political entities.

The aim of our second political layer was to refine our analysis by drawing lower administrative units of eighteenth-century states. Instead of having an area for the whole of a given country, our second layer enabled us to observe regional trends within a selected country. For example, it was possible to determine which parts of France received the most STN books and, not surprisingly, most customers were located in the northern part of the kingdom. France was divided into *généralités* that were mapped following modern atlases and, for finer details, eighteenth century maps such as the ones produced by the Cassini family[30] and Robert de Vaugondy. These administrative units were smaller than the first political layer and, as a consequence, their creation required careful representation of a greater variety of sizes and shapes. Moreover, these *généralités* were the result of a long administrative history that corresponded more precisely to the policing structures of the book trade rather than the de facto economic regions of the French kingdom. In other words, our approach frequently found political and administrative boundaries to be inadequate for representing actual economic networks (which frequently crisscrossed borders) and, in addition, we discovered that we often lacked enough detail to draw reliable statistical conclusions after sub-dividing datasets into politically-defined categories. The very last layer created for this project tried to overcome these issues by creating composite "geographic zones" that broadly corresponded to the major linguistic and cultural divisions of eighteenth-century Europe. The analysis by geographic zone showed the strength of French-language literature in the rest of Europe and that political borders were not always an obstacle for the dissemination of cultural goods such as books.[31]

The FBTEE database has been widely used by the international book history and eighteenth-century studies communities. Between June 2012 and mid-March 2015, over 10,000 individuals have accessed the FBTEE database to make over 72,000 searches. According to one reviewer, the FBTEE database:

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[30] The Cassini maps are available online at: 'Des villages Cassini aux communes d'aujourd'hui' http://cassini.ehess.fr/cassini/fr/html/1_navigation.php# [accessed 10 April 2014].

[31] This conclusion coincides with that of Jeffrey Freedman, *Books without Borders in Enlightenment Europe*, Philadelphia: University of Pennsylvania Press, 2012.

ranks beside Stanford's "Mapping the Republic of Letters" database, which shows the correspondence networks of Enlightenment-era thinkers, as one of the best and most cutting-edge digital tools that historians of early modernity now possess … [bringing] the historical profession into the age of interactive digital technologies and GIS technology.[32]

This is welcome feedback but there are distinct limitations to the use of FBTEE data in its current form.

As mentioned earlier, FBTEE data is based on only one set of sources: the accounting records of the STN, whose records have hitherto tended to be seen as representative of a wider international trade. FBTEE data throws that into doubt, highlighting the STN's predilection for Swiss and protestant books; their caution concerning radical enlightenment material and scandalous works; and their limited interest in science. In addition, the database's capacity to cross-reference different forms of data could be developed further. Moreover, the gathering of data into the system is delayed by the need to define physical and geographical space whenever new towns are encountered and to develop standard categorisations for the books entered.

A preliminary glimpse of what cross-referencing might achieve came when we looked for evidence of the impact of the book trade policing regulations introduced by the French government on 30 August 1777 and 12 June 1783, which ostensibly targeted the pirate and hard-core clandestine trades respectively. The maps produced below (figure 1) suggest that the STN's pornographic trade with France was in decline after 1783, and that other parts of Europe picked up the slack.
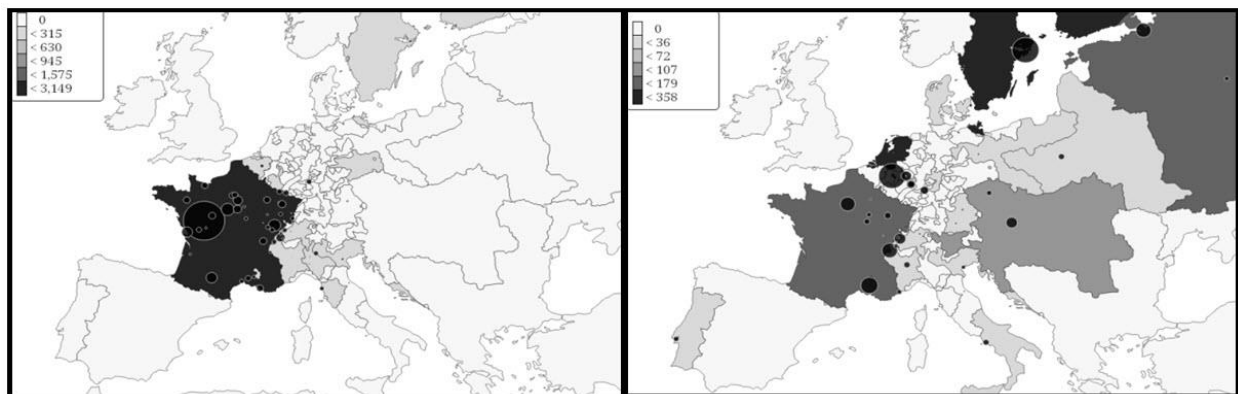

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[32]   Review by Jeremy Caradonna in *French History* 27 no. 2 (2013), 286-287.

Figure 1: STN sales of 'pornographic works' across Europe, 1 Jan 1769 to 30 June 1783 (left) and 1 July 1783 to December 1787 (right). Shading reflects percentage of trade.

However, when we analysed the time-series data more closely, graphical evidence suggests that the collapse in the STN's trade in pornographic works occurred much earlier – in the aftermath of the 1777 measures (see the graph in figure 2). Given that the period 1778-1782 might be considered the heyday of the STN's trade with France, and that their general market there collapsed after 1783, it seems that the 1777 measure, though aimed against piracy, was most effective against the highly illegal sector whereas the 1783 measure devastated the Swiss book trade more generally.[33] Letters in French archives protesting the impact of the 1783 measures provide anecdotal weight to this conclusion.[34]

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[33]   This analysis was first made in Simon Burrows, '30 August 1777 and 12 June 1783 - A Digital Impact Assessment of Two Censorship Measures', a paper delivered from Western Sydney University, Parramatta, to the Around the World On-line Digital Humanities Symposium, 22 May 2014, and is available online at http://youtu.be/aC5eP0yKiDo.

[34]   See, for example, Bibliothèque nationale de France, MS Français 21,823 fos 68-9, 'Mémoire pour les sieurs Piestre et Cormon, Libraires à Lyon' [1783]; fos 75-78 Mémoire of Jean-Marie Bruyset, pere et fils, Lyon, 22 Mars 1784; fos 83-85, François de Bassompierre, imprimeur-libraire de Genève to Vergennes, undated petition [1783].
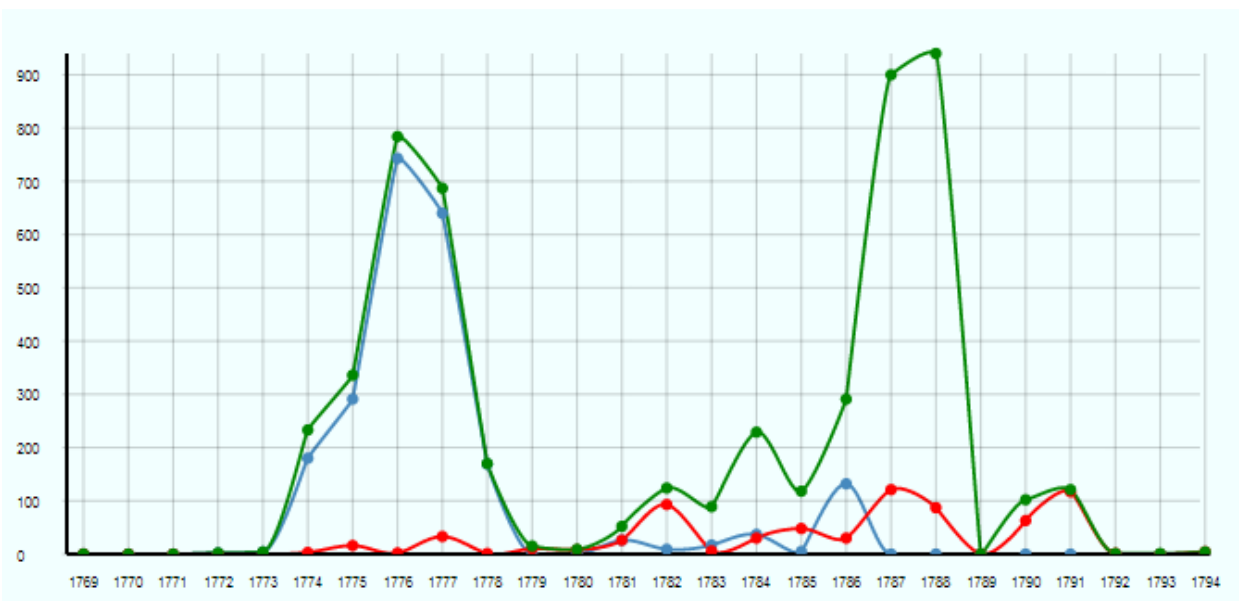
Figure 2: STN Sales of Pornographic Works to All Europe (Green), France (Blue) and the Helvetic Zone (modern Switzerland) (Red), 1769-1788.

Equally, comparison of data from different data-points can allow us to trace narratives that are otherwise invisible. For example, dissemination data in the FBTEE database reveals that on 29 September 1782, the STN dispatched 4,141 copies of Jacques Le Scène Desmaisons's *Contrat conjugal, ou loix du marriage, de la répudiation et du divorce, avec une dissertation sur l'origine et le droit de dispenses* to Paris on behalf of the Lyon bookseller Pierre Duplain *l'aîné*. The consignment left their silos in five crates or ballots, numbered DP n.161-165.[35] Cross referencing this with police data (gathered in pilots for FBTEE phase 2) reveals that the books never reached market. Instead, we learn from the Bastille archives in the Bibliothèque de l'Arsenal that a large consignment of *Contrat conjugal* was confiscated at Versailles in November.[36] They were transported to the Bastille on the King's orders the following April. The orders for the book's transfer record that their ballots bore the numbers DP n.161-165, proof

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[35]   The despatch and crate numbers are recorded in BPUN, STN MS 1036, Brouillard D, fo. 358.

[36]   Arsenal, Bastille MS 10,305, fo. 376, Lenoir, Lieutenant of Police, to the Governor of the Bastille, 25 November 1782.

positive that this was the consignment sent by the STN.[37] A work which appears a 'best-seller' in the database is thus reduced to mere impounded contraband.

If the opportunities and challenges of cross-referencing different domains of data can be met head-on, then the outcome might be considerable: a system capable of recording, analysing and cross-referencing geospatial historical bibliometric datasets in order to chart the comparative dissemination and reception of texts, ideas and discourses across time and space, potentially across and beyond the entire print era.[38] But is such a thing even possible?

Our response to this challenge in phase two of FBTEE will be multi-pronged. The first prong of our response is to reconceptualise our data and what can be done with it. Through a series of workshops, we identified that the data we propose to gather fits into six categories, provisionally encompassed within the acronym PROMPD. In essence, the data relates to the Production, Reception, Ownership, Marketing, Policing or Dissemination of printed texts. By arranging these individual kinds of data within our model, it becomes possible to make correlations between them. For example, we can seek to measure the impact of changes to censorship (i.e. policing) on what texts are published (i.e. production), how and where they are advertised (marketing) or the volume and places in which they are purchased (dissemination) or discussed (reception).

The second prong is to compensate for the unrepresentative nature of the STN archive by gathering comparable data on other publishers and booksellers. So far the project has identified four booksellers or publishers for which contemporaneous account books similar to those used by the STN survive. Permission has been given to enter data from two of these archives into the FBTEE data: those of the Parisian publisher *la veuve* Desaint and the Dutch publisher Luchtmans, a forerunner of academic publisher Brill. The latter is particularly rich with an archive approximately seven times the size of the STN archive, spanning the period 1697 to the 1840s. This axis of research would bring new challenges, of course, and greatly enhance the quantity of primary resource materials, but essentially merely expands our data set rather than inviting any new methodological contribution.

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[37]   Arsenal, Bastille MS 10,305, fo. 378, Order of Amelot and Louis XVI to the Governor of the Bastille, 28 March 1783. An annotation records the books finally arrived on 4 April but the reason for the delay between seizure and embastillement is not known.

[38]   For an imagining of the possibilities within just one domain, library history, see Simon Burrows, 'Locating the Minister's Looted Books: From Provenance and Library Histories to the Digital Reconstruction of Print Culture', Library and Information History 31 no. 1 (F2015), 1-17.

Another approach to the twin issues of coverage and representation is to gather data from a range of other book trade sources, including stock sale records for dead and bankrupt book dealers; lists of print-runs and booksellers' stock gathered by book trade inspectors; and records of book licencing, bans on books and seizures of clandestine works. Taken together these sources promise to provide raw data on perhaps 4–5 million more copies of the 40–50,000 titles produced in French in the final two decades before the French revolution. This work, already in progress, promises to give unprecedented insights into the print culture of a single historical society. The data will cover an estimated 10% of all books printed in French between about 1769 and 1789, making it the most comprehensive survey in recent book history. This, however, emphasizes the necessity and importance of addressing the concerns that surround the fidelity of conclusions drawn from large-scale datasets even when such datasets are a representative percentage.

We also plan, as part of this second approach, to conduct a wide-ranging geographic survey of the dissemination of novels, and information about novels, as offered by booksellers, review journals and advertisements across Europe. We will focus on identifying structured documents (for example, catalogues offering novels under a separate heading) in order to enter pre-categorized data cleanly and rapidly. This also raises the possibility of finding more direct routes to gathering high-quality historical bibliometric data in sufficient quantity to broaden analysis. A third approach to the twin issues of coverage and representation then will be to seek out existing curated sets of bibliographic and subject-taxonomic data that will facilitate and speed data entry. Within an eighteenth-century French context, we have that data potentially for two areas of literature. One area is plays, where the CESAR database could provide a complete list of seventeenth- and eighteenth-century plays, together with a subject taxonomy based upon title-page descriptions. Obviously, such data is prone to author foibles and, particularly later in the period, a certain playfulness in describing genre.

Fortunately, a rather more consistent and more finely researched resource exists for novels, in the form of an unpublished database of the eighteenth-century French novel authored by project partner Angus Martin of the University of Sydney and his collaborators Richard Frautschi and the late Vivienne Mylne. Their subject taxonomy is particularly useful as it offers data on place settings, key themes and genres, all of which map onto FBTEE's own taxonomic data. It is not, however, an unproblematic exercise to import this data, which resides in twenty-year old software format. The next phase of our research therefore includes a systematic effort to incorporate into a single resource the original FBTEE database and the Martin, Mylne and

Frautschi database. The technology will facilitate further projects for times and places where pre-packaged data already exists, the most definitive being early modern England where Gale-Cengage's magnificent Eighteenth-Century Collections Online (ECCO) and Chadwick-Healey's Early English Books Online (EEBO) resources aspire to cover every known book and pamphlet produced. ECCO metadata is currently being prepared for analysis using FBTEE-based methods and infrastructure.[39]

Having addressed the key challenges of reconceptualising the data and compensating for the unrepresentative nature of the STN archive, a third challenge is to test the FBTEE resources' utility against radically different sets of sources in more contemporary settings – for example, the entire archive of iconic Australian publishing house Angus & Robertson, which extend from the late nineteenth to late twentieth centuries. Given the company's international business activities with over 400 overseas book trade firms and archival holdings that span over a hundred years, this will be, like FBTEE, a project of transnational and transhistorical significance, requiring mapping facilities capable of depicting book trade operations on a global scale. Whereas the source types for FBTEE tended to be selected because of their unitary nature – their ability to provide discreet insights into a particular aspect of the production, reception, ownership, marketing, policing or dissemination of books, be it print runs, sales accounts, indices of banned books, lists of publishing permissions, book reviews or police confiscation records – the Angus & Robertson data is spread across a voluminous archive of correspondence. The material it contains includes minute books, press journals, annual accounts, sales histories, royalties records, stock transfer records and export sales statistics.[40] A single letter from a typical file box in the Angus and Robertson archive might typically discuss sales of a particular work in London; contract arrangements for an as yet unpublished work; potential Australian and overseas print runs; referees reports; the activities of a salesman; or comments on how best to edit a book for distribution in another territory in view of prevailing obscenity laws. Fortunately, for much of this period, internal letters and memos were generally annotated and structured to highlight each miscellaneous topic individually, and the company's business records are impeccably organized

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[39]   We thank Gale Cengage and in particular Craig Pett for providing this data for use in the wider FBTEE project.

[40]   For example, surviving materials for the mid-twentieth century include the Angus & Robertson Director's Minutes 1938-1966; Angus & Robertson Accounts for Year Ended 1931-1970; Halstead Press Minutes 1929-1957; Halstead Press Accounting Records 1929-1971; Halstead Press Journals and Registers 1961-1971; Angus & Robertson Sales History 1935-1971; Angus & Robertson Export Sales Statistical Information 1950-1968; Angus & Robertson UK Royalty Records 1966-1972; and Angus & Robertson UK Stock Transfers 1971-1972.

in the Mitchell Library, State Library of New South Wales.[41] If the system can capture, quantify and correlate such varied information effectively, we will know it is close to achieving its goal.

In order to capture, compare and control data across a range of such projects geospatial data will need to be organized at point of entry. As a result, the further development and application of FBTEE tools seems to necessitate a map-based data entry system on which sets of historical borders and other geo-referenced data might be layered. This is a very different approach to that of the original FBTEE system, developed at a time when existing GIS systems were either too unstable online to use as we hoped, or if stable enough, lacked the necessary facilities. As a result, FBTEE's original geospatial data was developed in a spread-sheet in which each town we encountered in the data was individually researched and plotted against a wide variety of geographical and other variables, such as: the province and state it belonged to in the eighteenth and twenty-first centuries; whether it was inside or outside the Holy Roman Empire; or was it in ecclesiastical territory, an Imperial free city or a university town? In some cases we even had to capture co-governship arrangements involving multiple polities. And naturally, we gathered geographical coordinates. In this sense, FBTEE's timing was fortunate as, over time, project aspirations converged with emergent technology, making it possible to transfer the task of geo-locating data to the person who enters the data. But by undertaking to provide map-layers geared towards particular historical moments, we hope to simplify and codify the management of geo-spatial information. Even so, one aspect of the project, the mapping of literary settings, will remain a significant challenge, as these cannot be relied upon to fit the temporally defined geo-political regions of our standard layers.

There remain significant hurdles ahead. Like other book historians who work with numbers, we have to interpret what those numbers might mean, however revelatory or concrete they may appear. Numbers do not necessarily equate directly to influence in any clear or consistent sense. Descartes' *Discourse on Method* sold only a couple hundred copies in his lifetime, but few would deny its impact today, let alone in the seventeenth century. Nor do sales necessarily imply that a text was read or consumed. As a second-hand book dealer remarked to us at the 2013 BSANZ conference: booksellers make their income from the books people buy but never read.

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41   Permission to access and digitize these documents was originally given by the current copyright owners of the material, HarperCollins, on 4 June 2008. This permission was renewed for another 5 years on 11 March 2011. Its scope has been expanded to include Angus & Robertson's complete interaction with overseas agents, booksellers, travelling salesmen, printers, organisations and publishers. A University of Western Sydney project is in production with partners in the United Kingdom, the United States and New Zealand.

This business model might apply equally well to Apple and Amazon. Numbers, therefore, imply only cultural receptivity, perhaps signifying practices of production, consumption and control that are indicative at best. Bestselling tables point to commercial significance – to a desire to own – but qualitative research is still needed to explicate and understand the wider importance and consumption of texts and physical books.

This linking of qualitative research to quantitative data requires a flexible categorisation system capable of handling different book history projects while maintaining the data consistency and integrity required to generate comparative analysis. Such a requirement also includes the need for high-quality controlled research inputs, gatekeeping and the consistently applied protocols and standards that managing each dataset entails. As a result, it is unlikely that the historical bibliometric research programme described here will be able to accommodate the open crowd-sourcing approaches used, for example, to gather data for the Reading Experience databases, or to make textual transcriptions and corrections in the National Library of Australia's Trove digital resource.[42] Moreover, our systems need to deal with, compensate for and visualize problems of uncertainty, inconsistency over time and the incompleteness that is to be found in most historical datasets. This capacity was certainly present in the original FBTEE database project, but it was underdeveloped. We hope, however, that by confronting such issues, the next generation of FBTEE projects will be uniquely placed to help book historians and digital humanities scholars map the contours of global print culture and navigate the shoals of complex historical reality.

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[42]   Trove: http://trove.nla.gov.au/