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Producing Spatial Knowledge: Mapmaking in Edinburgh, c.1880-c.1920

Anna Jane Feintuck

Doctor of Philosophy
University of Edinburgh
2017
Declaration

I hereby declare that this thesis has been composed by me, that the work is my own, and that it has not been submitted for any other degree or professional qualification.

Anna Jane Feintuck

August 2017
This thesis is dedicated to my extraordinary grandmothers.

Sybil Rose Feintuck  
(1924–2017)  

&  

Judith Mary Ravenscroft-Brown  
(1941–)
Abstract

This thesis examines the social and urban history of mapmaking in Edinburgh between c.1880 and c.1920 and argues that cartography, along with the associated printing and publishing industries in the city, provides an effective lens on broader urban concerns. The predominant focus of the archival research is on the family-run firm John Bartholomew & Co., internationally-renowned map publishers during the period. The central questions of the thesis relate to print, knowledge, space and place. The work is grounded, in particular, within urban history and the geography of the book. Chapters are structured around the ‘lifecycle’ of a map and a re-modelled version of Robert Darnton’s ‘communications circuit’.

Map production can profitably be contextualised within late nineteenth and early twentieth-century Edinburgh. A taxonomy of the contemporary printing and publishing industries shows — following Pierre Bourdieu’s theory of the ‘field of cultural production’ — that it is crucial to understand the economic, industrial and intellectual setting in which cartographers operated. In this respect, mapmaking is viewed as a fundamentally social process, a theme that continues into the factory, where technological developments are considered in the context of workers’ experiences. The buildings and spaces in which mapmaking occurred take on epistemological significance: they reflect how ideas about city space were made and the related importance of local knowledge. Changes in the sites and conditions of cartographic production corresponded with the increasing organisation of space shown in maps and fire insurance plans such as those produced by the firm Charles E. Goad. Once maps left the premises, a geographical approach to understanding distribution advances links between production and consumption: the local conditions of their making influenced international, national and local sales networks. Throughout, the thesis emphasises the importance of understanding maps as socially constituted objects. This also allows for new insights into the purchasing, ownership and use of maps. Tracing specific instances of use shows that meaning was not solely shaped by cartographers but also by the ongoing interactions and interventions of owners or readers.

Overall, the thesis shows that mapmaking was a continually developing way of understanding the city. This was true for cartographers, city officials, or insurers, each of whose increasingly detailed conception of urban space corresponded with more
accurate production practices and the greater availability of printed cartographic material. Mapmaking was also part of a broader move towards the growing documentation of urban places. The forms of cartography examined in this thesis show how codified, empirical systems of knowledge came to occupy a privileged position in late nineteenth and early twentieth-century cities. In particular, mapmaking practices in Edinburgh changed not only how the urban was depicted, but also how city spaces were conceptualised and used.
Lay summary

This thesis is about mapmaking in Edinburgh between c.1880 and c.1920. Its main argument is that by examining urban maps, and the processes behind their making, we can learn more about the city itself. Maps can be seen as a printed representation of geographical knowledge, which was recorded by the cartographer and potentially acquired by the reader. The thesis offers insight into the nature of this knowledge, where it came from and how it spread.

The majority of the research presented in this thesis was carried out in the Bartholomew Archive at the National Library of Scotland. This archive holds the records of the family-run firm John Bartholomew & Co., who were internationally-renowned map publishers during the late nineteenth and early-twentieth centuries. The material in the Bartholomew Archive illuminates the main questions of the thesis, which relate to print, knowledge, space and place.

The ‘lifecycle’ of the map — from the urban setting of its conception to the complexities of its eventual use — provides the structure for the thesis. Throughout, it views mapmaking as a social process: that is, the many people involved, and their relationships, were crucial in shaping the finished product. Attention is given to workers’ experiences as well as to the intellectual side of cartography. This distinction — between industry and intellect — is an important recurrent theme. The analysis also considers the significance of where the various stages of mapmaking occurred. Maps showed places and, in so doing, had the potential to shape people's thoughts about geography. The thesis builds on this idea to suggest that, in fact, where maps were made had an effect on how trustworthy they were seen to be. The relationship between the representation of place and the acquisition of credibility is another central theme.

Overall, the thesis shows that mapmaking developed throughout the period in question and that, as it did so, it offered new ways of understanding the city — which was also changing rapidly at this time. This did not just have an impact on cartographers, but also on figures such as city officials and insurers, who needed accurate maps in order to be able to carry out their work, which became more complex as cities grew. Reliable and systematically-produced urban knowledge became vital in this period. Mapmaking practices in Edinburgh changed the way places were depicted, and they also changed the way people thought about and used the city.
Acknowledgements

First and foremost, I would like to thank my supervisors, Richard Rodger and Charles Withers, who appointed me to work on this thesis as part of their broader project, ‘Mapping Edinburgh’s Social History’. They have both been encouraging, constructive and, above all, deeply supportive throughout. I first worked with Richard as a second-year undergraduate and his guidance over the eight years I have subsequently spent exploring various aspects of Edinburgh’s history has been invaluable. I was very fortunate to also benefit from the knowledge and support of Christopher Fleet, Senior Maps Curator at the National Library of Scotland. I am grateful for his consistent willingness to share his knowledge and the generosity with which he offers his time.

The staff at the National Library of Scotland made conducting research a pleasure. In the wonderful Maps Library on Causewayside, Tam (now retired), Alan, Laragh and all of their colleagues always went above and beyond to help me. In 2016 I was granted a J.B. Harley Fellowship in the History of Cartography, which gave me the chance to spend time in the British Library. Catherine Delano-Smith and Peter Barber made me feel very welcome in London. Peter took the time to orient me in the Maps Room and introduce me to members of staff, who were all extremely helpful (and patient).

Working with John Ennis at Gayfield Creative Spaces in the summer of 2015 helped me to see how I could engage a wider audience with this research through our co-curation of PACE: Walking by Design.

I finished this thesis while working as a Teaching Fellow at the University of Edinburgh. There, Ewen Cameron has been an unfailing source of support, and my brilliant students have given me the chance to widen my own thinking and teaching.

Sarah Laurenson, Sophie Cooper and Felicity Loughlin: there’s far too much to list here, so simply thank you for being the best not-so-new-now friends I could ever have hoped for. And to all my friends: thank you so much for tolerating my increasing social ineptitude and making me laugh even in difficult moments.

My parents have supported me, practically and emotionally, in everything I have done. I know for certain that without my mum, my dad and my step-mum Lisa, none of this would be possible. I am grateful to them — and for them — every day.

This thesis is for all of these people. Most of all, it is for Tom Heggarty: tea-maker, listener and problem-solver extraordinaire; cycling buddy, boyfriend, best pal.
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Chapter 1

Introduction

On 7 January 1901, John George Bartholomew (JGB), head of the Edinburgh mapmaking firm John Bartholomew & Co., wrote to Sir John Maurice Clark, a prominent figure in the city’s printing and publishing industries. Clark’s father, proprietor of the theological publishers T. & T. Clark and former Lord Provost of Edinburgh, had died two weeks earlier. JGB offered his condolences: ‘I cannot say how much I feel with you in the loss of your father — his kindly and familiar figure will be much missed in Edinburgh’. He apologized for not attending the funeral, held on 28 December at St George’s Church and Warriston Cemetery. He had, he explained, been suffering badly from a bout of influenza at the time. The focus of his letter then abruptly turned to business. ‘I enclose what may form a small prospectus for the map of Palestine’, he wrote. He explained that ‘we do not object to you increasing the publishing price to 10s. 6d. if you think it will not interfere with the sale. Of course the addition of the index will add to your cost. The index was a pretty heavy piece of work, and I find that in addition to my time on it, its complication has actually cost us £15 in wages alone … [but] we shall be glad to simply uphold this expenditure’. He ended by reassuring Clark that the map ‘will not get out of date and will be good for all future editions without alteration’. The contrast between empathetic sentiments and purposeful business dealings in the letter is particularly striking.

1 Sir John Maurice Clark became head of the legal publishers T. & T. Clark in 1886. Prior to this Sir Thomas Clark and his uncle, also named Thomas Clark, ran the company, which was founded in 1821. Sir Thomas Clark died on 24 December 1900. See David Finkelstein, “T. & T. Clark,” in The Edinburgh History of the Book in Scotland, Volume IV: Professionalism and Diversity, 1880-2000, ed. David Finkelstein and Alistair McCleery (Edinburgh: Edinburgh University Press, 2007), 303-305. Note also that the Bartholomew firm is often referred to as John Bartholomew & Son. This name was adopted in 1919 upon becoming a private limited company. For the bulk of the period covered in this thesis (c.1880-c.1920), the firm was known as John Bartholomew & Co., and is thus referred to as such, or simply as Bartholomew, throughout.
2 “The Late Sir Thomas Clark,” The Scotsman, 25 December 1900, 4.
3 National Library of Scotland (hereafter NLS), Dep.247, Box 1, T. & T. Clark’s correspondence with Bartholomew, John & Son Ltd., letter from John George Bartholomew (hereafter JGB), 7 January 1901.
4 “Funeral of Sir Thomas Clark,” The Scotsman, 29 December 1900, 6.
5 This was not an unusual occurrence. JGB contracted tuberculosis in his early twenties and experienced ill health throughout his life, frequently taking weeks or months away from the business to recuperate.
6 NLS, Dep.247, Box 1, T. & T. Clark’s correspondence with Bartholomew, John & Son Ltd., letter from JGB, 7 January 1901.
This vignette offers insight into a number of the central concerns of this thesis. First, the complexities of the relationship between JGB and Clark are important. Mapmaking was a social process, in which the personal and professional frequently overlapped. This was, in part, due to the prevalence of dense networks of printers and publishers in Edinburgh. By 1901, the city was home to at least 784 different firms and individuals carrying out printing, publishing or associated work. These firms employed 5% of the city’s total workforce. Within this context, the Bartholomew family firm developed close working relationships, frequently undertaking cartographic work for the city’s publishers and institutions, as well as ordering the bulk of their materials from local firms. The firm’s activities are shown throughout this thesis to have been firmly embedded in the local context.

Furthermore, the case of the late Sir Thomas Clark illustrates the important role that prominent figures in the industries occupied in public and associational life. Clark served as Lord Provost of Edinburgh between 1885 and 1888, during which time he oversaw city-wide developments such as the municipal takeover of Edinburgh and Leith’s gas infrastructure, the International Exhibition of 1886 and, in 1887, the opening of public baths and the laying of the foundation stone for the Central Library on George IV Bridge. In so doing, he followed in the footsteps of fellow publishers including Adam Black (of A. & C. Black, Lord Provost from 1843 to 1848), William Johnston (of W. & A.K. Johnston, Lord Provost from 1848 to 1851), William Chambers (of W. & R. Chambers, Lord Provost from 1865 to 1869) and Thomas Jamieson Boyd (of Oliver & Boyd, Lord Provost from 1877 to 1882). Other Lord Provosts also had close connections to the trade: James Cowan, for example, who served from 1872 to 1874, was the son of Alexander Cowan, head of a large Edinburgh-based papermaking firm. Although wealthy publishers were conspicuous in public life, the role their broader industry played in the local economy was rarely acknowledged. The tension between industrial and intellectual pursuits in Edinburgh is a recurrent theme of the thesis, and is shown to have had a constitutive role in the production of spatial knowledge.

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7 Post Office Edinburgh and Leith Directory 1900-01 (Edinburgh, 1901).
8 Eleventh Decennial Census of the Population of Scotland Taken 31st March 1901, With Report. Volume III. (Glasgow, 1903).
9 “The Late Sir Thomas Clark,” The Scotsman, 25 December 1900, 4.
JGB, likewise, held a range of public positions and associational honours, relating in particular to geography and cartography. He was a founding member of the Royal Scottish Geographical Society in 1884, and remained its honorary secretary his whole life; elected a fellow of the Royal Society of Edinburgh in 1887, and of the Royal Geographical Society in 1888; awarded an honorary degree from the University of Edinburgh in 1909, commemorated in a portrait by Edward Arthur Walton, which is in the Scottish National Portrait Gallery’s collection [Figure 1.1], and was geographer and cartographer to King George V.10 He also campaigned throughout his lifetime for a chair of Geography to be established at Edinburgh University.11 JGB was a prominent figure in Edinburgh’s public life, and was able to perform a range of roles, from industrial factory manager to educational campaigner. It was typical for printers and publishers at this time to ‘mingle high-mindedness and hard-headedness’, seeing ‘no contradiction in their service to God and commerce’.12 Essentially, JGB and Clark, in producing a fundamentally cerebral product, strove for more than simply financial profit: they wished to facilitate the transmission of knowledge (geographical and theological, respectively).

The discussion of the map itself is also revealing. The fact that details were established via correspondence is significant: it shows that mapmaking was inherently discursive and collaborative. The implications of this are discussed throughout the following chapters. Moreover, it highlights the role of epistolary business practices in the nineteenth and early twentieth centuries more generally, which meant discussions were quicker amongst local firms, although the importance of increasing efficiency in national transport networks should not be underestimated in its importance. It also becomes clear from the letter that there were various stages involved in producing a map, and that costs were ambiguous and subject to change throughout. Although in this case JGB ‘upheld’ the cost, similar occurrences with other businesses caused tension. It could be inferred that JGB’s offer to cover the £15 of wages was linked to the specific situation — that is, the sympathy he felt for Clark — or that a particular local system of charges and discounts was at play, emphasizing

11 Although JGB saw the appointment of the first lecturer in Geography in 1908, it was his son John “Ian” who lived to see the chair established in 1931.
the mutual benefits of transactions occurring within the local economy. Finally, JGB mentioned that the map would 'not get out of date'. This is a powerful assertion: maps frequently became outdated as borders and place names changed, and there is no discernible reason for this map being exempt from this risk. This emphasis on accuracy and currency illustrates a central concern of cartographers and one of the main terms on which maps were judged. Bartholomew’s capacity to keep pace with global changes was a constant feature of both their own advertising and reviews of their maps.

This episode was a local one: this thesis shows that understanding knowledge production on such a level is critical. The thesis also, however, examines the role of the local in historical analysis, and shows it to be just one of a range of geographies inherent in mapmaking. While Bartholomew and Clark were both based in Edinburgh, the content of the map in question was international. So, too, were the networks and processes behind its production, transmission and consumption. Mapmaking occurred on a number of geographical scales: interrogating how the local, regional, national and international interact and relate is key to better understanding the map. With this in mind, the following section turns to the main questions underpinning the thesis.
Figure 1.1: John George Bartholomew by Edward Arthur Walton. Oil on canvas, 1911.


Research questions and rationale

Maps cannot be separated from the social, economic and political conditions of their making. The cartography examined in this thesis was also embedded in a particular urban context. The late nineteenth-century city was large, complex and, increasingly, viewed in terms of its administration and governance. Maps provided one means of
doing so, and their role in urban management threads through the following chapters. This thesis seeks, however, to understand the relationship between the map and the city on a deeper level. The focus is, in part, on what the content of urban cartography itself indicates: as cities grew, space was increasingly rationalized and abstracted through cartographic realisations, amongst other processes. It is still more revealing, however, to examine the nature of this relationship and what it demonstrates about urbanism, c.1880 to c.1920. First, it becomes clear in the following chapters that this was a privileged relationship. The map came to be a trusted, credible form of spatial knowledge. It acquired this status in part because specific conditions of the period necessitated the increased representation and documentation of urban spaces. In this respect cartography may be viewed alongside other forms of increased quantification in the nineteenth and twentieth centuries. It is also important to note, however, that notions of objectivity and rationality must be considered in the context of their time. The values maps appeared to embody were socially and culturally constructed.

Second, the relationship between the map and the city was dynamic and mutually beneficial. Cartography is shown here to benefit from an urban setting in a practical sense: networks, institutions, associations and a skilled labour market were all crucial to Bartholomew’s development as an internationally renowned firm. In a more abstract sense, the firm was able to use aspects of Edinburgh’s existing reputation as a cultural, intellectual city to construct a similar image for itself. The city, in turn, was made more legible and governable by increasingly detailed and accurate mapping. This had tangible effects on changes in, for example, public health, sanitation, planning and insurance. Mapmakers and their output had significant agency: a map could change the way the city was used, potentially changing the nature of the city over time. The obvious example here relates, again, to the implementation of public health policies, but this thesis also shows the more quotidian impact of cartography. In a further example of dynamism, as the city changed so, too, did cartography. Different ways of moving around the city, such as the growth of urban cycling, created a market for cartographic representations of a particular development that, in turn, could be said to facilitate and accelerate the development in question (in this particular example, by making cycling more
accessible). The city and the map are thus seen throughout the thesis to operate in a dialectic and fluid relationship, each shaping the other.

An additional, related concern is with the lifecycle of the map: how it was produced, distributed and read. The thesis shows that map production can be understood in many of the same terms as book production; methodologies informed by the history of the book are shown to be useful. This is tempered, though, throughout, by an insistence that maps, while undoubtedly related to other types of printed object, are distinctive. An alternative model for understanding map production during the period is discussed in Chapter Two and Chapter Four. Where these stages occurred is shown to be of critical importance; so, too, are the people involved. Edinburgh was a distinctive setting, as discussed above. This was particularly true regarding its mix of industry and intellect, which mapmaking epitomized. But the city was not just a setting: it is shown here to play a formative role in the development of cartography. Socially, it did so by functioning as a ‘field’ for production — here, the thesis makes use of the theories of Pierre Bourdieu. This geography can also be interrogated on a micro scale, down to the level of individual streets, buildings and rooms. Where mapmakers, their employees and their customers were based is shown to be vital to the development of business. Moreover, the ‘production’ of these spaces, following Henri Lefebvre — how they were constructed, represented and used — played a critical role in developing reputation, credibility and claims of knowledge. The formation of places of knowledge, from the city itself to mapmaking premises, is an overarching theme.

Finally, the thesis seeks to examine the extent to which maps — their content and meaning — were socially constituted, and the significance of this. This occurred both internally and externally in the process of production. The external context, for example, includes developments such as the nineteenth-century growth in leisure and tourism, which created a market for particular genres of map. This cannot be neatly separated from advances in transport such as the burgeoning railway and the corresponding increase in route maps and highly specific timetable maps. Broader economic factors such as depression or the availability of capital in the local industry appear to have affected mapmaking less than other printing and publishing industries (in part due to its high level of specialization) but nonetheless should be considered. Political factors included imperialism and war, both of which necessitated the re-
drawing of borders and boundaries, or the creation of entirely new ‘war maps’. Internally, too, processes of mapmaking such as commission and compilation were profoundly linked to social networks. Most Bartholomew maps throughout the period were produced on commission, which meant the content was dictated by a particular individual or firm and was, as such, subject to their own particular motivations, which are shown to be wide-ranging. Compilation was the first process in the physical manufacture of maps: instead of surveying the land directly, Bartholomew amassed a range of information and used it to draw a base map. This process is shown to be inherently collaborative. Mapmakers sought information from, for example, engineers, architects, city officials and planners, as well as interest groups who had a reason to know the land in detail: walking and cycling groups were particularly helpful in this regard. Clearly, maps were not produced in a vacuum; instead they were profoundly shaped by the social (and often local) conditions of their making.

The meaning of maps, too, should be seen as socially constituted. Although new technology such as lithographic printing meant that maps could be reproduced in large quantities increasingly easily and cheaply, this replication did not ‘fix’ their meaning. To suggest so denies the agency at place in multiple stages of post-production. Instead, a range of individual responses to maps shows that their meaning could be flexible. The study of use here goes beyond concerns with ‘belief’ in a map. Although reviewers and customers were undoubtedly attuned to whether maps were accurate and up to date, their trust — or otherwise — was often based on Bartholomew’s reputation, which was certainly built in part by social means. Occasions of users writing on maps shows that they often used them for purposes far removed from those intended by the mapmaker. Maps could be annotated to plan or commemorate journeys, or emphasise certain routes and places — amongst other uses. Moreover, ‘use’ is not limited to the map as a physical object. Maps have been used in various figurative ways, such as imaginary or metaphorical devices, or as literary motifs. In this respect they acquire cultural resonance that shapes their meaning in a sense far removed from any originally envisaged. The meaning of maps remained ambiguous and fluid, despite being ostensibly grounded in geographic reality.
Structure of the thesis

The thesis as a whole is structured around a map’s ‘lifecycle’. It begins in the city, which is used to show how Edinburgh’s particular urban setting and, especially, the prevalence of the printing and publishing industries provided a fertile ground for the conception of maps and the expertise necessary for their production. It ends with the map in the hands of multiple generations of readers, each of whom were able to ‘re-make’ the map through their own highly individual interpretations and uses, often in ways separate to those originally intended by the cartographer. A wide range of actors possessed agency in the formation of cartographic knowledge — and the thesis shows, moreover, the importance of considering the role of their individuality in shaping knowledge. Production, more broadly, is understood not simply as a series of physical processes, but also in its social and cultural senses. Meaning was constituted through mechanisms both within and outwith the cartographer’s control. The production of spatial knowledge should thus be considered as a dynamic and dialogic process. Its making was affected by local conditions as well as national and global networks. In turn, cartographic practices in Edinburgh had an impact upon the way spatial knowledge was itself understood at each of these scales.

The research is grounded predominantly within existing work on urban history and the geography of the book, as well as histories and geographies of cartography and scientific knowledge. Chapter Two provides a theoretical and methodological overview of the concepts explored in these disciplines as they relate to the central questions of the thesis. It considers the role of the city in historical analysis, the map in its printed form, and frameworks for understanding the production, transmission and consumption of knowledge. It problematizes procedures of knowledge production throughout, both in the historiographical concerns of the thesis, and in terms of methodology: it interrogates the nature of the archive as a place of knowledge, and gives critical attention to research processes.

Following Pierre Bourdieu’s theory of the ‘field of cultural production’ — that is, that the ‘essential explanation’ of any work of art or literature ‘lies outside each of them, in the objective relations which constitute this field’ — Chapter Three argues

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that it is crucial to understand the economic, industrial and intellectual setting in which cartographers operated.\textsuperscript{14} It contextualises map production within late nineteenth and early twentieth-century Edinburgh. An examination of multiple volumes of the \textit{Post Office Directory} allows changes in the industries to be tracked across the four decades in question. The decline of Edinburgh’s printing and publishing industries following the First World War is well documented, but the analysis here suggests that the absolute numbers involved in the immediate post-war period are less substantial than implied by existing descriptions of decline, and that this change should also be understood in relation to increasing competition from regional firms and national attempts to standardise prices. From a spatial perspective, the chapter considers the significance of the locations of printing and publishing firms in the city, as well as their movement (in the case of firms with particular longevity) during the period. The address data also provides an insight into everyday experiences of the city and the visibility of these industries in the built environment: a case study of two printers living in Edinburgh’s Marchmont area indicates that they would have passed at least twenty printing or publishing establishments on their one-mile journey to work each day. Edinburgh was often portrayed as being an intellectual, cultural city, but this chapter shows that industry was certainly more conspicuous in the fabric of the lived city than contemporary accounts suggested, and that this prevalence is key to understanding mapmakers’ activities within the urban context.

The focus then moves, in Chapter Four, to the physical processes involved in map production. These are situated in a version of Robert Darnton’s ‘communications circuit’, a framework for understanding book production, which is adapted here to show the specificity of cartography.\textsuperscript{15} The chapter considers, in particular, technological developments in the context of workers’ experiences. Increasing mechanisation such as the shift in book production from manual to machine typesetting is often portrayed, particularly in social history of the 1960s and 1970s, as an attack on the workforce who can, in the case of printing and publishing, be classed


as a ‘labour aristocracy’. The chapter interrogates these concepts and argues that similar shifts in cartographic production actually necessitated more skilled labour. Although the craft skill of engraving slowly declined in the early decades of the twentieth century, it did not disappear. Analysis of production records and wage books shows that lithographic printing, a form of printing from stone that allowed maps to be mass produced, should only be seen as a partial replacement for engraving — and one which, in itself, created new, respected roles for both men and women. An examination of gender roles in the workplace shows, however, that while they were unusual in being acknowledged as skilled members of staff, women working for Bartholomew earned considerably less than their male counterparts, albeit significantly more than typical female industrial workers in the city. Furthermore, this economic imbalance is complicated when viewed through the firm’s paternalistic business practice, which allowed women to be hired even after labour disputes elsewhere in the city resulted in them being barred from entering the printing trade. The experience of mapmaking employees in Edinburgh is shown to be distinctive, especially when considered within broader narratives of technological change and its effects.

The theme of production then shifts from the physical to the social and cultural creation and validation of spatial knowledge via a study of mapmaking premises. Chapter Five frames this analysis in the context of local aspects of knowledge production, through the continuing study of urban cartographic practices. It is informed by two case studies. The first of these examines Bartholomew’s changing premises, and shows how credibility and trust were formed, in part, as a result of the firm’s close attention to locality. Conscious curation of the premises, both externally and internally, allowed cartography to be presented as an intellectual rather than industrial pursuit. The second case study focuses upon fire insurance plans made by the London-based firm Charles E. Goad. Local and highly specialised knowledge was vital in both the making and selling of Goad’s product: it enabled precision and encouraged trust. Together, the case studies show that changes in the sites and conditions of cartographic production corresponded with the increasing

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organisation of space shown in maps and fire insurance plans. The chapter blurs the lines between knowledge production and consumption, and argues that a local focus, in particular, illuminates issues around the conceptualization and use of urban space in the late nineteenth and early twentieth centuries.

Further developing the dialectic relationship between the production and consumption of spatial knowledge, Chapter Six considers the dissemination and sales of Bartholomew’s products. It offers a geography of distribution networks from international, national and local perspectives. The focus is on the 1890s, the ‘peak’ decade of the period in question, when both the number and size of printing and publishing firms in Edinburgh were at their largest. Earlier chapters show Bartholomew’s local relationships with the broader trades to be important: this theme continues here. This decade also saw Bartholomew’s market expand significantly beyond London, Edinburgh and Glasgow for the first time. Overall, the chapter traces an emergent ‘middle’ in the market for maps: firms in regional cities across Britain began to place orders consistently, whereas in previous decades the market had been confined to large, regular orders sent to the three major cities mentioned, and small, irregular orders sent to Scottish towns and villages. This change is explained in the context of increasing professionalization and conscious expansion from Bartholomew, along with processes of technological and practical changes, such as the growth of efficient transport and communication networks, which made wider distribution more feasible. Moreover, an analysis of the content of the dispatched maps shows the importance of regularity and re-prints to Bartholomew’s income. Mass-production is thus shown to be a significant part of the firm’s daily labour; in this respect the chapter further complicates the processes explored in Chapter Five, which were targeted instead towards the production of an intellectual, cultural image.

The use, reading and survival of maps are vital parts of their lifecycle but rarely leave archival traces. Chapter Seven investigates these stages, however, by exploring how maps, and the geographical knowledge they presented, were conceptualised by their publishers. The terms upon which they were advertised are shown to be revealing. Likewise, responses to maps in newspaper reviews show why a ‘good’ or ‘bad’ map was seen as such. The chapter then turns to use and survival. Use is viewed both in physical and in non-material terms. The former is explored through a study of annotated maps, while the latter focuses upon the use of maps as an
imaginary device. This stage also constitutes survival. This is considered in terms of 'afterlives', through an exploration of cases in which specific maps have acquired cultural resonance in their use as a literary motif. The two sides of the chapter problematize the transmission of knowledge and show it to be a process in which readers have significant creative and imaginative agency. As a whole, the chapter emphasises the importance of understanding maps as socially constituted objects, their meaning shaped not only by cartographers but also by the ongoing interactions and interventions of owners or readers. Different copies of one mass-produced map are thus shown to be individual: the factory's capacity to endow fixity should, correspondingly, be treated with caution. The navigation made possible by maps is shown to be emotional as well as physical, and their use is therefore understood in figurative as well as practical terms.
The study of urban cartography places this work at something of a historiographical intersection. This thesis draws upon scholarship in urban history, histories and geographies of the book, and historical geographies of science to inform its analysis. The contextualization that follows identifies focal points in each discipline that are particularly instructive. Each is shown to be most useful to the overarching concerns of this thesis when it interrogates the nature of space and relationships within it. Urban history, for instance, encourages analysis of the city as an agent rather than a setting; the nature of place and space assumes fundamental importance. Likewise, although the history of the book has not typically been concerned with space per se, the geography of the book provides an important corrective to this and offers a vital framework for understanding the map in greater depth via the spaces it was produced in and moved between. Finally, historical geographies of science offer a sustained interrogation of the production, circulation and transmission of knowledge. Essentially, the maps considered in this thesis were inherently urban objects: they were made in the city, and it was often also their subject. Frameworks for understanding urbanism are thus imperative. Maps must also, however, be understood in their printed, material form, and as a communicative part of processes of knowledge transmission. The three areas of historiography examined below are thus shown to be relevant and interconnected. The work of Henri Lefebvre, Michel de Certeau and Pierre Bourdieu threads through the sections of this chapter — and through the chapters that follow — offering theoretical foundations.

The first section of this chapter sets the work in its historiographical context, and problematizes the process of producing spatial knowledge. The interrogation of the nature of knowledge, print, space and place continues into the second section, which considers the archive as a place of knowledge. This section builds on previous considerations of the central concerns of the thesis to reflect critically on how these can be explored via, primarily, the Bartholomew Archive. A crucial tenet of this thesis is understanding how knowledge comes to assume credibility: this question should not just be asked of cartography, c.1880 to c.1920, but also of the process of research.
The construction of the archive itself as a credible ‘centre of calculation’ should be seen in its late nineteenth-century context and, as such, interrogating the nature of the archive is also relevant to the central concerns of this thesis as they relate to knowledge production in that period. Following James Secord’s suggestion that knowledge should be understood ‘in transit’, the researcher’s own role in producing a certain account is also examined.

Urban cartography in its critical context

The works most similar to this thesis in terms of their focus on the social, cultural and economic history of mapmaking are those of Mary Sponberg Pedley and Susan Schulten. Sponberg Pedley examines eighteenth-century cartography in England and France, and argues that studying the economics of the map trade is a means through which to understand the commercial imperatives for the development of cartography, many of which had intellectual ramifications. She offers an international perspective on economic trends in map production and publication, and shows that these cannot be separated from the social and cultural conditions of a map’s making: the idiosyncrasies of particular elements of production are a consistent theme. Debates over the accuracy of a finished map, for instance, were often highly personal, and she profitably shows map production to be populated by individuals rather than operating as a homogeneous group.

Schulten’s focus is on how the development of American cartography, and publications such as the National Geographic Magazine, affected the development of a particular ‘geographical imagination’ in the nineteenth and early twentieth centuries. She argues that the ‘design, production, marketing and consumption’ of such resources ‘helped Americans make sense of a world that was far too complicated to comprehend on its own’. Both Schulten and Sponberg Pedley consider the map’s whole lifecycle, from the conditions of its making to its eventual use. Although each

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4 Schulten, The Geographical Imagination, 17.
author engages to an extent with historiographical debates about cartographic ‘truth’, their concern lies primarily with how maps (and, correspondingly, geographical knowledge) were made and sold, and what is revealed by a sustained analysis of these conditions.

Neither, however, takes a spatial approach to the subject, or interrogates the ways in which the very nature of the maps they examine is in fact an insightful means of examining the production of space or, moreover, the city. In this respect the following chapters diverge, and are informed by the role the city plays in historical analysis, the ways in which printed material has been understood, and frameworks for understanding the production, circulation and consumption of knowledge.

**The role of the city**

H. J. Dyos, variously described as the ‘doyen’, ‘father’ or even ‘midwife’ of urban history due to his role in encouraging its development in the 1970s, described it not as a discipline but a ‘strategy’. In so doing he hinted at its scope. Urban historians do not simply write histories set in cities, but rather attempt to understand the nature of cities and urbanism: why places functioned in certain ways, the significance of this and how the urban was conceptualized and treated. Dyos described the ‘authentic measure’ of urban history as ‘the degree to which it is concerned directly and generically with cities themselves and not with the historical events and tendencies that have been purely incidental to them’. The city should not be seen as a stage; instead, its role as an ‘independent variable’ should be examined: how did cities change things? This premise — that cities are agents, and that the nature of urbanism is thus a valuable focus for research — is central to urban history and to this thesis.

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In 1986, a lecture given by Michel Foucault (in 1967) was published in English for the first time. It announced the beginning of a new era — ‘the epoch of space’. Foucault suggested that historicism could be replaced with a focus upon space as a primary category of analysis. This pronouncement has since been taken to herald the beginning of ‘the spatial turn’ in the humanities, in which the geographical is privileged as a means of examining social and cultural processes. While this thesis undoubtedly makes use of much theory that both informed and is informed by the spatial turn, it is important to note four related points. First, some scholars argue the extent to which there was a ‘turn’ has been overstated: Paul Stock, for example, following Jo Guldi, shows that ‘the study of the past has long been saturated with spatial concepts’. Second, urban history of the 1970s and 1980s along with social theory (such as that of Henri Lefebvre, whose work is vital to this thesis) was concerned with space as an analytical category: to suggest this arrived post-1986 is misrepresentative. Third, although a geographical focus on the past is crucial in much of the material that follows in this thesis, this should not signify the death of time as an analytical category. The importance of temporality is shown throughout. Finally, not all spatially informed history is focused on the urban. This thesis shows that understanding the city (in this case, as a site of knowledge production) definitively warrants a specific ‘strategy’. The spatial turn should thus be seen to bring urban history’s concerns to a wider audience, and to broaden the potential base of theoretical literature it draws upon, rather than ‘superseding’ and rendering it indistinct to spatially informed history in general.

The following analysis explores prevalent works and theories in urban history alongside some less commonly used (such as Pierre Bourdieu’s notion of ‘the field of cultural production’) to show how the concerns of urban history have shaped the approach taken throughout this thesis.

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11 Gunn, “The spatial turn,” ll.
The nineteenth-century city grew rapidly. This was true for the Scottish cities along with cities throughout Britain and Europe. The populations of Edinburgh, Glasgow, Dundee and Aberdeen increased by an average of 64% between 1881 and 1921. The increasing size and attendant complexity of the city meant that the need to understand it became ever greater. City officials, as well as engineers, planners and more, sought to make the urban ‘legible’. In so doing, their own roles expanded: Richard Rodger describes how the ‘administrative tentacles’ of the town clerks and city engineers were ‘everywhere’ in the nineteenth century. Brian Ladd, similarly, shows that the development of modern city planning was a direct consequence of this nineteenth-century expansion. The relationship between city and state, and concurrent attempts to make sense of the urban, therefore warrant interrogation.

Patrick Joyce’s work is central in this regard. In The Rule of Freedom (2003), he argues that ‘the state is to be seen not simply as the author of the knowledge it helped create, but also as the outcome of this knowledge’. The abstract focus on the state and governance means, however, that Joyce’s work is not directly consonant with this thesis. The individuality of ordinary experiences in the city, for example, is somewhat lost in his account. Alan Hunt criticizes Joyce’s analysis of public spaces such as parks and libraries for neglecting notions of social ‘dispositions’, which might have excluded groups or individuals despite technical, physical inclusivity. This critique evokes, though does not explicitly mention, Pierre Bourdieu’s notion of ‘habitus’ — that is, inherent knowledge and behaviours, the possession (or lack) of which conditions responses to external stimuli (in this context, the likelihood of

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12 For a summary of European urban growth in this period, with relevant figures, see Paul M. Hohenberg and Lynn Hollen Lees, The Making of Urban Europe 1000-1950 (Cambridge, Mass. and London: Harvard University Press, 1985), 222 and 227: Figure 7.1 and Table 7.2.
17 Joyce, The Rule of Freedom, 12.
different social groups feeling welcome in specific places). This thesis emphasizes the importance of considering a multiplicity of responses to the city and its complexity.

Nonetheless, Joyce’s arguments relating to how and why knowledge and information about the city was acquired also provide a useful starting point — albeit one in need of interrogation — for this thesis, which shows urban cartography to be a significant means of knowledge acquisition and provision. He suggests that maps ‘as both cause and effect exerted their own agency by framing the thoughts and actions of city improvers, shaping their particular urban imaginaries’. Joyce profitably explains the important role maps played in making the city ‘legible and hence governable’, and John Walsh praises his aim of interrogating how maps were made in order to discover how the city was plotted and read. Yet Joyce treats this aim abstractly, conceptualized within a Foucauldian reading of governmentality, rather than in terms of the practical urban conditions of their making. His concern with the material traces of urban governance means that objects — maps and otherwise — are often treated as symbols of a particular urban outlook that, in simple terms, privileged precision in order to govern efficiently.

This is more relevant for some cities than others: Antoine Picon, for example, makes a strong case for cartography’s regulatory potential in nineteenth-century Paris, where the ‘more efficient control’ it facilitated was seen as a means by which to ‘prevent the return of revolutionary events’. The case of the French capital is specific, but the perceived need for increased urban legibility was widely shared. This is an important point of embarkation for the following chapters. In this thesis, however, the physical and social processes involved in cartographic production and reception are also shown to be a significant part of the city’s history in their own right. Moreover, as Richard Dennis writes, it is vital to recognize the ‘power relations, the partiality and the socially constructed nature of statistical surveys, but still analyse their content as evidence of one reality of the structure and conditions of modern

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21 Ibid., 55. See also John C. Walsh, “Book review,” *Urban History Review* 38:1 (2009), 40.
22 See Richard Dennis, *Cities in Modernity: Representations and Productions of Metropolitan Space, 1840-1930* (Cambridge: Cambridge University Press, 2008), 53, for the valuable point that maps were ‘sources of entertainment and education as well as power’.
How maps were made and what — literally — they showed should not be subsumed by analyses of the inferred power relations behind them, important though the latter undoubtedly is.

Maps are and were, however, just one of many ways of understanding the city. Other forms of information based upon quantification and aggregation occupied a privileged position in the governance of the late nineteenth and early twentieth-century city. In a contribution to The Victorian City: Images and Realities (1973) Asa Briggs argues that Victorians ‘approached the growth of their cities first and foremost in terms of numbers’ and suggests that considering Victorian attitudes towards the city in this manner is a vital means by which urban historians can understand the city within its temporal context. Joyce’s focus is similar to that of Briggs, albeit more theoretically driven, and more firmly concerned with governance. Following Bruno Latour, Joyce understands these ‘social facts’ as ‘traces that enabled the coordination of incredibly complex systems’. His analysis primarily relates to the effects of this coordination upon rule and power structures — and vice versa. In seeking, instead, to understand something of the nature of urbanism and the city itself, it is instructive to turn to the rise of the urban ‘expert’, tasked with presenting and analyzing this preponderance of facts, and the forms of knowledge they expounded.

How expertise itself was socially and culturally validated is a concern of the section, below, on histories of science and knowledge, but from an urban perspective, it can profitably be considered through inter-linked issues such as public health and city planning. As cities grew so, too, did concern for their inhabitants. The notion of ‘public health’ acquired currency in the nineteenth century. Authorities, charities and organisations sought to better manage the city in order to better provide for its population. Health officials, such as Henry Duncan Littlejohn in Edinburgh, thus...

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24 Dennis, Cities in Modernity, 79. Maps are included in Dennis’ account of ‘statistical surveys’.
acquired a prominent place in the management of the nineteenth-century city. Littlejohn’s *Report on the Sanitary Condition of Edinburgh* (1865), moreover, necessitated a reconceptualization of the city. In producing the report, he divided Edinburgh into 19 ‘sanitary districts’ and, in so doing, also produced the first comprehensive list of all of Edinburgh’s streets. This allowed for a greater understanding of health in the city, but also represents the broader production of spatial knowledge or a ‘new social geography’.\(^{30}\) In a figurative sense, a consideration of health also highlights a tendency to consider the city in organic, bodily terms. Richard Sennett, for example, argues that the emergence of understanding of blood circulation and descriptions of the city as a ‘circulatory system’ were contemporaneous.\(^{31}\) Whether cities are understood, even metaphorically, as a man-made or natural system is meaningful. Shifts between these understandings indicate broader changes relating to the nature of urban life, and contemporary views on ‘man and his place in nature’.\(^{32}\) The links between city, body, expertise and regulation are multifaceted.

The growth of city planning in this period was also significant and indicates, again, that the city was seen as an entity to be rationalised. John D. Fairfield, Brian Ladd and Christine M. Boyer, for instance, have each produced important work on late nineteenth-century planning, which, in its processes, can be understood as a means of abstracting the city in a similar way to cartographic documentation.\(^{33}\) Christine M. Boyer, in particular, highlights the disconnect this causes between planners and urban dwellers.\(^{34}\) The formation of expertise is evidently more complex than these disciplinary distinctions of ‘public health’ and ‘planning’ suggest — it can be understood, instead, as a ‘patchwork of overlapping blocks of knowledge’ — but, nonetheless, these areas provide clear insight into the relationship between science, science, city planning, and urban life.

\(^{30}\) Laxton and Rodger, *Insanitary City*, 1.
\(^{34}\) Boyer, *Dreaming the Rational City*, 282.
knowledge and the city. Planning, for example, acquired validity and credibility in specific spatial and temporal contexts. Simon Gunn describes how cities became ‘the object as well as the locus of knowledge’. The different forms that this knowledge took, how it was presented (and by whom), its transmission and its reception are major themes of the thesis. Each invites an analysis of the nature of the city, both as contemporaries viewed it, and from a present-day perspective. The former is elucidated throughout the thesis, where mapmakers and other figures provide insight into contemporary views. For the latter, an examination of the city’s explanatory potential is instructive.

The role of the city itself in analysis is a contentious issue, which necessitates a methodological return to theories on space and place. An essential question relates to what the city can do. H.J. Dyos saw cities as ‘agents of modernization’, meaning they function as ‘historical entities that act on the world around them’. Implicit in these comments is the suggestion that the city is more than a setting or a stage, which is, as established, a fundamental part of urban historical thought. Rather than being a ‘passive container’ or ‘benign receptacle’, the city is instead viewed as ‘a complex material and symbolic environment’. This endows it with the capacity to ‘shape’ institutions, individuals and events. Sven Dierig, Jens Lachmund and J. Andrew Mendelsohn, for example, argue that ‘the city has been more than simply a location where science occurred. It has been a socio-spatial setting affecting the production of knowledge in various ways’.

As a counterpoint to these views, Robert Mayhew expresses doubts about the existence of ‘an ontologically “real” space which can epistemologically “do” things in history’. From this nominalist perspective, space does not function as an explanatory category. A realist perspective on space, however, shows that the social and material facts of space, whether urban or otherwise, undoubtedly have a role to play in historical analysis. While the fact of being located is clearly not in itself a sufficient

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36 Ibid., 8.
38 Martin Daunton quoted in Ewen, What is Urban History?, 10; Richard Rodger and Roey Sweet, “The changing nature of urban history,” History in Focus 13 (2008), [https://www.history.ac.uk/ihr/Focus/City, accessed 20 July 2017].
39 Rodger and Sweet, “The changing nature of urban history”; Dennis, Cities in Modernity, 1.
40 Dierig, Lachmund and Mendelsohn, “Toward an urban history of science,” 2.
point of departure for analysis, social relations in space, as well as the physical fabric of the city, are shown in this thesis to have significant agency. The tension between these two approaches can productively be utilized in the sense that it highlights the importance of considering the meaning and significance of locations. As Shane Ewen argues, the city should be ‘accorded an agency in its own construction and synthesis; its spaces, both imagined and real, shape, structure and represent the human relationships that take place within its borders’.  

In this respect the work of Henri Lefebvre has been a formative influence on much urban history. Lefebvre’s *La Production de l’Espace* (1974, translated as *The Production of Space* in 1991) argues for space’s analytical potential and shows it to be far more than a mere container. In arguing that ‘(social) space is a (social) product’ Lefebvre emphasizes the necessity of understanding relations within spaces. The people and material realities of given places ‘produce’ space in this way; space, too, shapes them in return. Space is seen as ‘organic and fluid and alive … it flows and collides with other spaces’. The social nature of space, including its production and agency, is a central concern of this thesis. This links Lefebvre’s work with that of Pierre Bourdieu, most importantly his notion of ‘the field of cultural production’ or the idea that the ‘essential explanation’ of any work ‘lies outside each of them, in the objective relations which constitute this field’. Bourdieu argues that nothing is created in a vacuum: the cultural order (*épistème*) is not and cannot be autonomous. It is vital, therefore, to consider the influences that act upon a given work (such as cartography) and where they come from. In Bourdieu’s model the ‘field’ is largely abstract: the scientific field, the literary field, and so on. Recent critics have suggested this theory could profitably be spatialized. To do so, the city itself can be considered as a field — one also subject to wider concerns and influences — where a

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42 Ewen, *What is Urban History?*, II-12.
46 Ibid., 33.
A variety of local institutions, networks and individuals all play a role in the production of printed material.

This emphasis on the social nature of space can effectively be linked with experiences of the city. Knowledge in and of the city was formed in part through direct use. Social historians’ concern with the everyday, along with socio-geographical explorations of the same issue, informs research on the significance of ordinary actions and movements in the city. The work of Lefebvre, in particular, shows that city dwellers’ own use of space acquires a constitutive potential. Here, Michel de Certeau’s work on everyday urban experiences is also crucial. In his exploration of eminently quotidian actions, meaning is given to the apparently banal. He argues that the simple act of walking in the city is ‘resistance’, and that it provides a means of avoiding controlling structures put in place by governing bodies. Lefebvre’s work on ‘rhythmanalysis’ is also instructive here. This provides a framework for understanding urban movement through, for example, ‘linear’ and ‘cyclical’ rhythms. Linear rhythms are ‘the daily grind, the routine’, while cyclical rhythms are ‘social organization manifesting itself’. Regular journeys, or linear rhythms, created the development of ‘mental maps’ and highly individual forms of spatial knowledge. Printed maps facilitated knowledge and use of the city but they cannot be neatly separated from experiential accounts of urban space: to do so risks neglecting the significance of ordinary lives and actions.

Lefebvre points, however, to the differentiated position of the urban analyst. He shows that patterns and structures seen ‘from the window’ do not necessarily correspond with the perceptions of those experiencing them on the street. This view can profitably be considered alongside de Certeau’s observation that the lived city does not resemble the city from above, contrasting ‘totalizations’ with the ‘blindness’

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51 Patrick Joyce, for example, claims that over the course of the nineteenth century the purpose of walking in the city changed: it was no longer to reach a destination but was instead for ‘the process of travel itself’. This neglects the experience of countless daily journeys made by — amongst others — employees between home and workplace. See Joyce, Rule of Freedom, 213.
52 Lefebvre, Rhythmanalysis, 28.
of walking. The distinction between formal and informal views of the city is important. Lefebvre and de Certeau’s theories provide a valuable theoretical backbone for a key tenet of urban history and its fundamental concern with the social: that is, as Simon Gunn argues, that the ‘rational, abstract mapping of the city and its spaces always co-existed with other popular, lived, and potentially subversive, geographies’.

Following this, a focus adopted in recent urban history, and in Chapter Three of this thesis, is on moving in the city: where from, where to, and by what means. Simon Abernethy, Erika Hanna and Colin Pooley, for example, have each recently explored different forms of everyday movement and its significance. Hanna uses the example of cycling in the city to explore ideas about the ‘visibility’ of twentieth-century cyclists, from their own perspective as well as that of contemporary city planners and the historian. For the latter, she shows that an ‘archival deficit’ prevents many everyday experiences of cycling being uncovered. She also briefly mentions ‘cycling as method’, hinting that her own means of understanding the city comes, in part, from the street. This methodological reflexivity adds depth to what is a reading of the city from multiple perspectives. It shows that the urban should evidently be seen not only in terms of legibility but also occasions of illegibility. Further to this, Lefebvre’s ‘Seen from the Window’ argues that it is critical to acknowledge the analyst’s separation from ‘the multiplicity of noises, murmurs, rhythms’ of the city. Ascribing overt significance to these movements through a psychogeographical or phenomenological approach risks anachronism: evidence for the meaning of everyday practices, as Hanna and others show, is elusive, and even de Certeau’s influential work has been criticized for a lack of any ‘historical specificities’. Furthermore, exercising a capacity to read the city, whether in the past or present, can be seen as

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57 Ibid., 273.
58 Lefebvre, Rythmanalysis, 28.
59 Crang, “Relics, places and unwritten geographies,” 149.
being ‘complicit in the strategies of power’.\textsuperscript{60} Making knowledge in and of the city should thus always be treated critically.

Exploring the tension between specific urban experiences, and the nature of urbanism more broadly, necessitates the careful use of space and time as analytical categories. The spatial turn, despite its justification of shifts away from historicism, should not be taken to make time meaningless. Conditions of the late nineteenth century did change the nature of urbanism: this section has shown that the city was increasingly documented, governed, rationalized and ‘made legible’ in this period. The experience of individual cities, however, is no less valid, and urban centres were far from homogeneous. It is vital to pay attention to both space and time — that is, particular cities within their temporal context — which in turn allows for shared experiences to be identified and investigated. This includes ways in which the very idea of space can be seen to be ‘historically contingent and constructed by specific circumstances and perspectives’.\textsuperscript{61} Cartography is shown in this thesis to be one such means of construction — and it cannot be separated from the urban conditions of its making.

**Histories and geographies of print**

Scholarship on the city, especially in terms of how the urban is conceptualised and represented, is critical to this research. Understanding the map, however, also necessitates viewing it within its context as a printed object. Studies in the geography of the book are instructive in this regard. The following section examines significant trends in the historiography of printed objects, and argues that in the case of map production, these approaches, while valuable, should be taken alongside those used by urban historians as well as historians and geographers of science in order to offer a rich account of this particular form of knowledge transmission. It begins with an account of a formative historiographical debate, showing its value to be in the tension it highlights between people-focused and production-focused approaches to understanding print. This highlights the importance of considering physical and social production as iterative, rather than separate, processes and, further, suggests

\textsuperscript{60} Ibid.
\textsuperscript{61} Stock, "History and the uses of space," 5-6.
that a geographical approach is a productive framework for doing so, especially in the case of the map.

Elizabeth Eisenstein’s work on ‘print culture’, *The Printing Press as an Agent of Change* (1979) states that technological advances in printing during the fifteenth century should be considered as a revolution. New technology, she argues, allowed standardized forms of texts to be produced and distributed, and thus facilitated the spread of knowledge on a previously impossible scale, with attendant social and political ramifications.62 She presents her position on standardisation as pragmatic: printed material, while not irrefutably uniform, became ‘sufficiently’ so, which allowed ‘scholars in different regions to correspond with each other about the same ideas’.63 This interpretation has since been challenged from a number of angles.64 Most notably, Adrian Johns’ monograph *The Nature of the Book: Print and Knowledge in the Making* (1998) contends that Eisenstein’s work forces printing to ‘stand outside history’.65 Her conception of culture, Johns argues, is similarly and problematically ‘placeless and timeless’.66 Instead, Johns shows how the social elements of a book’s production are key to its nature. Multiple actors have an influence on the book’s final form. The results of these complicated and contested forms of individual agency, rather than the existence of the printing press, are shown to shape a book’s meaning. In this respect he shows Eisenstein’s work to be problematic, a view that has generally acquired currency amongst historians of the book (a recent anthology, following Johns, describes *The Printing Press as an Agent of Change* as ‘over-determinist and simplistic’).67 Eisenstein, however, rallied against Johns’ arguments, stating that in his

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64 For a useful summary of the reception of Eisenstein’s work (which is atypically sensitive to period and gender), see Sabrina Alcorn Baron, Eric N. Lindqvist and Eleanor F. Shevlin, “Introduction,” in *Agent of Change: Print Culture Studies After Elizabeth L. Eisenstein*, ed. Sabrina Alcorn Baron, Eric N. Lindqvist and Eleanor F. Shevlin (Amherst and Boston: University of Massachusetts Press, 2007), 1-12.
own work he ‘brushes aside all consideration of how the use of printing affected the duplication of texts and images’. 68

A central issue in the reception of Eisenstein’s work, then, is based upon the fact that she does not pay sufficient attention to the role of individuals, their networks and relationships, and that she concentrated instead upon the technology that (she argues) facilitated the spread of knowledge amongst them. Reflecting on the reception of her work, she compares Johns’ view of technology to the idea that ‘guns don’t shoot people, people do’. 69 The apparently binary relationship she constructs between technology and people in this example is unnecessarily reductive. 70 She also views her disagreement with Johns as, in part, geographical: she casts her study as ‘cosmopolitan in scope’ and repeatedly describes Johns’ focus on spaces of production in London as ‘restricted’ and ‘insular’. 71 Johns’ interest in ‘real people’, however, echoes concerns within the discipline more generally, and the tension between the two approaches should be understood in social and cultural as well as geographical terms. The socially constituted nature of printed objects is an overarching theme of this thesis. Johns was not, however, the first to acknowledge the importance of books’ existence within the social world. D.F. McKenzie’s work is particularly instructive here. Countering the overwhelmingly material focus of bibliographical studies in the 1970s and 1980s, he argues for the importance of considering the ‘sociology of the text’ (1985). By this he means that the book could not be removed from its social context: ‘The book, in all its forms, enters history only as an evidence of human behavior, and it remains active only in the service of human need’. 72 Jerome McGann advances this line of thought in his theories on ‘the socialization of texts’ (1991). He

argues that the meaning of texts is formed, in part, as they move from the author to
the reader. In his example, this happens via editorial processes, which he portrays as
analogous to the function of an art gallery: 'both gallery and edition force us to
engage with artistic work under a special kind of horizon'.73

Considering printed materials as socially constituted objects represents a shift
away from a viewpoint in which an author shapes the entire meaning of a given book
(or, concurrently, in which cartographers are solely responsible for a particular map).
Even Eisenstein implicitly acknowledges this in her emphasis on the role of
technology — though, of course, Johns and others would argue it is the printers
rather than the machines that are important (not to mention engravers, compositors,
binders and more, as Chapter Three and Chapter Four of this thesis show). But to
reduce this debate to 'producers versus machines' is an oversimplification: a printed
object’s lifecycle is longer and more complex than this. It is important to also consider
commercial interests such as those of publishers, shippers and booksellers. The role of
the reader, too, is imperative. This should not quite announce the author’s 'death', as
Roland Barthes would have it, but it certainly facilitates significant doubt regarding
the primacy of authorial authority in the creation of meaning.74 First, the reader does
not have a direct relationship with the author, who produces a text, viewed by Roger
Chartier as 'abstract, idealized [and] … detached from any materiality'.75 Instead, they
read a book — one that has been produced by multiple individuals. Moreover,
readers’ responses are highly individual. Reading can, in itself, be viewed as a ‘creative
activity’, which has the potential to remake meaning.76 This theme and its relevant
historiography are developed further in Chapter Seven, which examines the use and
reading of maps. In this way, amongst others, frameworks from the history of the
book are also applicable to the study of cartographic production, with some
modification, as discussed below.

The multiple networks and relationships involved in book production, then,
all warrant consideration. Robert Darnton’s ‘communications circuit’ (1982) is the

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73 Jerome McGann, “The socialization of texts,” in The Book History Reader, ed. David Finkelstein and
74 Roland Barthes, “The death of the author,” in The Book History Reader, ed. David Finkelstein and
76 Michel de Certeau, “Reading as poaching,” in The History of Reading, ed. Shafquat Towheed, Rosalind
Crone and Katie Halsey (London and New York: Routledge, 2011), 132. This theoretical viewpoint is
succinctly discussed and utilised in Peter Fritzsche, Reading Berlin 1900 (Cambridge, Mass. and
seminal framework through which to do so [Figure 2.1]. The communications circuit follows the lifecycle of a book via the people whose hands it passes through. It begins with a two-way relationship between the author and publisher, and moves through printers, shippers, booksellers and binders before arriving with the reader, who ‘completes the circuit because he influences the author both before and after the act of composition’. Darnton’s intention is to prevent book historians from simply focusing on one stage of the cycle: he states that ‘the parts do not take on their full significance unless they are related to the whole’. Darnton’s work has since been modified by Thomas Adams and Nicholas Barker (1993), whose alternative model focuses on ‘events’ in a printed object’s lifecycle rather than people, and expands the definition of book to ‘bibliographical documents’, which allows for consideration of ephemeral printed matter [Figure 2.2]. Their cycle also includes ‘survival’, which Chapter Seven of this thesis shows to be a crucial stage in the construction of meaning. Each of these models is considered in more depth in Chapter Four, in the specific context of how they can be made applicable to a study of cartographic production.

While any model of this nature could be said to over-simplify, the communications circuit, viewed as a product of its time (when Darnton described ‘interdisciplinarity run riot’ in the field) provides a valuable starting point and proffers necessary encouragement to view the production of printed material holistically. It does, however, require modification in order to be applicable to the study of the map — this is considered below, in relation to historiography on the specifics of cartographic production (social and physical), and an alternative model is presented in Chapter Four. This model is also shown to be one that can profitably be viewed from a geographical perspective. The importance of space and place is implicit in both models, but can productively be made explicit. To do so chimes with concerns central to the geography of the book.

78 Ibid.
80 See Chapter Four, 99-102.
81 Darnton, “What is the history of books?”, 10.
82 See Chapter Four, Figure 4.1, 102.
Figure 2.1: The communications circuit (1982).


Figure 2.2: Thomas Adams and Nicholas Barker’s revised model (1993).

Although the history of books has to occur somewhere, as a discipline it has not consistently been preoccupied with the nature of space and place, urban or otherwise. As such, it risks neglecting a critical part of a printed object’s existence. Here, a geographical approach serves as an important corrective and provides a valuable framework for considering map production. In *The Coming of the Book* (1958), Lucien Febvre and Henri-Jean Martin include a chapter on the ‘geography of the book’, which examined the journeys and locations of printers, publishers and their products.\(^{83}\)

Certain works in book history since then have shown, in various ways, that space and place matter. Adrian Johns and James Raven provide notable examples of this. Johns’ work focuses ‘not just on London, but on particular streets, buildings, floors and rooms’.\(^{84}\) Doing so, he argues, shows that print’s capacity to transcend geographical boundaries was formed ‘by the hard, continuous work of real people in real places’.\(^{85}\) Raven’s study of eighteenth-century London shows that the geographical concentration of the book trade in particular areas had tangible economic and social benefits.\(^{86}\) In terms of post-production, James Secord shows that geographically-differentiated audiences responded differently to *Vestiges of the Natural History of Creation* (published anonymously in 1844).\(^{87}\) Miles Ogborn and Charles W.J. Withers offer a clear agenda for future work of this nature in their edited volume *Geographies of the Book* (2010). In its introduction, Ogborn and Withers suggest that a particularly productive mode of analyzing printed materials is to consider ‘both their geographical distribution (how far were they flung, and who and where were they flung to?) and the local conditions of their production, movement and consumption’.\(^{88}\)

Aileen Fyfe’s work on the Edinburgh-based publishing house W. & R. Chambers — a chapter in Ogborn and Withers’ edited volume and a monograph, *Steam-Powered Knowledge* (2012) — does just that. Fyfe shows how Chambers’ location in Edinburgh both benefited and limited their business practice (respectively: they had access to the city’s networks of printers, publishers and literary figures, but faced issues with transporting their goods further afield prior to the


\(^{84}\) Johns, *The Nature of the Book*, 42.

\(^{85}\) Ibid.


development of steam-powered transport). She explores ways in which this affected the dissemination of their educational journal, thus creating particular ‘landscapes of knowledge’. Fyfe’s focus, however, lies with movement more than understanding location — or the particularity of place. The study would be enriched by a deeper consideration of the nature of the city. This thesis adopts Ogborn and Withers’ model of taking a geographical approach to ‘production, movement and consumption’ alongside concerns, elucidated in the section above, which aim to provide a ‘thick’ understanding of Edinburgh and the nature of late nineteenth and early twentieth-century urbanism as it relates to map production. Essentially, space should be seen as more than a setting, and a location as more than a problem to overcome.

Maps can profitably be considered through many of the frameworks offered by histories and geographies of the book. They are, however, distinct. Map production should not be thought of as a simple subsidiary of the printing and publishing industries: this is both a theoretical and practical argument that runs throughout the thesis. Models such as Darnton’s ‘communications circuit’, while serving as an important starting point, require modification if they are to be productively applicable to the study of maps. Such modifications are offered in a new framework in Chapter Four. Nonetheless, there are two significant ways in which histories and geographies of the book are useful to historians of cartography. First, an understanding of the map as a printed object benefits from insights into the importance of considering materiality and, in particular, production history, as discussed above. Second, geographical frameworks encourage a critical consideration of the means by which the knowledge presented in maps was formed and transmitted. The remainder of this section highlights significant ways in which historians of cartography have conceptualized the map. It suggests that the complexities of urban mapmaking, in social, intellectual and physical terms, necessitates closer examination of knowledge production, transmission and

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90 ‘Thick description’ is an anthropological term: see Clifford Geertz, “Thick description: toward an interpretive theory of culture,” in The Modern Historiography Reader, ed. Adam Budd (London and New York: Routledge, 2009), 431-442; Sven Dierig, Jens Lachmund and J. Andrew Mendelsohn refer to ‘thick descriptions’ of urban life as ones which show ‘a city is constituted by more than its people, buildings and institutions; a rich multiplicity of practices and meanings are also integral’: see Dierig, Lachmund and Mendelsohn, “Toward an urban history of science,” 4.
consumption, and thus benefits additionally from the consideration of methodologies used in histories and geographies of science.

A central argument of many map historians — most prominently, J. B. Harley in the 1980s — is that maps are not objective representations of space.\(^91\) This is partly because of their very nature as a visual representation, not replication, of space. This view operates within a broader poststructuralist tradition of disecting and distrusting notions of truth and objectivity. Harley, for example, describes the ‘inherent textuality’ in maps, which therefore allows them to be analysed in the manner of a narrative.\(^92\) Just as narrative is fundamentally selective so, too, the cartographer makes conscious choices. Mark Monmonier argues that the map ‘works as a communication device only when the mapmaker consciously avoids graphic clutter’.\(^93\) What is left out, Harley would argue, is often as important as what is included: ‘there is no such thing as an empty space on a map’.\(^94\) It is not, however, simply the physical constraints of translating the physical environment into map form that remove, in this theoretical viewpoint, the possibility of objectivity. They are also politiscised objects, produced with interests in mind. This is most commonly explored in the context of imperial agendas: John Hegglund, for example, argues that mapmakers and their patrons, ‘by submitting these territories to the common language of latitude and longitude, forced the heterogeneity and chaos of far-flung colonial places into a seamless graticule of abstract, instrumentalized space’.\(^95\)

These suspicions can be over-emphasised, to the point of a ‘conspiratorial’ or even ‘negative and doom-laden’ view of a map’s power to conceal and deceive.\(^96\) Matthew Edney characterises these approaches as ‘socio-cultural map history’ and

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\(^96\) Dodge and Perkins, “Reflecting on J. B. Harley’s influence,” 38.
suggests that ‘there is more to maps and mapping than untoward ideology’. In so doing, he follows Martin Brückner, who suggests that histories of cartography must go beyond showing maps to be an ‘ideologically driven medium’: Brückner declares himself to be suffering ‘from a case of “maps-are-bad” fatigue’. The approaches Edney and Brückner criticise also place an excessive focus on the early stages of map design and production, denying the agency of readers. Moreover, while the theories of Harley and others are a productive way to produce critical histories of, for instance, imperialism, urban cartography necessitates a slightly different approach. The acknowledgement that maps are not all made in the same way, nor for the same reason, is critical here.

This thesis takes a more ‘processual’ view of cartography. This involves an acknowledgement of the multiple strands of historical significance present in the making of any map, and encourages a spatially and temporally aware approach. In so doing, it is informed by disciplines outside of the history of cartography that allow it to study ‘the many processes by which maps have been produced, circulated and consumed’. Furthermore, understanding distinct genres of map in their own terms is shown to be productive. Cities, for instance, can be seen as being constructed, in part, by their representations. Understanding how these representations were made is thus crucial. Peter Fritzsche, for example, shows how words and representations ‘built’ Berlin: ‘the city as place and the city as text defined each other in mutually constitutive ways’. His focus lies primarily with newspapers, but the relationship between map and city can be examined in the same terms. Urban cartography made aspects of the city ‘visible’ in a clear form: ‘a geologic site’ or a ‘network of streets’. This undoubtedly played a role in the development and implementation of urban infrastructure and policy. To suggest so does not, however, necessarily cast the map as a symbol of insidious power structures, but rather as an integral factor in the development of urbanism.

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100 Edney, “Academic cartography, internal map history, and the critical study of mapping processes,” especially 94-99.
101 Ibid.
102 Fritzsche, *Reading Berlin*, 1.
The relationship between the production and consumption of print — whether in the form of a map or a book — is dynamic. The transmission and communication of knowledge are central at every stage. Understanding knowledge in print as a communicative process necessitates a consideration of how this knowledge is, itself, produced, validated and received. This section has shown that understanding the map as a printed object can deepen accounts of its production and consumption. The following section offers frameworks for understanding the epistemological credibility of its content.

**Historical geographies of science and knowledge**

Maps present a form of spatial knowledge in print. It is vital, then, to consider how this knowledge is produced, validated and communicated. This is an essential concern of historians of science; further to this, the relationships between scientific knowledge, space and place, which are central to this thesis, can profitably be investigated through a historical-geographical approach. How knowledge was both generated and consumed — and how it came to assume validity — can be considered through historiography which views science as a form of cultural production. Historians of science have worked to dismantle a ‘false science/society dualism’, exploring how science operates within society — and the attendant ramifications of an acknowledgement of the socially determined aspects of scientific knowledge.104

One means of doing so is to consider the various forms claims of scientific authority have taken. Experiments, for example, have been seen as an established and trusted means of acquiring knowledge and it is important to consider how this came to be the case.105 Likewise, the presentation of statistics and notions of ‘precision’, rather than possessing objective truth, have been seen to ‘render an accounting of belief.’

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Historians of science have considered how these methodologies came to gain credibility as historical values and beliefs rather than simply ‘assuming validity’.\footnote{Theodore M. Porter, “Making things quantitative,” Science in Context 7:3 (1994), 389-407; Simon Schaffer, “Accurate measurement is an English science,” in The Values of Precision, ed. M. Norton Wise (Princeton: Princeton University Press, 1995), 136.} For any of these methodologies to have acquired authority, they needed strategies for validation, which, as well as stemming from genuine reasons for ‘rational belief’, take the form of ‘culturally accepted practices’.\footnote{Franklin, “Epistemology of experiment,” 459.} Essentially, historians of science pay attention to elements of social construction behind notions of ‘expertise’ and established knowledge.\footnote{Harry Collins and Robert Evans, Rethinking Expertise (Chicago and London: University of Chicago Press, 2007); Thomas Nickles, “Justification and experiment,” in The Uses of Experiment, ed. David Gooding, Trevor Pinch and Simon Schaffer (Cambridge: Cambridge University Press, 1989), 327.} These notions are interrogated further in what follows.

It is important to note that, as a medium for knowledge presentation and communication, print occupied a privileged place in the nineteenth century. David Livingstone and Charles Withers describe how knowledge gathered in exploration ‘could count for little unless one’s results made a further voyage — into print’.\footnote{Charles W.J. Withers and David N. Livingstone, “Thinking geographically about nineteenth-century science,” in Geographies of Nineteenth-Century Science, ed. David N. Livingstone and Charles W.J. Withers (Chicago and London: University of Chicago Press, 2011), 11.} Jonathan Topham’s work in the same volume investigates further how various aspects of a printed object’s lifecycle shaped flows of knowledge between Britain and France. His account shows how booksellers, reviewers and translators, amongst others, played a formative role in the transmission and reception of knowledge.\footnote{Jonathan R. Topham, “Science, print, and crossing borders: importing French science books into Britain, 1789-1815,” in Geographies of Nineteenth-Century Science, ed. David N. Livingstone and Charles W.J. Withers (Chicago and London: University of Chicago Press, 2011), 311-344.} Timothy Lenoir sounds a cautionary note, however, suggesting that scientific thought could be altered or ‘hampered’ by a translation into print.\footnote{Timothy Lenoir, “Inscription practices and materialities of communication,” in Inscribing Science, ed. Timothy Lenoir and Hans Ulrich Gombrecht (Stanford: Stanford University Press, 1998), II.} This is an important acknowledgement of the limits of print as a communicative device, and the selective nature of writing. Furthermore, the role of the publisher — as well as other agents discussed in the previous section — takes on a formative role in the context of decisions about which work to publish and how to present it.\footnote{Jonathan R. Topham, “Scientific publishing and the reading of science in nineteenth-century Britain: a historiographical survey and guide to sources,” Studies in History and Philosophy of Science 31:4 (2000), 581-586.} The reader, too, has the capacity to interpret knowledge in individual ways. Fixity of meaning cannot be established simply through printing and mass-production. Evidently, understanding the nature of
printed material itself is necessary to fully explore the knowledge it expounded. The fact that print became a central medium for transmitting knowledge means that histories and geographies of the book are crucial to the study of science and knowledge — and vice versa.

Historical geographies of science show that how knowledge is made relates fundamentally to where it is made. A prominent line of thought suggests that for knowledge to acquire broad credibility and validity the conditions of its making should have an element of ‘universality’ or ‘placelessness’, even becoming ‘disembodied’. In this view, a suitable place for the creation of knowledge is somewhere that indicates ‘claims from there are true anywhere’. This is what Thomas Gieryn terms a ‘truth spot’. Laboratories, for example, are a common truth spot or, in Bruno Latour’s words, ‘centre of calculation’, because their supposed universality ostensibly removes the potential for local conditions to affect the production of knowledge. Knowledge formed in these supposedly ‘placeless places’ can thus potentially be standardized and replicated. Gieryn shows the value of truth spots in contemporaneously endowing epistemological credibility, but his analysis makes it clear that truth spots are constructions. He exposes the effort inherent in removing traces of the local. Furthermore, David Livingstone shows that even standardization is not truly a universal value but rather that it represents ‘the triumph of one set of local practices over another’. How these local practices were developed, contested and accepted is a concern, in particular, of Chapter Five.

Knowledge production, however, is viewed in this thesis not as ‘placeless’ but as fundamentally situated. The local conditions in which knowledge was produced are crucial to understanding its nature, along with its subsequent circulation and reception. This does not render knowledge inauthentic but is, rather, inescapable — and formative. A focus on the construction of supposedly ‘universal’ knowledge can neglect the social, local connections involved in its making. Places associated with

117 Shapin, “Placing the view from nowhere,” 5-12.
knowledge production acquire status in part through cultural meaning, and it is vital to interrogate the mechanisms operating behind this process. This brings local conditions sharply into question. In other words, acknowledgement of the geography of science renders its knowledge fallible: the element of the local removes the possibility of it being a ‘universal undertaking’.

But fallibility can be embraced; authentic scientific ideas do not have to be ‘disembodied’ to be worthy of consideration. Cartographic production, for example, is shown in this thesis to be firmly embedded in the local context, even to the level of individual streets and buildings, while reaching national and international readerships. A focus on the local element of knowledge production is crucial to understanding how it comes to be construed as valid and thus able to move between locations. The possibility of interaction between different geographical scales of analysis, hinted at here, is explored below in the specific context of circulation and transmission.

On a local scale, the nature of the city as a place of knowledge should be interrogated; this itself functions on a number of micro scales such as those of streets, buildings and even rooms. Peter Galison and Caroline Jones show the value of an approach which considers the places science was made — and, furthermore, ‘discursive sites’ where it was transmitted and ‘made meaningful to a wider culture’. These places might include Latourian laboratories, but the classroom, lecture theatre, library, museum and other sites of knowledge are equally valid focal points. So, too, are factories and other industrial premises, which are considered here as sites of ‘invention and intervention’ and are thus interrogated for what they reveal about the formation of credible knowledge.

This is the focus of Chapter Five. Architecture and aesthetics are shown to be revealing. Sophie Forgan makes a powerful case for considering ‘buildings as artefacts’, and shows how the physicality of buildings conveys meaning — which helps them to function as agents of trust. Forgan and Graeme Gooday’s examination of the location and layout of the working environments of the Victorian biologist T. H. Huxley, for instance, offers insights into

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119 Ibid., 1.
120 Shapin, “Placing the view from nowhere,” 5.
his networks, power, the funding of science, reputation formation, and knowledge formation and transmission (the latter is examined, in this example, through a close analysis of teaching spaces).124

The validation of knowledge, then, relies on a range of cultural values and the acquisition of credibility as well as being ‘objectively’ true or correct. The notion of objectivity, in fact, should be taken within a temporal context: its particular value can be seen as a cultural construct of the nineteenth century.125 Steven Shapin’s work shows the importance of trust in allowing knowledge to circulate.126 By the nineteenth century such trust was based upon a belief in certain values, such as objectivity and precision. Simon Schaffer, moreover, sets these values firmly within the context of their time: he shows that, for the Victorians, accurate measurement was fundamental to ‘commercial, military and thus imperial triumph’.127 A description of precision was not necessarily a ‘fact’ but instead a value judgement based upon ‘cultures of communal trust’.128 This is, of course, linked to the earlier discussion of the value of aggregation in the Victorian city. Theodore Porter, in describing a ‘politics of precision’, shows that these terms of accuracy are inherently revealing.129 He suggests that the privileging of explicitly ‘precise’ ways of working in the nineteenth century was not ‘a cognitive matter’ — it was a strategy and a means of ‘organizing a heterogeneous work force’.130 Precision, in other words, requires cultural validation as an episteme, or way of knowing, and it is important to analyse how and why certain things come to be described in such terms.131

Here, it is also instructive to differentiate between authority and expertise. Graeme Gooday cautions against the use of the word ‘expertise’ in an ahistorical sense. He shows that in the nineteenth century the term came to be associated with

128 Ibid., 164.
130 Ibid., 191.
the ‘expert witness’ in court, where the individual was not seen as ‘an impartial authority’ but as someone who was ‘prepared to lie to serve the interest of a paying patron’. A suggestion that mapmakers, for example, projected an image of ‘expertise’ should, therefore, be considered in its modern sense, which, as Harry Collins and Robert Evans argue, has multiple strands. Their ‘contributory’ experts, for example, are those who possess ‘technical know-how’, while ‘interactional’ experts engage with ideas and develop knowledge in a discursive, productive sense. For the purposes of this thesis it is useful to think of expertise in terms of social credibility. How did individuals or groups acquire the capacity to offer ‘expert’ knowledge or judgements, and to what extent was this socially constituted? Experts speak with authority: but while authority is vested in the term, expertise is vested by virtue of longevity and can be relational. Authority is a reflection of a social position and, though expertise also has an irrevocably social dimension, it also has strong epistemological connotations in that it represents a capacity to understand. Essentially, expertise is warranted, while authority is not necessarily: the important thing to consider, though, is where this warrant comes from and thus how the terms may overlap.

The factors discussed so far each play a role in the transmission of knowledge: this is illustrated in greater detail throughout the thesis. The role of circulation or ‘knowledge in transit’ is the focus of a plenary lecture delivered by James Secord in 2004. Secord calls for an overlap in scales of analysis. He acknowledges that to do so while maintaining a detailed analysis of the local is challenging, but suggests making the ‘unit of analysis’ more flexible than the study of a particular place or period. Rather, the significance of knowledge is in the fluidity of its movement and in understanding how and why it acquires the capacity to transcend borders and boundaries. Charles Withers emphasises the importance of considering overlapping scales of analysis in offering a framework based around the ‘site, region and circulation’ of knowledge. These views help to elucidate a further critical point: that

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133 Collins and Evans, *Rethinking Expertise*, 14-44.
134 Secord, “Knowledge in transit,” 668.
while place is crucial in understanding how knowledge is made, it is of equal importance in understanding its consumption.\textsuperscript{136}

The layout of a building or room not only plays a role in how knowledge is made, but also how — and indeed whether — it is ‘absorbed’. The material conditions of spaces have a traceable impact on knowledge transmission, which can have deep epistemological implications. Diarmid Finnegan shows that physical attributes such as the acoustics of a given space had ramifications on audiences’ capacity to effectively listen to (or even hear) lectures intended to transmit knowledge. Moreover, transmission is viewed as an embodied experience: behavioural codes in often cramped spaces and levels of physical comfort also had an effect on how the subject expounded was received.\textsuperscript{137} Similar arguments can be made about ecclesiastical architecture, where Victorian debates over minutiae such as the provision of cushions were, to an extent, about how the content of sermons might take on more or less importance for church-goers depending on their level of comfort while listening.\textsuperscript{138} Essentially, architecture, by playing a mediatory role in diffusion — again, knowledge had to be acquired somewhere — can have a tangible effect on what comes to be known or believed. Finnegan’s study shows, moreover, that while this local, even site-specific, context was distinctive and significant in its own right, knowledge always transcends the local scale to ‘connected sites and spaces’ as well as providing insight into broader, cultural communicative tactics and the ‘less visible geographies of speech’.\textsuperscript{139} A local scale of analysis, therefore, while revealing, should always be open to interactions with other scales.

In offering a focus for historians of science, James Secord suggests that ‘sustained attention to knowledge as communication’ is a means to prevent disciplinary fragmentation: it can ‘draw together a variety of approaches, while encompassing an understanding of the specialized, esoteric aspects of science that must remain central to what we do’.\textsuperscript{140} The capacity of communicative themes to encompass multiple strands of research could be viewed more broadly: it is applicable

\begin{thebibliography}{99}
\bibitem{136} Livingstone, \textit{Putting Science in its Place}, ll.
\bibitem{138} Arguments were made in both directions: some believed comfort induced lethargy, while others suggested discomfort was too distracting. William Whyte, "Feeling faithful: the Victorian church and the architecture of affect," unpublished seminar paper, University of Edinburgh, 8 March 2016.
\bibitem{139} Finnegan, "Placing science in an age of oratory," 172.
\bibitem{140} Secord, "Knowledge in transit," 672.
\end{thebibliography}
in areas beyond histories of science. Arguments relating to communication run consistently throughout this thesis, and thread through the three main historiographical areas discussed here, which show it to be a crucial part of understanding the role of cities in knowledge production and transmission, the forms knowledge took, and how it came to be construed as valid.

**The archive as a place of knowledge**

The section above makes it clear that knowledge does not appear fully formed. Nor is its meaning fixed. Place and space, amongst other factors, play a role in shaping the production, transmission and interpretation of knowledge. The archive, too, should be considered in these terms. Historians have a responsibility to consider the nature of the archive and be reflexive about our own role in shaping the meaning and possible interpretations of its contents. Simon Gunn and Lucy Faire comment that ‘it is rare to find any explicit discussion of what choices might be made in the archive.’

This is perhaps true of traditional historical monographs but elsewhere the archive itself has been the subject of significant interrogation. Recent ‘creative histories’, too, are open about the role of contingency in historical research — a theme returned to below. Matt Houlbrook, for example, tracing the fragmentary life story of a conman, describes how initial frustrations in the archive came to play a role in shaping his conceptualization of his topic and, indeed, of historical ‘truth’:

> Historians and biographers have often likened themselves to detectives ... Maybe I could tell that story here, but despite all the years I have pursued Lucas through libraries and archives, I am less sure in my abilities ... Rather than pursue certainty, I am interested in what happens when we embrace ‘an irreducible dimension of opacity’ and not-knowing about the past. Lucas demands a different kind of practice — a way of writing history that is readier to admit its limits, more open-ended in its conclusions, deliberately less confident.\footnote{Matt Houlbrook, *Prince of Tricksters: The Incredible True Story of Netley Lucas, Gentleman Crook* (Chicago and London: University of Chicago Press, 2016), 15-16.}


The availability — or lack thereof — of sources evidently shapes the histories it is possible to write. The necessity of piecing together, as in the example above, is in itself telling, and can profitably be discussed explicitly to make the process of ‘doing history’ more open and reflexive. It should also be noted, though, that the archive, like the materials it contains, is a product of its time. Historians are well placed to consider it as such, though Patrick Joyce comments that ‘there has been limited reflection on the truth that the archive which produces history is also the product of history’. The development of public archives and libraries in the nineteenth century can be understood in similar terms to the increasing acquisition of ‘social facts’ and statistics (that is, in terms of the epistemic value accorded to quantification and knowledge aggregation). The archive, then, is not a neutral repository of information.

How and why the archive acquires the capacity to endow credibility can usefully be understood through both the framework of a Latourian ‘centre of calculation’, and Bourdieu’s notion of legitimizing discourses. Discussing the cultural value ascribed to a work of art or literature, Bourdieu writes: ‘belief in the value of the work ... is part of the full reality of the work of art’. Cultural belief, or discourse, attributes the value of ‘art’. This belief is formed socially rather than representing an objective list of attributes that allow something to be considered as art or literature. Likewise, belief in the archive legitimizes, in part, the research that stems from it. Latour considers the archive, along with universities, laboratoraries and museums, to be a place which validates knowledge by virtue of its status as a centre of calculation — a venue for the accumulation, production and dissemination of different types of knowledge. While Gieryn’s ‘truth spots’, discussed above, rely on notions of ‘placelessness’, a centre of calculation is fundamentally situated. It is a node in a geographical network, serving an accumulative function for knowledge acquired in multiple places. Nonetheless, as Charles Withers argues, the archive should not be

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148 Ibid.
seen as a ‘straightforward expression of power’. Instead, it is a place where knowledge both arrives and leaves. The researcher’s role in ‘transmitting’ this knowledge onwards should also be interrogated.

Examining the nature of the archive, then, encourages the historian to see it as a product of its time as well as question its status as a place that has acquired the capacity to bestow credibility. This reflexivity has attendant ramifications. In practical terms, it instigates a consideration of the way in which archival practices and, especially, space play a role in the process of knowledge acquisition. The use of the catalogue is an example of these two issues coming together. By keeping archival materials separate to the reading room, archivists limit the possibility of physical browsing and thus the catalogue itself becomes paramount to the process of research.

The catalogue has a formative function in archival research but so, too, does the presence of uncatalogued material. The letterbooks and library documents of Charles E. Goad, for example, which are used in Chapter Five, are not listed in the British Library’s manuscript catalogue. That I was able to access these while conducting research for this thesis was a result of both contingency and privilege. During a visiting fellowship as a J.B. Harley Fellow in the History of Cartography, I was introduced to a former curator of the Map Room at the British Library (in their role as a trustee of the funding body in question) who told me about shelves of Goad documents in the staff office. Thanks to this introduction I was offered the chance to browse these documents and select those I wished to view; this bypassed the normal structures of the archive. It is important to acknowledge the epistemic credibility bestowed by a funding body in this regard, which directly resulted in me making use of documents I would not otherwise have known about or been able to access. This raises the question of the ‘completeness’ of archival catalogues and the inconsistent agency of researchers and funders.

Elsewhere, I made use of material that was publicly available, but could only be found by accident — it was not listed in any catalogue. Bartholomew frequently noted down details in the back pages of their record books that were unrelated to the book’s denoted function, or used books for a number of different purposes, only one of which has since been recorded in the catalogue. In a volume listed as ‘Record of printing from stones’, for instance, I found a penciled list of ink suppliers, with

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specific products, prices, and records of quantities purchased.\textsuperscript{150} This information went on to form part of an analysis of local supply chains in Chapter Four. Likewise, a map owned by the Scottish artist John Duncan Fergusson discussed in Chapter Seven was part of an exhibition I visited in Perth in 2014 on a trip unrelated to the thesis; I noted with interest that the map was made by Bartholomew, but did not realise its significance until I began researching that chapter over a year later. By that point, the map had been put into storage (due to funding constraints and local council budget cuts — a separate and no less important issue) and was no longer on public display. I was eventually able to view it again, but would not have known about it at all were it not for the chance visit to the gallery.

These examples are not intended to cast doubts over the proficiency of cataloguing in these particular archives, which are large, complex and often only funded in part. The Bartholomew Archive began with gradual deposits from 1983 onwards and, from 2008, was funded for six years through the John R. Murray Charitable Trust. Between 2008 and 2014, seven employees documented and conserved 110 metres of business records, catalogued 26,000 items in a searchable printing record and audited collections of 3000 copper plates.\textsuperscript{151} Cataloguing was substantially complete when the project funding ended, but the extent of its detail is evidently contingent on external circumstances to a degree. Perth and Kinross local council runs the Fergusson Gallery archive: there, budget restraints had, by May 2017, resulted in the suspension of most archival, enquiry and photographic services. Instead, these reflexive examples illustrate the role of contingency or, more prosaically, luck, in the process of conducting historical research. Reflecting on these occasions shows the inherent selectiveness of any project of this nature: the archive itself is a 'haphazard accumulation of "stuff"' in many ways, but there is an element of haphazardness in our own use of it, too.\textsuperscript{152} Knowledge acquisition is never a straightforward process: this is a consistent theme of the thesis, both in the topic it explores, and in my own experiences of exploring it. By being reflexive here I hope to

\textsuperscript{150} NLS, Acc.10222/BR/475, record of printing from stones, penciled notes on ink suppliers and prices in back of volume.


\textsuperscript{152} Withers, “Constructing ‘The Geographical Archive,’” 305.
encourage future researchers to turn to the apparently empty back pages of volumes (or the nearest equivalent): there may be something there of use.

The project: Mapping Edinburgh’s Social History

The National Library of Scotland (NLS) holds detailed records of around 20 relevant printers, publishers, and other firms involved in the book trade. A small amount more is held elsewhere: the business records of Thomas Nelson & Sons, for example, are in the University of Edinburgh’s Centre for Research Collections. Although these records give rich detail about these firms, and a significant amount of material has survived, this material only represents about 3% of the total firms in the city (of the 784 listed in the 1900-01 Post Office Directory, for example). As the extant material relates overwhelmingly to the larger firms, their examples are not necessarily representative of broader experiences. The majority of the small firms have left behind no archives and little or nothing has been written about them. One of the few surviving pieces of information about these smaller firms is their location, as listed in the Post Office Directories. Although it is not clear exactly how the data in the directories was compiled, the extent of its coverage is significant, and using this information to visualise the industry, as presented in Chapter Three, thus offers a more detailed picture than would otherwise be available.

This thesis is part of the project ‘Mapping Edinburgh’s Social History’ (MESH), of which one output was the development of a geocoder and mapping application. This provided a means of plotting the locations of firms listed in the Post Office Directory. Geocoding is the process of attributing a location on the earth’s surface to a particular address, pair of coordinates, or the name of a place. The MESH geocoder, which covers Edinburgh, is based on a comprehensive glossary of former street and place names in Edinburgh, along with addresses in OpenStreetMap (OSM), an open-source platform to which a community of users add data. The MESH project developed the OSM coverage of Edinburgh over the course of three years to add comprehensive details such as building and flat numbers, details of basement properties (which are prevalent in Edinburgh), details of gardens and public spaces, and more. This meant addresses listed in the Post Office Directory could be plotted accurately: an address such as ‘6a Bristo Place’, for example, site of the Edinburgh
Cooperative Printing Company’s premises, could be attributed to a highly specific location using the geocoder.

Mapping historical addresses, however, is not a straightforward process and a number of practical issues should be considered. As mentioned, the presence of multiple-level properties in the city means that the denotation of building numbers is complex and the present system of noting the floor number and flat number (‘fl1’, ‘fl2’, and so on) was not used in the directories. Although many firms occupied the ground floor of buildings, smaller-scale and craft-based work such as engraving could feasibly have been carried out in workshops or homes on higher floors. Difficulties in attaining this level of detail do not, however, prevent the representation of the spatial distribution of firms in the city, where the location of a specific building rather than its internal details is key. Changes in street names initially presented a more significant challenge. The final version of the MESH geocoder includes a glossary that converts former street names to their modern version and can hence plot accurately onto historical maps. Earlier versions of the geocoder, however, relied on the modern street names in OSM, many of which have changed since the 1880s. In the initial years of the project, before the development of the glossary, the National Library of Scotland’s ‘side by side’ digital mapping interface was useful. Georeferenced maps allow the details of a modern map to be directly compared with those of the past [Figure 2.3]. Bristo Street, for example, was the site of six different printing and publishing firms over the period 1880 to 1920. It is now the location of a number of university buildings and is no longer known by that name. Using these georeferenced maps in combination with newspaper articles relating to changes in the city’s infrastructure made it possible to identify the location and modern name of such streets, and thus include these firms in the analysis conducted of the maps presented in Chapter Three.
Figure 2.3: Screenshot of georeferenced maps showing Bristo Street on the Ordnance Survey’s 1876 map (left) and its modern equivalent on OSM, 2017 (right).

The MESH application does not include a tool for marking distances or denoting movement around the city. Maps showing firms’ changing locations over time, therefore, were made using the open-source platform Mapbox. This allows addresses to be plotted manually: each of the firms sampled (eight from each of the four industries in question) moved a maximum of five times across the period which limited the number of locations to be plotted and thus made this manageable. Using Mapbox’s drawing tools, it was then possible to add lines between locations to track moves and measure the distances involved. This is discussed further in Chapter Three. MESH also does not cover locations outside of Edinburgh. In examining the geography of map dispatches and distributions, which is considered on a nationwide scale, it was necessary to use Mapbox to mark the locations of dispatches. These markers were colour-coded according to how many dispatches their location received in a given year, thus offering a clear visualization not only of the geographical expansion of Bartholomew’s distribution networks but also the changing levels of custom in major cities. These maps are presented and analysed in Chapter Six.
Mapping spatial information should not be seen as an ‘end in itself’. It does not necessarily provide answers, but facilitates questions. Visualising the geographies of these industries, whether in terms of the locations of printing firms, employees’ addresses or customer lists allows for a detailed view which, in turn, promotes specific questions. A list of addresses is less meaningful without its mapped representation: it is harder to identify features such as clustering, for example, which have significant analytical potential. Nonetheless, there are limits to what can be discerned without additional information. As discussed above, approximately 97% of the firms mapped do not have an associated body of archival material. The scale of their proceedings and the nature of their work are therefore often unclear. They are revealing, however, in the context of their placement in the urban environment and in what they therefore imply about the nature of industry in the city. Extant sources make it clear, for example, that properties in the south of the city, which was less crowded, were more spacious and thus likely to be appealing for growing firms: mapped locations confirm that migration to the south of the city did occur in the late nineteenth and early twentieth century. This is discussed in greater depth throughout the following chapters as examples arise.

Finally, it is important to note the complexity of the boundary between Edinburgh and Leith. Until 1920, the two were separate burghs. The Post Office Directory, however, covered both areas: for the period in question, it was titled the Post Office Edinburgh and Leith Directory. The ‘Professions and Trades Directory’ section of these volumes did not differentiate between addresses in Edinburgh and addresses in Leith. This highlights the permeability of formal urban boundaries. Evidently, businesses in each burgh were presumed to benefit from knowledge of each others’ locations, which suggests a level of inter-connection between the two places. The maps presented in this thesis follow the directories in including businesses in Leith. This is a methodological point in two ways. First, the capacity to map business locations in Leith allows for a more nuanced and detailed view of the industry than one focusing simply on Edinburgh ‘proper’. Second, it is telling that Leith is included in the directories: it suggests that the separation between the two places was not necessarily clear-cut. This is corroborated by evidence relating to

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shared transport and municipal services. In following the content of the sources themselves, the thesis acknowledges the complexity of the boundary within its historical context.

Conclusion

This chapter shows that it is vital to consider knowledge production in its spatial and historical context. It builds upon the research questions outlined in the previous chapter, which seek to understand the relationship between the map and the city, the lifecycle of the map, and the constitution of cartographic meaning. The production of knowledge, throughout, is shown to be complex and dependent on particular social, geographical and temporal conditions, all of which are fundamentally interlinked. The following chapter focuses on Edinburgh, and shows that industrial and intellectual concerns, often considered to be separate, should be brought together to develop a deep understanding of the city as a ‘field’ of production.

See Chapter Three, 57.
Edinburgh’s printing and publishing industries, c.1880-c.1920

This chapter examines the impact of Edinburgh’s printing and publishing industries in three main areas: on representations of the city, on employment and the local economy, and on experiences of urban space. Mapmaking should be understood within its social, economic and intellectual context. This includes the broader printing and publishing industries of which it was part, and their relationship with the city. The focus throughout this chapter is on understanding the specific local context of Edinburgh, in order to better understand the products made in the city. The following analysis makes use of census data, Post Office directories and the archival material of printing and publishing firms, alongside contemporary commentary and reporting. The directories, especially, allow for a visualization of the form that this industry took, facilitating a spatial analysis of the location and prevalence of printing and publishing firms. In combination with details of employees’ addresses, they are used here in a new manner to assess the impact of printing and publishing on everyday life. Overall, this chapter shows that book production in Edinburgh was shaped by the particularities of the city, but also that these industries played a role in shaping everyday experiences of the city.

The previous chapter introduced Pierre Bourdieu’s concept of the ‘field of cultural production’, which is shown here to be a useful framework through which to understand the production of printed material in the urban context. It can, however, profitably be spatialised to further develop its utility. This can be done by considering the city as ‘field’: a site in which relationships and interactions play a formative role in both the production and consumption of print, and no production occurs in a vacuum. More broadly, the theory underpins the chapter’s assertion that it is vital to understand the nature of the city in order to understand the products made within it. It also connects to Henri Lefebvre’s conception of space as a ‘social product’:

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the city itself was constituted in part by representations of it, and actions within it.3

This chapter explores the importance of the printing and publishing industries in the city and their significance both in terms of the local economy and everyday experiences of the built environment. In so doing it offers an alternative perspective on the industries’ inter-war decline: this is usually expressed in terms of a simple failure to recover from the difficulties caused by the First World War, but is shown here to also be linked to declining local profitability and increasing regional competition. Likewise, mapping the industries suggests that dominant narratives of mechanization — in bookbinding, in this case — could be tempered by reference to individual trades and the persistence of small-scale firms.

**Industry in the city: representation and reality**

Nineteenth-century Edinburgh was renowned for its literary activity and intellectual atmosphere. Contemporary commentators frequently chose this aspect of the urban environment as a starting point for their descriptions of the city. In 1865, the poet and essayist Alexander Smith wrote: ‘Edinburgh is not only in point of beauty the first of British cities, but, considering its population, the tone of its society is more intellectual than any other. In no other city will you find so general an appreciation of books, art, music and objects of antiquarian interest’.4 Echoing this sentiment two decades later, James Grant’s history of Edinburgh declared that it had long been ‘the capital of a land that was almost a *terra incognita*, not only to England, but to the greater part of Europe, and remained so till nearly the era of the [Walter] Scott novels’.5 In the latter example, particular literary works are portrayed as being so significant to the city’s history that they serve as a marker of time and sufficient identification of an ‘era’ — no dates (or even a full name) are given, suggesting that Grant expects his readers to have existing knowledge of Scott’s work. It should be

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noted here that, through his mother, Grant was a relation of Scott.\textsuperscript{6} This is, therefore, not an unmediated account of Scott’s importance. Nonetheless, the knowledge Grant presumes of his readers is revealing.

The emphasis on intellectualism in these texts is typical in many accounts of Edinburgh. It is thus easy to assume that industry was consistently downplayed in the city’s history. This has some basis: the Town Council, certainly, maintained this image, giving visiting dignitaries, for example, tours of ‘culture, class and castle’, rather than its manufacturing districts.\textsuperscript{7} Likewise, Edinburgh’s highest ceremonial honour — the Freedom of the City — was awarded to over 100 people between 1880 and 1920, of whom only Andrew Carnegie and William McEwan had industrial associations. Both men were honoured, though, for having provided the city with the funds for new public buildings.\textsuperscript{8} The Town Council seldom explicitly recognized the role of industry in the city’s economy.

To focus solely on this side of contemporary opinion making in (and of) the city, however, is misrepresentative. The printing industry, for example, received considerable interest: in 1869, David Bremner’s survey of Scottish industry declared printing and related trades to be ‘the staple industry of Edinburgh’.\textsuperscript{9} This continued to be the case into the twentieth century: in 1904, Alexander Eddington described the city’s strong association with printing, publishing and map engraving, and in 1908 a handbook of employment advice for children encouraged seeking training in the printing trades, where ‘a very large number of men are employed’.\textsuperscript{10} When other industries such as brewing, distilling, and rubber manufacturing were mentioned, it may have been with a tone of surprise, but they were, nonetheless, acknowledged to

\textsuperscript{8} Andrew Carnegie was a steel baron and William McEwan was a brewer. They contributed funds, respectively, towards a ‘Free Public Library’ — now Edinburgh’s Central Library — and the University of Edinburgh’s McEwan Hall. See Edinburgh City Archives, SL 141/3/8, Honorary Burgess Roll. See also Richard Rodger, “The common good and civic promotion: Edinburgh 1860-1914,” in Cities of Ideas: Civil Society and Urban Governance in Britain 1800-2000, ed. Robert Colls and Richard Rodger (Aldershot: Ashgate, 2004), 152.
\textsuperscript{9} David Bremner, The Industries of Scotland: Their Rise, Progress and Present Condition (Edinburgh: A. & C. Black, 1869), 500.
exist: ‘Even Edinburgh — academic, book-making, law-administering Edinburgh — whose face we are so religiously told is her fortune, contains the largest breweries north of the Trent, and some of the greatest distilleries and manufactories of rubber goods in the United Kingdom’.

Two main representations of Edinburgh thus abounded. Both aimed to give a particular distinction to the city. The first, on the part of the Town Council and writers such as Smith and Grant, was a conscious attempt to create an image of the city as cultural and non-industrial. The second, found in contemporary commentaries such as those of Bremner and Eddington, reflected the city’s cultural image — but not entirely at the expense of industry. In both cases, culture — most frequently, literature — was used as a means of differentiation. The Town Council portrayed the city as being special due to its proliferation of cultural and intellectual institutions: this is shown in what follows to be linked to the city’s Enlightenment past as well as the Act of Union of 1707. Contemporary commentaries echoed this, but also showed how the city maintained this image, alongside — or even in spite of — its established industrial pursuits. In what follows, it is argued that Edinburgh was not special due to its supposed lack of industry but, instead, due to its distinctive combination of intellect and industry. Printing and publishing, as the ‘necessary industries of knowledge’, are shown to form a vital part of Edinburgh’s identity and economy.

Census records show that industrial pursuits consistently occupied the largest percentage of both the male workforce and the total workforce between 1871 and 1911 [Figures 3.1 and 3.2]. For women, too, industry overtook domestic work as the largest sector of employment by 1911. Evidently, industry was prevalent. In this respect, the city’s occupational structure was not unique. The proportion of men working in industry in Edinburgh was similar to that in cities such as Bristol, Liverpool and Cardiff. In other aspects, too, the urban experience in Edinburgh throughout this period was ‘typically Victorian’: the city experienced high levels of population growth [Table 3.1], transport networks were constructed and expanded, and urban

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11 Eddington, Edinburgh and the Lothians, 19.
boundaries were adapted and enlarged.\textsuperscript{14} The Edinburgh Extension Act of 1896 integrated Portobello into the city and further extensions in 1902 added Duddingston. A further Act in 1920 expanded the city boundaries and incorporated Leith, Colinton, Corstorphine, Cramond, Liberton, Gilmerton and Longstone.\textsuperscript{15} Of these, Leith was the most controversial: a plebiscite on the amalgamation voted firmly against it, though in many respects it had previously come under Edinburgh’s infrastructure. Trams, for example, ran between the two, and some municipal services were shared.

The specifics of Edinburgh’s industry, however, did play a role in making the city distinctive. Industry in Edinburgh was diverse: many firms were small or medium-sized, and there was a broad range of these relatively small-scale industries. Although the city was also home to the aforementioned larger industries, such as brewing, rubber manufacturing, and printing, the workforce occupied within these industries was dispersed across them rather than being concentrated in one major industry, as was the case in places such as Sheffield (steel) and Clydebank (shipbuilding).\textsuperscript{16} It was Edinburgh’s industrial diversity and, more specifically, its variety of scales of industrial manufacture that differentiated it. A measure of the concentration of the workforce in the largest single category of employment shows that Edinburgh had the most variegated local economy of all major British towns and cities. In Glasgow, by contrast, one in six workers were employed in engineering and metalwork by 1914, often supporting the wider area’s shipbuilding industry.\textsuperscript{17} The variation in Edinburgh’s industrial structure also aided the long-term stability of the city’s economy.\textsuperscript{18}

\textsuperscript{15} This creates the impression of a dramatic population increase in the Census of 1920-21.
\textsuperscript{18} Rodger, “Landscapes of capital,” 87-89.
Figure 3.1: Structure of the male workforce in Edinburgh, 1871-1911.

Figure 3.2: Structure of the female workforce in Edinburgh, 1871-1911.

Table 3.1: Population of Edinburgh, 1881-1921. Note that the figure for 1921 is inflated by the Edinburgh Extension Act of 1920 and the incorporation of Leith.

<table>
<thead>
<tr>
<th>Year</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1881</td>
<td>104247</td>
<td>124110</td>
<td>228357</td>
</tr>
<tr>
<td>1891</td>
<td>119255</td>
<td>141970</td>
<td>261225</td>
</tr>
<tr>
<td>1901</td>
<td>144563</td>
<td>172274</td>
<td>316837</td>
</tr>
<tr>
<td>1911</td>
<td>143436</td>
<td>176882</td>
<td>320318</td>
</tr>
<tr>
<td>1921</td>
<td>192013</td>
<td>228251</td>
<td>420264</td>
</tr>
</tbody>
</table>


In place of a sole focus on large-scale industry, then, Edinburgh firms frequently produced quality goods with high added value. A comparison with Glasgow is especially instructive. In 1890, for example, relative to their respective sizes (Glasgow’s industrial workforce was more than three times that of Edinburgh), the city had more than double the number of cabinetmakers, lace manufacturers, jewellers, and musical instrument makers as a percentage of industrial workers than Glasgow [Table 3.2]. This shows that a significant proportion of Edinburgh’s industry was made up of highly skilled manufacturers, which was considerably more visible in Edinburgh than Glasgow. While the numbers in both cases are small, the difference is still telling. The varied local economy in Edinburgh supported these small-scale trades, many of which benefitted each other by their presence. This is certainly the case in the analysis of the printing and publishing trades that follows. Furthermore, the comparison reflects the social composition of the cities: Edinburgh’s wealthy inhabitants and higher proportion of both skilled-industrial and professional workforces supported such industries.19

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Table 3.2: Sample of four high added value industry workforces in Edinburgh and Glasgow, 1890-91.

<table>
<thead>
<tr>
<th></th>
<th>Edinburgh</th>
<th>Glasgow</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Numbers employed</strong></td>
<td>As percentage of industrial workforce (65397)</td>
<td>Numbers employed</td>
</tr>
<tr>
<td><strong>Cabinetmakers</strong></td>
<td>198</td>
<td>0.30</td>
</tr>
<tr>
<td><strong>Jewellers</strong></td>
<td>132</td>
<td>0.20</td>
</tr>
<tr>
<td><strong>Musical instrument makers</strong></td>
<td>40</td>
<td>0.06</td>
</tr>
<tr>
<td><strong>Lace manufacturers</strong></td>
<td>14</td>
<td>0.02</td>
</tr>
</tbody>
</table>


Printing and publishing in Edinburgh

Despite the presence of small-scale industry, and its importance to Edinburgh’s image and economy, a focus on artisanal labour misrepresents the interests of a considerable range of diverse industries. Like the commentaries above, this narrative should be treated with caution. Printing and publishing — which, while skilled, operated on a much larger scale than the high value added industries listed above — formed an especially important part of the local economy. 20 Of the four major Scottish cities — Glasgow, Edinburgh, Aberdeen and Dundee — the percentage of the workforce occupied by printing and publishing in Edinburgh was notably high [Figure 3.3]. Census records show that the size of the workforce occupied in printing, publishing and allied industries in Edinburgh nearly doubled between 1881 and 1911: at their peak in the latter year, these trades occupied 9946 people, or 6.69% of the city’s total employed population [Table 3.3]. Although the absolute numbers employed in these trades in Glasgow were slightly larger throughout this period, the difference in size of industrial workforce between the two cities [Table 3.2] shows that printing and publishing were of much greater significance to the local economy in Edinburgh than in Glasgow.

Figure 3.3: Percentage of total workforce occupied in printing, publishing and allied industries in the major Scottish cities, 1881-1921.

Table 3.3: Numbers employed in printing, publishing and allied industries in Edinburgh, 1881-1921.

<table>
<thead>
<tr>
<th></th>
<th>Workforce</th>
<th>Workforce in printing, publishing and allied industries</th>
<th>Workforce in printing, publishing and allied industries (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
</tr>
<tr>
<td>1881</td>
<td>66659</td>
<td>38326</td>
<td>104985</td>
</tr>
<tr>
<td>1891</td>
<td>77849</td>
<td>44623</td>
<td>122472</td>
</tr>
<tr>
<td>1901</td>
<td>93595</td>
<td>53658</td>
<td>147253</td>
</tr>
<tr>
<td>1911</td>
<td>93631</td>
<td>55128</td>
<td>148759</td>
</tr>
<tr>
<td>1921</td>
<td>201224</td>
<td>131682</td>
<td>332906</td>
</tr>
</tbody>
</table>

The rise and prevalence of printing and publishing in Edinburgh is conventionally explained by its maintenance of a disproportionately large amount of intellectual, legal, financial and religious institutions following the Act of Union in 1707. These included Scotland’s principal law courts; the University of Edinburgh; the annual Assembly of the Church of Scotland; the headquarters of Scottish banks; Register House, which held many of Scotland’s legal documents; the National Gallery, and the Advocates Library which, having obtained copyright privileges in 1710, led the way for the National Library of Scotland’s formal constitution in 1925. These and other institutions undoubtedly had an effect on the city’s intellectual atmosphere and reputation, encouraging the development of scientific societies, religious and philanthropic groups, educational campaigners, debating clubs, and literary associations. The corresponding increase in ‘knowledge-based human capital’ was an influencing factor in Edinburgh’s growth, and aided the development of an atmosphere amongst those in relevant professions and industries where information could be quickly spread and readily obtained. This gives a tangible economic dimension to the phenomenon of the city’s high number of intellectual and cultural institutions.

For most of the city’s inhabitants, however, this explanation may over-simplify matters: only a minority of the population ever directly experienced this aspect of the city. More significantly, these institutions provided a ready market for print and stationery — and thus supported a significant field of employment. Edinburgh firms printed bank notes, bibles, other religious press and pamphlets, and legal documents. They also provided stationery, such as specific accounting books, to firms throughout the city’s professional sector. Societies and associations also required large amounts of printed material. The demands of Edinburgh’s institutions were such that a specific printer and publisher, T. & T. Clark, established in 1821, was able to specialize in

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23 In 1900, the middle of the period in question, the Post Office Directory listed 337 separate associations, clubs and societies: see Post Office Edinburgh and Leith Directory 1900-01 (Edinburgh, 1901), 908-913.


theological publishing and later also published legal work.26 For the majority of the population, then, Edinburgh’s institutions may have had most impact due to their role in demanding and purchasing printed material: this, in turn, helped the industry to grow, providing considerable employment. Nonetheless, while clearly being of great importance to its early years, the maintenance of institutions is not the sole factor in the industry’s later nineteenth-century peak. Broader national developments, such as the Education Acts of 1870 and 1872 (Scotland), which made education compulsory for children aged between 5 and 13, stimulated demand for printed material. In this respect, the Edinburgh firm of Thomas Nelson & Sons was especially successful in producing books for this growing market.27 The development of new technologies, such as steam-printing, and the growth of the railway network, allowed Scottish firms to compete directly with those in London: of these, the most successful were Edinburgh-based W. & R. Chambers, who, by the 1850s, had a national distribution network established for their instructive and educational Chambers’s Journal, and were attempting to branch out into the overseas market.28 These broader developments took place on a national scale, yet their effect was felt acutely in Edinburgh, showing the existence of a dynamic and responsive industry, which was influenced and supported in part by the city’s institutions and intellectual atmosphere.

The census categorization of printing, publishing and allied industries as ‘industrial’ belies the complexity of these trades, which, in fact, comprised highly physical and industrial processes alongside literary, intellectual, or otherwise professional pursuits. This is another factor in Edinburgh’s distinctiveness: one of its main industries was fundamentally linked to non-industrial, intellectual activities. The various stages involved in printing and publishing, discussed below (and, in the context of maps, in Chapter Four), necessitated close working links between a diverse

range of intellectuals, professionals, small to large-scale industrial producers, and commercial trades. While larger firms carried out multiple stages of production ‘in-house’ and thus benefited from economies of scale, the presence of individual firms specializing in skilled subsets of printing (engraving and bookbinding, for instance) shows the overall industry to be sufficiently complex to support activity at a range of scales. Further interactions took place between authors, publishers, booksellers, and more. This blurring of industry and intellect was fundamental to the production of printed material. It reflects the myths and realities of late nineteenth-century Edinburgh: the city was not intellectual at the expense of industry but, rather, prominently combined the two.

**Growth and ‘decline’, c.1880-c.1920**

In 1880-81, fifteen different occupations relating to printing, publishing and other aspects of the book trade were listed in the *Post Office Directory’s ‘Professions and Trades Directory’. By 1910-II, this figure stood at 23 [Table 3.4]. As the complexity of the industry increased, so too did its workforce: the absolute numbers listed in the various categories total 545 for 1880-81 and 806 for 1910-II [Figure 3.4, Table 3.4]. It should be noted that the *Post Office Directories* are not a straightforward source. Unlike the census, which gives the industry’s total workforce, the directories list firms, each of which may have included anything from 1 to 200 or more employees. The numbers provided by the directories are therefore fewer than the numbers listed in the census, and do not of themselves provide an indication of the size of each of the firms listed, though the name listed does give some clue as to the scale of proceedings (‘& Sons’ or ‘& Co.’, for example, immediately suggest multiple employees). The numbers listed below come, as noted, from the directories’ ‘Professions and Trades Directory’, which is not necessarily a complete list of every firm in the city. It was also common for larger firms, who did multiple aspects of book production in house, to be listed under more than one category: Oliver & Boyd, for instance, are listed under ‘bookseller and stationer’, ‘bookbinder’ and ‘printer’ in 1900. In the same year, Thomas Nelson & Son are listed under ‘bookseller and stationer’ and ‘printer’, though, like Oliver & Boyd, they also carried out bookbinding on their premises. Evidently, then, the directories require some interpretation and are not
consistent in their recording of occupational categories. Nonetheless, they provide valuable insight into the complexities of the printing and publishing industries, not least because, as discussed in Chapter Two, they list firms’ addresses, giving a spatial dimension to an understanding of industry in the city.

**Table 3.4**: Firms and individuals listed under printing, publishing and other book trade occupations in the ‘Professions and Trades Directory’ of the Post Office Directories, 1880-1920.

<table>
<thead>
<tr>
<th></th>
<th>1880-81</th>
<th>1890-91</th>
<th>1900-01</th>
<th>1910-11</th>
<th>1920-21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bookbinder</td>
<td>33</td>
<td>38</td>
<td>46</td>
<td>44</td>
<td>35</td>
</tr>
<tr>
<td>Bookseller and stationer</td>
<td>134</td>
<td>148</td>
<td>141</td>
<td>129</td>
<td>87</td>
</tr>
<tr>
<td>Printing and copying press maker</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Engraver and lithographic printer</td>
<td>89</td>
<td>101</td>
<td>95</td>
<td>84</td>
<td>52</td>
</tr>
<tr>
<td>Lithographic draughtsman</td>
<td>10</td>
<td>8</td>
<td>18</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>Map mounter</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Paper maker</td>
<td>13</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Paper ruler</td>
<td>7</td>
<td>12</td>
<td>14</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Paper stock merchant</td>
<td>2</td>
<td>11</td>
<td>6</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Printer</td>
<td>98</td>
<td>125</td>
<td>139</td>
<td>133</td>
<td>109</td>
</tr>
<tr>
<td>Printer’s joiner</td>
<td>2</td>
<td>6</td>
<td>7</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Stationer</td>
<td>141</td>
<td>212</td>
<td>267</td>
<td>269</td>
<td>51</td>
</tr>
<tr>
<td>Stereotyper</td>
<td>4</td>
<td>4</td>
<td>7</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Typedefounder</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Ink manufacturer</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Collotype printer</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrotyper</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper machine maker</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Printer’s agent</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Printer’s roller composition manufacture</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Printing ink manufacturer</td>
<td>4</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Printing machinery agent</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Printing material valuator</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stencil plate maker</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lithographic transfer inks and papers</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Printer’s engineer</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Publisher</td>
<td>66</td>
<td>64</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper merchant</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper varnisher and gummer</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Printer’s valuator</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>545</td>
<td>685</td>
<td>784</td>
<td>806</td>
<td>482</td>
</tr>
</tbody>
</table>

Fifteen specific occupations were listed in each of the five directories consulted for the period 1880 to 1920. Others, such as those linked to new technologies including collotyping and electrotyping, and various intermediary roles such as printers’ agents, appeared later in the period and are indicative of increasing technological developments and increasing industry specialization (discussed below). The fifteen occupations consistently present were arguably those most consistently central to the industry: they also employed the largest numbers of workers. Eleven of these fifteen occupations were at their largest total (that is, the most firms were listed) in either 1890-91 or 1900-01 [Table 3.4]. This is an earlier peak than that suggested by the census figures, which show 1911 to be the year when the highest percentage of the total workforce was occupied in printing and publishing [Figure 3.3, Table 3.3]. This indicates a consolidation of the industry in the first decade of the twentieth century: comparably fewer firms, relative to the overall population growth, appear to have
been employing a greater number of employees. This corresponds with accounts in the secondary literature that describe overall trends in the city's printing and publishing industries, all of which point to a high point of the industry's economic success in the late nineteenth and early twentieth centuries.\textsuperscript{29} Explanations of this trend are multi-faceted. New technologies, such as the development of steam printing and the railway network, aided faster production and distribution of printed material on a considerably larger scale: steam printing, for instance, made it possible to produce serial publications at a quantity and speed that allowed the Edinburgh firm W. & R. Chambers to compete with the London market. This was further aided by steam-powered transport, which helped Chambers to distribute their material on a national (and, to an extent, global) scale, thus broadening their customer base.\textsuperscript{30} The theme of distribution and circulation is addressed in Chapter Six.

Furthermore, the cheaper labour market in Scotland allowed firms to employ more workers. In a specific example, Edinburgh was distinctive in its employment of female compositors, who were paid even less than their male counterparts.\textsuperscript{31} Lower wages were also a reason for Edinburgh firms becoming notable for being able to offer lower prices than equivalent firms in London, which meant that a significant number of publishers from elsewhere in Britain sent work to Edinburgh to be printed. In Edinburgh, according to a master printer's lecture reprinted in the \textit{Scottish Typographical Circular} (1888), firms could 'do the finest work without asking a fancy price for it', which was 'on a higher level of excellence and lower rates than London'.\textsuperscript{32}

Yet by the 1920s, the total number of firms involved in printing and publishing had dropped to just 482, from its highpoint of 806 only a decade earlier. The directory for 1920-21 lists 87 booksellers and stationers, a 70% decrease from this trade's high point in 1890-91, and 109 printers, a 28% decrease from 1900-01. This shows that even the book trade's larger subsets were diminished. At this time, the Edinburgh Printing and Kindred Trades Employers' Association (hereafter EPKTEA)


\textsuperscript{30} Fyfe, “Steam and the landscape of knowledge,” 51-78.

\textsuperscript{31} On Scottish wages, see, for example Richard Rodger, “The invisible hand: market forces, housing and the urban form in Victorian cities,” in \textit{The Pursuit of Urban History}, ed. Derek Fraser and Anthony Sutcliffe (London: Edward Arnold, 1983), 190-211; on female compositors see Reynolds, \textit{Britannica’s Typesetters}.

\textsuperscript{32} Scottish Typographical Circular (1888), 710, quoted in Reynolds, \textit{Britannica’s Typesetters}, 10.
was fighting for standardized prices across the book trade, and for an agreement between Scottish and English book producers which would give Scottish firms the right to quote prices up to 5% cheaper than those listed on the agreed 'scale'. This aimed to counteract the 'disadvantage' Edinburgh firms had 'in the way of securing orders', which EPKTEA explained by reference to the distance between Edinburgh and London. Smaller firms, especially, seem to have been struggling in this period. In correspondence with EPKTEA in 1921, J.C.W. Barrett of The Edinburgh Press, wrote: 'We regret that we are unable to sign this agreement, as we have all along considered that the scale prices are too high and do not think the proposed reduction of 5% is sufficient. We prefer to face open competition rather than the underhand cutting that is going on at present'. George Brodie of Edinburgh's Darien Press expressed similar concerns in 1924, writing: 'We cannot, unfortunately, get sufficient work by quoting strictly scale prices and in several cases we have been told that our prices were much higher than those obtaining in the South. What part of the “South” we cannot precisely say but we assume it is some place near London'.

Even larger companies, such as Morrison & Gibb, who did support EPKTEA's system of standardization in principle, were concerned by 'increasing competition from non-signatories'. This suggests that undercutting was prevalent by this point and that Edinburgh firms were struggling to match or beat the prices offered by their London counterparts. The low prices offered in the late nineteenth century were evidently not sustainable, and cheap production experienced declining profitability in the face of rising costs. Printing in Edinburgh had suffered during the First World War: The Scotsman reported regularly throughout the war and into the 1920s on the troubles facing this 'staple industry'. By the 1920s, census records show that printing

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34 NLS, Acc.8291, Box 10, Folder 4, letter from Turnbull & Spears to R.T. Wishart, 7 October 1921.
35 NLS, Acc.8291, Box 10, Folder 4, letter from J.C.W. Barrett to R.T. Wishart, 10 October 1921.
36 NLS, Acc.8291, Box 10, Folder 4, letter from George Brodie to R.T. Wishart, 28 January 1924. Emphases in original.
37 NLS, Acc.8291, Box 10, Folder 4, letter from Morrison & Gibb Ltd. to R.T. Wishart, 20 March 1924.
and publishing occupied just over 2% of Edinburgh’s workforce, a significant drop from the high point in 1911 of nearly 7% [Figure 3.3, Table 3.3]. It should be noted, though, that this figure also coincided with an increase in Edinburgh’s population size, and the size of the city’s entire workforce more than doubling. The absolute numbers employed in printing and publishing actually only dropped from 9946 to 8075. Nonetheless, the industry never recovered to pre-1914 levels and many firms faced struggles, amalgamations and closures throughout the twentieth century. The main focus of what follows is thus the period of growth and expansion in the late nineteenth and early twentieth centuries.

The taxonomy of the industry

The growth in occupations linked to printing and publishing, and the corresponding increase of number of firms listed in the Post Office Directory under these occupations, demonstrates the industry expanding and becoming more complex. New types of printing emerged, such as collotyping and electrotyping, as well as new roles relating specifically to printing, such as printer’s agents, valuators of printing machinery, paper machine makers and printing roller composition manufacturers. Technological developments in printing created new types of employment, both in terms of the physical aspect of printing — creating a need for more specialist engineers and manufacturers, for example — and in terms of the industry’s administration. Valuators, agents, and other associated roles are listed in the directories from the early 1900s. Increasing specialization and professionalization can also be seen in the context of publishers. Until 1909-10, publishers were listed under the category of ‘bookseller and stationer’, with a symbol (*) next to their name to


Collotyping is a photo-mechanical printing process. It relies on the application of light sensitive gelatin to one plate, over which a negative plate is then placed. Exposing these plates to light makes the exposed parts of the first plate waterproof. These hold ink, while the non-exposed parts are absorbent and repel ink. Electrotyping, a different method of printing, replicates plates for letterpress printing and thus is more durable than printing methods used earlier in the nineteenth century such as wood engraving.
indicate that they also operated as a publisher. Thus leading publishers of the late nineteenth century such as Thomas Nelson & Sons (religious and educational) and W. & R. Chambers (non-fiction and reference) can be found in various categories in the Professions and Trades Directory (‘bookseller and stationer’, ‘printer’), yet in the General Directory, which lists by surname rather than profession or trade, both describe themselves solely as publishers. The directories were rather slow to recognize publishing as a profession in its own right. Their categorization does, however, reflect contemporary opinion of these trades: Mrs Ogilvie Gordon’s Handbook of Employments (1908) lists ‘booksellers and publishers’ as one category of employment. She suggests the same skills are required for each, and that beginning as a bookseller can lead to a career in publishing: ‘Mental ability, literary interests, and a very good general education are essential in the bookselling and publishing business ... The experience gained in a bookseller’s shop is very valuable for young men who intend to enter a publisher’s office. There are good posts available to capable men in such offices’.

The directories’ categorization also reflects the fact that large publishing firms carried out most stages of book production in house. The records of Oliver & Boyd, described in the 1900-01 General Directory as ‘publishers, wholesale booksellers, printers, and bookbinders’ amply illustrate this. Oliver & Boyd’s cost books, which were used to estimate quotations for customers, show the firm undertaking every stage of physical book production, from ‘cutting and preparing sheets’ at the beginning of the process, to ‘gathering in sets & banding’ and finally ‘parcelling & delivering’ when the book was finished. In sum, an Oliver & Boyd book could potentially go through up to 35 separate stages of physical production, depending on the complexity of the project [Figure 3.5]. Each of these stages was individually priced, and the final price to the wholesale customer typically included an added 50% for labour, 15% for materials, and 12.5% for the ‘overall cost’, though the precise percentage in each case was subject to a negotiated discount. The multiple processes carried out at Oliver & Boyd, as well as other large firms such as W. & R. Chambers

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43 Post Office Edinburgh and Leith Directory 1900-01 (Edinburgh, 1900-01), 270.
44 NLS, Acc. 5000/22-23, Oliver & Boyd, cost books, l834-94 and 1923-25.
and Thomas Nelson & Sons, as mentioned, clearly necessitated a wide range of skills and a large number of employees. The tasks listed below were carried out by different departments. Many necessitated long periods of training: ‘forwarding’, a branch of bookbinding, required an apprenticeship of seven years. The scale of a firm can also be ascertained from work books and wage books: Oliver & Boyd separated ‘Machine and Press’ from ‘Binding’ and ‘Warehouse’, which were in turn separate from managerial and clerical work, though wages for these departments were not recorded or have not survived. Likewise, the printers T. & A. Constable listed their staff under ‘case’, ‘staff’, ‘press’, ‘foundry’, ‘warehouse’ and ‘binders’. The map publishers W. & A.K. Johnston took pride in their ability to carry out a wide range of work on their premises: a pamphlet from the 1890s shows that, far from becoming ‘jacks of all trade’, they saw their varied production capacity as a selling point [Figure 3.6]. More broadly, the specialization of the physical aspects of print production reflected the increasing professionalization of the industry, which is a recurrent theme in the following chapters. This was also illustrated through the example of publishers’ changing categorization in the directories and the acknowledgement of publishing as a profession.

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**Figure 3.5:** Stages of production listed in Oliver & Boyd cost books.

<table>
<thead>
<tr>
<th>Stages of Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUTTING AND PREPARING SHEETS</td>
</tr>
<tr>
<td>CUTTING AND PREPARING PLATES OR MAPS</td>
</tr>
<tr>
<td>FOLDING SHEETS, MAPS, ETC</td>
</tr>
<tr>
<td>INSETTING, OVERCASTING</td>
</tr>
<tr>
<td>PLACING PLATES, TISSUES, MAPS, AND GUARDS</td>
</tr>
<tr>
<td>LINING ENDS</td>
</tr>
<tr>
<td>GATHERING, COLLATING IMPERFECTIONS</td>
</tr>
<tr>
<td>SEWING, STITCHING WIRE OR THREAD</td>
</tr>
<tr>
<td>PAPERING, PINCHING, PASTING SLIPS</td>
</tr>
<tr>
<td>STIFFENING, COVERING CLOTH OR PAPER</td>
</tr>
<tr>
<td>CUTTING TOP AND TRIMMING EDGES, TIP UP</td>
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<tr>
<td>GILDING OR COLOURING TOP EDGES</td>
</tr>
<tr>
<td>FORWARDING</td>
</tr>
<tr>
<td>CUTTING BOARDS, BEVELLING</td>
</tr>
<tr>
<td>MAKING CASES, SIZING CASES, MOUNTING</td>
</tr>
<tr>
<td>BLOCKING - SETTING UP STAMPS</td>
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<tr>
<td>BLOCKING - BLIND, INK, COLOURS</td>
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<tr>
<td>BLOCKING - GOLD, FOIL</td>
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<tr>
<td>LAYING ON GOLD, FOIL</td>
</tr>
<tr>
<td>GOLD ON EDGES, TOP</td>
</tr>
<tr>
<td>GOLD ON CASE, BACK, BOARD</td>
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<tr>
<td>FOIL ON CASE, BACK, BOARD</td>
</tr>
<tr>
<td>INK, COLOUR ENDS, PAIRS</td>
</tr>
<tr>
<td>PAPER FOR GUARDS, TISSUES</td>
</tr>
<tr>
<td>BOARDS, PAIRS</td>
</tr>
<tr>
<td>STIFFENERS, PAPER LININGS</td>
</tr>
<tr>
<td>CLOTH, YARDS AT, CUTTING CLOTH</td>
</tr>
<tr>
<td>PAPER FOR COVERS, SIDES</td>
</tr>
<tr>
<td>THREAD, MULLS, TAPE, GLUE, Paste</td>
</tr>
<tr>
<td>HEADBANDS, REGISTERS</td>
</tr>
<tr>
<td>EXAMINE, PAPER UP</td>
</tr>
<tr>
<td>PRINTING JACKETS, PAPER</td>
</tr>
<tr>
<td>GATHER IN SETS, BANDING</td>
</tr>
<tr>
<td>PARCELLEING, DELIVERY</td>
</tr>
<tr>
<td>LABOUR COST ADD</td>
</tr>
<tr>
<td>50%</td>
</tr>
<tr>
<td>MATERIAL COST ADD</td>
</tr>
<tr>
<td>15%</td>
</tr>
<tr>
<td>TOTAL COST ADD</td>
</tr>
<tr>
<td>12.50%</td>
</tr>
</tbody>
</table>

*Source: NLS, Acc. 5000/22-23, Oliver & Boyd, cost books, 1834-94 and 1923-25.*
Local provenance and value

Whether produced in-house by one firm, or in various stages by multiple firms across the city, contemporaries frequently commented upon the fact that books had been made in Edinburgh. This adds considerably to a conception of the significance of place in this context: Edinburgh is known for its prominent literary output, but the focus has tended to be on celebrating authorship and works of literature — that is, the end products of the book trade. It is important to note that the local element of physical production was also a source of pride for contemporaries, and added value.

The date is estimated on the basis of a quotation inside the pamphlet from the British Lithographer periodical, which ran from 1892-95.
and credibility to the works. In 1903, for example, Francis H. Groome, in the *Ordnance Gazetteer of Scotland*, noted that Walter Scott and his publisher Archibald Constable ‘gave ample proof to the world that Edinburgh was rapidly becoming a centre of literature ... now the city may be said to produce a larger proportional quantity of standard works than any other with the exception of London’.\(^{49}\) The mention of Constable is significant: it recognises that Scott did not operate autonomously and acknowledges the important role of connections and networks in creating a work of literature. This can clearly be seen in terms of ‘the field’, in which the actions and interactions of individuals play a formative role in the production of art (broadly construed to include printed material), and cannot be seen in isolation.\(^{50}\)

Publishing, as an intellectual profession, fitted well into the dominant cultural and intellectual image of Edinburgh. Printing, however, was also a source of local pride: in 1892, David Masson, university professor in literature, defended the city’s supposedly declining literary scene by celebrating the role of printing. He wrote that ‘Edinburgh possesses, at all events, a most flourishing printing industry. The printing of Edinburgh is celebrated the world over; a very large proportion of the books published in London are printed in Edinburgh’.\(^{51}\) The emphasis on comparison between Edinburgh and London continued into the twentieth century, when Alexander Eddington described how ‘[since the 1500s] Edinburgh has been famed for its printers, who to-day do a large part of the work of many leading London firms’.\(^{52}\) Many London firms did indeed use Edinburgh printers.\(^{53}\) Edinburgh printers were proud of their trade, and two of the city’s most important commercial printers, R. & R. Clark and T. & A. Constable, established ‘printer’s marks’ to distinguish their work and serve as a signature.\(^{54}\) By comparing the work of Edinburgh printers with that of their southern counterparts — with whom, as discussed, they endured struggles with pricing — Masson and Eddington implicitly acknowledged the importance of place in

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\(^{49}\) Groome, *Ordnance Gazetteer of Scotland*, 518.


\(^{52}\) Eddington, *Edinburgh and the Lothians*, 83.


establishing reputation (the focus of Chapter Five). The negotiations between authors, publishers and printers in different locations, moreover, can be seen to play a constitutive role in the formation of texts’ meanings. This theme is considered throughout the following chapters; the material that follows here explores the spatial aspect of Edinburgh’s printing and publishing industries on a local scale.

Spaces of printing and publishing

The first group of maps presented in this section shows the location of four main branches of the printing and publishing industries at intervals of one decade for the period 1880-81 to 1920-21: printer, bookbinder, bookseller/stationer, and engraver/lithographic printer [Figures 3.8-3.12]. The prevalence of these establishments throughout the city centre is immediately striking. In all four cases, clusters are particularly visible in the Old Town, especially around the area of the University of Edinburgh and the High Street, and in the eastern end of the New Town, close to St James Square. A small cluster (around three of each trade) can also be seen for the majority of the period in question in Leith. From the peak years (when the highest number of firms were listed in the directory) around the turn of the century onwards, a number of premises were also located further out of the city centre, especially towards the south and east of the city.

Certain patterns are clear to different extents in the selected four trades. In printing, for example, in the decades either side of the peak year of 1900-01, establishments appeared on either side of Leith Walk, which makes the formal separation between Edinburgh and Leith at this time less apparent. The spread of printing firms in this year was reasonably consistent in the areas immediately to either side of the boundary [Figures 3.8.a, 3.9.a, 3.10.a, 3.11.a, 3.12.a]. The two burghs were not differentiated in the ‘Professions and Trades Directory’, which enhances the apparent permeability of the official boundary. None of these premises are visible in 1920-21, however, by which dates the total number of printers listed in the directory

55 Scholarship on place and reputation is wide-ranging and considered in detail throughout Chapter Five. For a useful summary in the specific context of book production, see Ogborn and Withers, “Introduction: book geography, book history,” 1-28 and especially 7-8.
57 See Chapter Two, 48-52, for a discussion of mapping as method.
had declined from 139 to 109 [Figure 3.12.a]. This corroborates the argument, above, that the industry was consolidating near to businesses and structures. The pattern of spatial distribution in 1920-21 is most similar to that of 1880-81, suggesting that long-established firms — that is, those present in earlier years — were most likely to survive the difficulties of the period around the First World War [Figures 3.8.a and 3.12.a]. Many businesses that appeared during the industry’s ‘boom’ years appear to have not survived, to have amalgamated with other businesses, or otherwise moved back towards the areas where the industry was initially concentrated. Each of these possibilities represents overall consolidation. Likewise, the presence of engravers and lithographic printers, and booksellers and stationers around Leith Walk is noticeably diminished by 1920-21 [Figure 3.12]. It seems, therefore, that this area outside of the main zones of concentration was more vulnerable to economic change. In each of the four trades, firms were most prevalent in this area during the peak years, and were severely or entirely diminished by 1920-21. This suggests that clustering was beneficial: business locations outside of areas with higher levels of density appear less likely to survive the changed conditions of the early twentieth century. This shows a clear spatial dimension to industry-wide economic trends. The benefits of operating within a local cluster are explored throughout the chapters that follow, with particular reference to mapmaking networks.

The industry’s small-scale spread south and east, which is especially visible in the case of bookbinders from 1900-01 [Figures 3.10.b, 3.11.b and 3.12.b] and booksellers and stationers from 1890-91 [Figures 3.9.d, 3.10.d, 3.11.d and 3.12.d] indicates that firms were expanding. Premises outside of the immediate confines of the city centre, which was notoriously cramped, were likely to be more spacious: one reason for this is that they were often purpose-built, like Thomas Nelson & Son’s Parkside Works, on previously unused land. This was in part due to the need for more space for new technology. Bookbinding, for instance, was increasingly mechanized throughout the late nineteenth century, with sewing machines replacing handstitching, and presses being used to apply decoration to spines and covers: by 1908, Gordon’s Handbook of Employments stated ‘bookbinding is no longer a craft’ on the basis that ‘it has been subdivided to such a degree’.

Likewise, new technology in printing, such as flat-bed machines, required considerable amounts of space (the

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58 Gordon, Handbook of Employments, 149.
mapmakers John Bartholomew & Co.’s largest flat-bed machine printed sheets of up to four by five feet and, allegedly, was affectionately known as ‘Jumbo’). Technological developments in production are considered in greater depth in the two subsequent chapters, but it is important to note here that they had a clear effect on the spatial distribution of firms in the city. The fact that these moves took place towards the south and east is also significant, showing how different types of industry occupied different parts of the city. The west of Edinburgh contained large amounts of heavier industry. As shown in contemporary maps such as Bartholomew’s *Plan of Edinburgh and Leith with Suburbs Constructed from Ordnance and Actual Surveys* (produced in 1901-2 for the Post Office), an area of one square mile around Haymarket Station contained the Caledonian Coal Depot, the North British Distillery, the Caledonian Distillery, vulcanite works, a foundry, a stone depot, a malting, and slaughterhouses. These industries were dominant in this area and the sites they required were different to those used by the printing and publishing industries: they were larger, caused more air and noise pollution, and were thus less suitable for integration into a mixed use area of the city.

Printing and publishing firms were therefore likely to find more suitable premises for small scale industrial work in other areas of the city, hence their tendency to move south and east. Space was also available in these areas for building new, purpose-built premises. Thomas Nelson & Sons’ Parkside Works, for example, built from 1880, was on land which was close to St Leonard’s Station and Coal Depot — the proximity of this service may have been appealing — but was otherwise largely unused. Maps from the 1850s onwards show the area slowly being ‘filled in’ by a brewery, St Leonard’s Church, the Parkside Works, and residential properties, although it also retained significant amounts of green space. The fact that the area remained in mixed use resonates with earlier arguments relating to the scale of Edinburgh’s industries and, crucially, their varied nature.

The industry-wide changes in locations can be examined on a closer scale by considering the moves made by individual firms. The second group of maps shows the movement of eight firms in each of the four categories of printer,
engraver/lithographic printer, bookseller/stationer, and bookbinder [Figure 3.13]. Of the 33 bookbinding firms listed in the directory for 1880-81, eight were also present in the four subsequent directories. This allows their movement across the city to be traced over this 40-year period. Of the other three trades, samples of eight firms with the same longevity were taken for each for comparison. It is important to note here that these firms were exceptional in their longevity: as the figures for bookbinding show, the majority of firms (in this case, 76%) listed in 1880-81 were not listed by 1920-21. Though firms with a long lifespan naturally provide a more detailed picture of patterns of movement across the city, they are not necessarily representative of the wider industry, in which it was not the norm for firms to survive 40 years. This persistence was also geographical.

Across all four categories, the 32 firms sampled made an average of 1.75 moves over the period 1880-1920, which equates to one move every 23 years. Of these firms, five stayed in the same premises for the entire period, one firm 'moved' only in the sense that their premises expanded, and no firm moved more than four times. This level of industry stability is perhaps unsurprising in the specific context of firms with especially long life spans. Where movement did occur, however, there are noticeable patterns and differences between the four trades. These primarily relate to the distances moved. The maps show clearly that many firms made short-distance moves of just a few streets, covering distances of a half-mile or less. This can be seen in the cases of, amongst others, John Baxter & Son, printers, who moved from 19 Elder Street to 39 Elder Street [Figure 3.13.a], and B. Given, bookseller and stationer, who moved from 20 to 15 Bristo Street [Figure 3.13.d]. Elsewhere, J. Deas & Son, engravers and lithographic printers, moved from 11a Hanover Street to North West Thistle Street Lane and then Young Street, a total distance of 0.5 miles [Figure 3.13.c], and William Geddes, bookbinder, moved from 9a North Bank Street to 451 Lawnmarket, a distance of just 0.1 miles [Figure 3.13.b].

These short moves all took place within the central parts of the Old and New towns. This should encourage caution when describing particular areas — the ‘centre’ and the ‘outskirts’ of the city are generally assumed to have different characteristics, but this geography can also be interrogated on a much closer scale. Evidently,

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premises within the city centre were in fact sufficiently differentiated to warrant these small-scale moves, whether in facilities, cost, convenience, or a combination of these factors. The ‘centre’, despite having certain defining characteristics, should thus not be seen as homogeneous.

The majority of small moves took place between 1880 and 1900; longer moves — which, across the trades, were less common — took place more frequently between 1900 and 1920. This echoes previous arguments relating to consolidation and expansion, suggesting that firms became increasingly willing and able, throughout the period, to move further in order to find specific premises that met increasingly complex needs. The early twentieth century was also the period in which mechanization, where relevant, became increasingly prevalent, which effected more significant changes upon the nature of work carried out and thus the type (and location) of premises required, potentially necessitating longer moves. This was not, however, uniformly the case across the trades, as shown by the example below.

Bookbinders moved with the least frequency and over the shortest distances [Figure 3.13.d]. They were the smallest and most specialized of the four trades included here — many bookbinders listed in the Post Office Directories were individuals rather than firms. Although bookbinding processes were, as discussed above, mechanized in this period, these maps offer a sense of perspective on the scale and immediacy of this change. The persistence of small-scale premises with limited migration suggests that mechanization took hold primarily at large firms where binding was just one branch of work carried out in the mass-production of books. Individuals, however, continued to offer bookbinding as a specialized craft practice into the twentieth century: on this scale, it could be done from home or a small workshop from which there was little impetus to move. The nature of work, in each of the examples discussed here, is shown to have an irrevocably spatial dimension — and interrogating the nature of these spaces suggests modifications for dominant narratives of change.
Industry, the built environment and everyday life

Oliver & Boyd, one of the city’s largest printing and publishing firms, recorded employees’ addresses in their wage books during the period 1891 to 1912. These addresses are mapped and presented below [Figure 3.7]. The pattern of addresses is striking: two-thirds of the employees on this map lived almost exactly a mile — in all directions — from the firm’s premises on the High Street. The daily journey from home to work was, in this case, relatively short: none of the locations of the map are more than 1.5 miles from Oliver & Boyd’s premises, which suggests that many employees would walk to and from work, revealing something of the lived city. The fact these employees did not, however, cluster in a particular area (with the exception of four who lived close to the top of Easter Road) shows the spread of these industries throughout the city. The discussion below explores this prevalence in terms of firms’ locations, but it is also true for their employees’ residences.

William Scott and Peter Young lived at 12 Roseneath Terrace and 5 Roseneath Street respectively, one street away from each other (a distance of 0.1 miles). The two men experienced the visible prevalence of the printing and publishing industries in the built environment every day — not just during their daily work, but as they travelled to and from Oliver & Boyd’s premises at Tweeddale Court, on the High Street. Imagining that, in 1900, the two men walked the mile from their homes to work, they passed, on a daily basis, at least 19 other establishments whose work related to printing and publishing. Walking this route — the shortest available — which took them along Argyle Place, Middle Meadow Walk, Forrest Road, George IV Bridge and part of the High Street, the frequency of Scott and Young’s encounters with similar work to their own increased, on these streets or close to adjoining corners, as they approached Oliver & Boyd’s premises.

63 NLS, Acc. 5000/43, Oliver & Boyd, warehouse wages book, 1891-1912.
64 Using mapped data from the Post Office Edinburgh and Leith Directory (1900-01) shows the two men passing the following businesses: C. Lightbody, bookbinder, printer and stationer, 20 Argyle Place; M. Tait, stationer and printer, 41 Argyle Place; E. & S. Livingstone, bookseller, stationer and printer, 15 Teviot Place; William F. Clay, bookseller, stationer, 18 Teviot Place; E. Stephenson, bookseller and stationer, 4 Greyfriars Place; H. Virtue & Co. Limited, bookseller and stationer, 35 George IV Bridge; N. Macleod, bookseller and stationer, 25 George IV Bridge; R.W. Hunter, bookseller and stationer, 19 George IV Bridge; R. Anderson & Son, printer, 11 Chambers Street; J. & J. Gray & Co., bookseller, stationer and printer, 1 Victoria Terrace; Orrock & Son, bookbinder and stationer, 15 Victoria Street; William Geddes, bookbinder, 451 Lawnmarket; W. Macdonald & Co. Limited, Courant Printing Works, 8 and 12 St Giles Street; G.S. Smith, stationer and bookbinder, 12 St Giles Street; R.M. Cameron & Son,
The significance of these encounters should not be underestimated. The separation of home and work increased throughout the nineteenth century, meaning daily interactions with the spaces existing specifically between these two locations played a particularly important role in the acquisition of knowledge relating to the city.65

bookseller and stationer, 12 St Giles Street; Andrew Baxendine, bookseller and stationer, 10 St Giles Street; J. Rosenbluth, bookbinder, and C. & R. Anderson, bookseller and stationer, 377 High Street; A. Miller, printer, 369 High Street; J.S. Robertson, engraver, lithographic printer and stationer, 52 Cockburn Street; George Cooper & Co., bookbinder and paper ruler, 40 Niddry Street. Note that only data for the trades of bookbinder, printer, bookseller and stationer, and engraver and lithographic printer has been mapped; other printing and publishing trades may have also had premises in the areas examined here. The estimate of 19 is thus conservative.

Developing a ‘mental map’ and navigating city space is a highly subjective but nonetheless central part of the urban experience. This may be heightened in the context of everyday movement through the city. The normally rhythmic nature of a routine trip brought attention, for example, to any anomalous or extraordinary encounters, helping to make sense of what was usual and what was not. Essentially, walking in the city can be a means of ascribing personal meaning to specific spaces; thus, in Michel de Certeau’s words, through everyday activity ‘a “metaphorical” or mobile city’ is created ‘within the planned city’.

Of course, it is not clear whether Scott and Young paid especial attention to these establishments: the day-to-day diaries of Victorians suggest that daily journeys were usually only considered to be worthy of comment if they were eventful — that is, if they deviated from everyday routines. More broadly, these daily practices may take on more meaning for the historian than they ever held for contemporaries. An overtly psychogeographical or phenomenological approach to historical space risks anachronism; these approaches can tell us more about the author than their subject. Lefebvre points to the analyst’s differentiated position through the analogy of listening to the city from a window: ‘He who walks down the street, over there, is immersed in the multiplicity of noises, murmurs, rhythms ... By contrast, from the window, the noises distinguish themselves, the flows separate out, rhythms respond to one another’. Clearly, caution is necessary when considering the meanings of everyday interactions with the city: experiential evidence relevant to the majority of urban inhabitants is scarce. Historians may see patterns that were not meaningful to those directly experiencing a given space. Nonetheless, though residents’ interactions


with these buildings and spaces are difficult to quantify, the example of Scott and Young’s daily walk to work illustrates, once more, the prevalence of printing and publishing, and its specific impact on Edinburgh’s built environment. In a walk of less than a mile through the city, multiple premises were encountered — whether consciously or otherwise — as were their attendant sights, sounds and smells. In this way, printing and publishing clearly had a role to play in shaping the urban experience of Edinburgh.

**Conclusion**

This chapter adds local nuance to an understanding of printing and publishing in the late nineteenth and early twentieth centuries. The prevalence of industry in Edinburgh is shown to be of greater significance than is typically acknowledged: this is true in an experiential as well as an economic account. The analysis of this chapter can be synthesized in terms of increasing professionalization alongside high levels of stability.

The acknowledgement of publishing as a profession in its own right rather than as a subset of the *Post Office Directories* ‘bookseller and stationer’ category (where it was listed until 1910-II) has broader significance. In 1892, David Masson engaged with ideas that Pierre Bourdieu and others contended with a century later, questioning who the ‘generators’ of literature were. Considering the role of Archibald Constable, Walter Scott’s publisher, Masson wrote:

> He led the way in that enormous change in the whole system of the British book trade, now almost consummated, which has liberated publishers from the good old necessity of waiting for the authors that might come to them, one by one, with already-prepared manuscripts under their arm, the fruit of their careful private labours on self-chosen subjects, and has constituted publishers themselves, to a great extent, the real generators and regulators of literature, projecting serials, manuals, sets of school-books, and whatever else they see to be in demand, and employing literary labour preferably in the service of these enterprises of their own.\(^{73}\)

By emphasizing the role of the publisher, Masson implicitly highlighted the ambiguous role of the author as just one part of the early stages of production. In suggesting that publishers and their networks source and control literature, he placed them as a crucial agent in the process of cultural production. Nonetheless, this

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chapter shows the importance of considering the role of these 'generators and regulators' within the broader context of the field — in this case, Edinburgh's particular urban environment. This example also provides a broad illustration of the complex and interlinked nature of printing and publishing.

This professionalization was also linked to increasing specialization and mechanization in book production. The division of stages of labour under one roof in the cases of large printing and publishing firms such as Thomas Nelson & Sons, Oliver & Boyd and W. & A.K. Johnston shows that the role of the manager, overseer or 'foreman' came to be of importance. Rather than being an artisanal process where an individual saw production through from start to finish, printing and publishing were increasingly specialized, and technological developments in machinery facilitated mass-production and economies of scale in business practice. Each of these themes is developed in subsequent chapters in the specific context of cartography. The role of skill was contested, as machinery changed the roles of compositors and bookbinders, amongst others. This should, however, be tempered with a consideration of the industry's stability. The continued presence of bookbinders in small premises, for example, indicates that, even by 1920, this particular trade had not been mechanized to the extent suggested in contemporary accounts such as that of Mrs. Ogilvie Gordon. Likewise, although the inter-war years saw a decline in the number of firms from their peak in the early 1900s, the geography of this pattern suggests it can be viewed, instead, in terms of consolidation. Across the industry, trade clusters were prevalent in the city. Firms that appeared outside of these clusters in the industries' peak years were typically not present in 1920, while the original clusters remained stable. These areas were those that printing and publishing employees, in their journeys to and from work, would have frequently passed through. In terms of the fabric of the lived city, too, the pattern is of stability or consolidation rather than decline. This adds depth to the chapter's argument that the First World War cannot be used as a simple explanation for the industries' declining profitability in subsequent decades, though these years fall outside of the period of study. Issues explored here such as increasing regional competition should be seen as a precursor to later struggles. These themes provide important contextualization for the following chapter, which turns to the distinctive case of cartographic production.
Figure 3.8: Addresses of printers, bookbinders, engravers and lithographic printers, and booksellers and stationers, 1880-1881.

a) Printers

b) Bookbinders
c) Engravers and lithographic printers


d) Booksellers and stationers

Figure 3.9: Addresses of printers, bookbinders, engravers and lithographic printers, and booksellers and stationers, 1890-1891.

a) Printers

b) Bookbinders
c) Engravers and lithographic printers


d) Booksellers and stationers
Figure 3.10: Addresses of printers, bookbinders, engravers and lithographic printers, and booksellers and stationers, 1900-1901.

a) Printers

b) Bookbinders
c) Engravers and lithographic printers


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d) Booksellers and stationers

Figure 3.11: Addresses of printers, bookbinders, engravers and lithographic printers, and booksellers and stationers, 1910-1911.

a) Printers

b) Bookbinders
c) Engravers and lithographic printers


d) Booksellers and stationers

Figure 3.12: Addresses of printers, bookbinders, engravers and lithographic printers, and booksellers and stationers, 1920-1921.

a) Printers

b) Bookbinders
c) Engravers and lithographic printers


d) Booksellers and stationers
Figure 3.13: Changing premises of a sample of eight firms in each of the four trades, 1880-1920.

a) Printers

b) Bookbinders
c) Engravers and lithographic printers

![Map showing locations of engravers and lithographic printers from 1880 to 1921.]

**Key**
- Location in 1880-81
- Location in 1890-91
- Location in 1900-01
- Location in 1910-11
- Location in 1920-21


d) Booksellers and stationers

![Map showing locations of booksellers and stationers from 1880 to 1921.]

Chapter 4


This chapter explores the cartographic production processes of John Bartholomew & Co. (hereafter Bartholomew) and shows them to have been fundamentally collaborative. The following analysis argues that a consideration of the firm’s social relations, both internal and external, is crucial to understanding the finished product of the map. The chapter examines the processes of mapmaking in relation to a modified version of Robert Darnton’s ‘communications circuit’ (1982) and illustrates the multiple stages of mapmaking and their attendant social complexities.¹

In its journey from idea to finished product, a Bartholomew map passed through many hands, literally and figuratively. Multiple interests were involved in the cartographic process. This chapter therefore echoes Charles Withers’ and Innes Keighren’s argument that the final, published version of a work should not be relied upon ‘too readily … without reference to the conditions of its making’.² Authorship is shown here to be ‘necessarily collaborative’ in both the conception and physical manufacture of maps.³ This begins most tangibly with the process of commissioning maps. Bartholomew — both JGB and the firm — operated within an intellectual network of printers, publishers, geographers, and more: the broader influence of these networks should not be underestimated. Bartholomew’s maps were also subject to revisions and editing; corrections came not only from customers, but from an extensive network of correspondents, solicited or otherwise. The breadth of these influences, and their capacity to affect the many stages of the production cycle, necessitates in-depth consideration of the materiality of maps. Yet more hands applied ink to copper and stone, fed paper to printing machines, and folded and mounted maps. This chapter therefore integrates labour experiences — including issues of gender, skill and wages — into its overall account of how maps were made.

¹ The ‘communications circuit’ is reproduced and discussed in Chapter Two, Figure 2.1, 32.
³ Ibid., 564.

During the period c.1880 to c.1920, the printing industry as a whole saw increased mechanization. In more generalised printing firms, such as those discussed in the previous chapter, this was often perceived as an ‘attack’ on the skilled worker, in situations where tasks could be accomplished with greater efficiency by a machine.\footnote{R.J. Morris, “Bargaining with hegemony,” \textit{Bulletin — Society for the Study of Labour History} 35 (1977), 60.} The example of changing practices at Bartholomew complicates this narrative. In cartography, the craft skill of engraving gradually declined as lithographic printing became more commonplace: the technicalities of each are explained in the following analysis. This partial replacement was, however, still highly technical and provided skilled employment to an increasingly diverse workforce. This illustrates an important point of distinction within the printing industry. While Edinburgh printing firms faced labour troubles in the early twentieth century, these did not affect Bartholomew. This difference is shown here to be due, in part, to the highly skilled nature of cartographic production and thus an alternative route of technological development, which did not remove the need for skilled labour but rather created new roles.

The distinction between the agency of technology and the agency of people in the production of printed material is a key tenet of important debates in the history of the book, as discussed in Chapter Two.\footnote{This debate is discussed in Chapter Two, 28-30.} This chapter shows how the two are inherently linked: technology shaped workers’ experiences, and the nature of the end product, but mapmaking employees also had to exercise their own skill and judgement, which was socially and culturally formed. Furthermore, social relations outside of the physical manufacturing process also shaped the end product. Technology offered increased potential for mass-production and standardization, but an overarching argument of this thesis is that social processes inherently shaped the meaning of maps, at every stage of production. The following analysis shows that
Bartholomew became able to accurately predict manufacturing times and costs as they related to machines and physical processes, but that processes were considerably more complex, and less quantifiable, when human interests were at stake, as illustrated by stages of production including commission, shared authorship and editing.

**The ‘communications circuit’, people and processes**

As demonstrated in Chapter Two, Robert Darnton’s ‘communications circuit’ (1982) provides a useful framework for tracing the various stages involved in the production of a printed object. Darnton’s model follows a book through the people involved in its production: from author to publisher, and then through printers, suppliers, shippers, booksellers and binders to the reader. Darnton argues that the reader ‘completes the circuit because he influences the author both before and after the act of composition. Authors are readers themselves’. He profitably acknowledges, in the centre of the circuit, the role of ‘economic and social conjuncture’, or outside influences, such as ‘political and legal sanctions’ and ‘intellectual influences and publicity’. The model has most notably been revised by Thomas Adams and Nicholas Barker, who propose a shift of focus to the book itself, or ‘a bibliographical document’, and thus plot the lifecycle in terms of events (publication, manufacture, distribution, reception, and survival). Their referral to ‘bibliographical documents’ allows their model to be applicable to ephemeral printed matter as well as books. Although their revisions are implicitly critical of Darnton’s people-focused model, in practice their ‘events’ still depend upon — and are organised around — the decisions and actions of people involved in the book trade. The most important revision, perhaps, is their consideration of the survival of printed matter, a step beyond Darnton’s reader, which calls into question the importance of reception, editing, re-working and the location of books.

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In order to be applicable to the study of map production, however, both Darnton’s original model and Adams and Barker’s revised version require modification. Figure 4.1 shows a circuit specifically adapted for cartography. Alterations necessary in this context include the change from ‘author’ to ‘mapmaker’, and the inclusion of different manufacturing roles. These particular modifications are informed by Charles Withers’ discussion of the communications circuit in the context of Blaeu’s Atlas Novus (1654). Withers draws attention to the problematic nature of ‘authorship’ in the context of mapmaking, as well as highlighting the importance of manufacturing roles such as engraving, and the difficulty of separating ‘bookseller’ and ‘publisher’, and of tracing the reading and reception of maps.\(^\text{12}\) Despite the temporal differences these distinctions are relevant and important.\(^\text{13}\) Although ‘bookseller’ was a more straightforward category in the nineteenth and twentieth centuries, ‘publisher’ could be the mapmaker themselves or an external firm, which is a crucial differentiation with economic implications. In some cases the nature of cartographic commissions also meant there may not have been a ‘publisher’ in the usual sense: this is the case in individual maps produced for the Town Council, for example. Furthermore, the manufacturing specialisms Withers identifies are highly pertinent to a study of the later period: ‘printer’, in fact, could be separated into multiple further specialised roles by the late nineteenth century, while the function fulfilled by engravers is complicated by developments necessitating lithographic ‘artists’ and ‘writers’, whose roles are discussed below.

The model also takes into account the contemporary view of JGB, whose personal notebook, which includes a record of map production, shows that he conceptualised the stages of manufacture as ‘drawn’, ‘engraved’, ‘lithographed’ and ‘printed’. He also noted the firm for whom the work was undertaken, and any dates the map was revised.\(^\text{14}\) The lifecycle of a Bartholomew map was not necessarily straightforward: some projects were seen from conception to sales by Bartholomew, while others were sent to a different firm for binding, finishing, or insertion into a larger volume. In the discussion that follows, each of these stages and their potential complexities are considered.


\(^{13}\) Chapter Three also shows the importance of specialization in the printing and publishing industries more generally in this period: see pages 69-73.

\(^{14}\) NLS, Acc.10222/BR/277, work in progress notebook, 1888-1892.
The framework presented here also engages with geographical approaches to the history of the book. In so doing, it shows how the communications circuit can be usefully modified with a consideration of transmission and location, encouraged by James Secord’s model of seeing ‘every text, image, action, and object as the trace of an act of communication’, and Charles Withers and Miles Ogborn’s assertion that printed materials ‘should be understood in terms of both their geographical distribution (how far were they flung, and who and where were they flung to?) and the local conditions of their production, movement and consumption’.¹⁵ It does so by complicating the relationships — represented by arrows — involved in each stage of production. Neither of the previous models considered here attempt to do this. By designating relationships ‘internal’, ‘external’ or ‘potential’, it highlights that maps were not produced in a vacuum or, to return to the ‘field of cultural production’, an ‘autonomous sphere’.¹⁶ Instead, a range of human relationships exerted agency over different stages of the process. By showing that these relationships can usefully be considered in terms of being ‘internal’ or ‘external’, this work also aims to emphasise the fundamental spatiality of human relationships. Internal relationships took place within Bartholomew’s premises, whereas external relationships involved the movement of ideas or goods between places. This is not to designate the fact of relationships ‘being located’ as a simple explanatory factor — an approach criticised by Robert Mayhew, who acknowledges that ‘contexts are geographically differentiated’, but expresses doubt that ‘this amounts to space, location, or place doing anything’ — but rather to show how the location and particular nature of these relationships, and transmission between locations, did play a tangible role in the production of maps.¹⁷

A consideration of internal and external relationships also serves to mesh Darnton’s people-focused approach with Adams and Barker’s object-focused approach. As well as considering the movement of goods and ideas in an object’s lifecycle, this framework shows how people and processes are fundamentally linked and, in so doing, adds depth to the consideration of human relationships involved in

map production. Therefore, although this chapter broadly follows the structure of the production cycle shown in Figure 4.1, context-specific discussions of the people involved at each stage and employees’ experiences are integrated throughout. As the focus of this chapter lays primarily with examination of physical production processes, the discussion covers stages of publication and conception and manufacture. Later chapters continue this analytic thread around the circuit: Chapter Six focuses on distribution, and Chapter Seven on reception and survival.

Figure 4.1: The communications circuit, adapted for cartographic manufacturing.

Conception and publication: the role of commission

The first section of the modified communications circuit [Figure 4.1], ‘Conception and Publication’, references Adams’ and Barker’s model of ‘events’, which presents ‘Publication’ (in which category Adams and Barker also include conception and pre-publication negotiations) as the first event in the lifecycle of a printed object. Here, however, Darnton’s people-focused approach is maintained in order to understand
the key characters at each stage. This places the mapmaker as the main actor, with potential relationships taking place between the mapmaker and commissioning firms and individuals, or publishers. The bulk of Bartholomew’s work was produced to commission, whether for publishers or other customers and collaborators.

The distinction drawn between publisher and commissioning firm or individual in the diagram is intended to illustrate the range of Bartholomew’s networks and the different types and scales of work undertaken. Publishers are a clear category in themselves: large publishing houses formed a significant part of Bartholomew’s customer base. In the period 1900-05, for example, 9% of the firm’s total orders came from six major publishers.¹⁸ Not all customers were publishers, however, and other commissioned work came in a variety of forms. Some placed the commissioning body firmly in the role of collaborator: Patrick Geddes, sociologist and town planner, worked closely with JGB throughout the 1890s to develop plans for a ‘Geographical and Historical Museum … in which I need hardly say much of your work will occupy a leading place’.¹⁹ JGB described this as a ‘grand idea’ and continued to have close discussions with Geddes while engraving and printing the elevations and floor plans for the building.²⁰ In other cases, the relationship was clearly one of customer and provider, albeit on a variety of scales: in January 1900, for example, an order for 50 visiting cards from Mrs. R. Morham is listed alongside an order for ‘Maps for Tourist Programme’ from the Caledonian Railway Company.

Considering these firms and individuals, publishers or otherwise, in the context of conception and publication highlights not only the role of intellectual networks — in some cases the work was collectively conceived, while many other customers presented work to Bartholomew fully-formed — but also the variety of possible relationships and outcomes.

Bartholomew’s approach to commission had a clear economic dimension. Working to commission primarily involved fixed rather than variable costs and revenue and thus significantly less risk than producing their own publications. Commissioned jobs were accurately costed with all materials and labour accounted for, and a profit margin included in the customer’s final bill — which represented a

¹⁹ NLS, Acc.10222/BR/943, letters from Sir Patrick Geddes, correspondence from 1895 and 1896.
²⁰ Ibid. See also Christopher Fleet and Daniel MacCannell, _Edinburgh: Mapping the City_ (Edinburgh: Birlinn, 2014), 232-35.
guaranteed income. The firm were careful in their calculations: a penciled draft estimate for one sheet of a 'Comparative Atlas' (1917) notes initially that 'Hewitt took 418 hours to do 1st side — 158,500 pulls ... at above rate it would take 16 weeks 36 hours to finish 1 sheet in 10 plys'. This shows the level of detail, including past work, taken into account when producing estimates.

Sales of Bartholomew’s own publications, though successful, provided a less predictable source of cash flow. It is unsurprising, therefore, that work to commission comprised the bulk of Bartholomew’s production activity across the fifty year period 1888 to 1938. The number of orders listed for customers was consistently much higher than the number of orders listed under ‘publications’ — that is, their own work [Figure 4.2]. The number of orders, of course, does not take into account the fact that some orders required more work than others. The overall slow drop in the absolute number of orders suggests that the firm were taking on fewer, but larger commissions: their annual net profits and losses in fact show an overall pattern of growth. The pattern of decline in the number of orders therefore should not be interpreted as a sign that the firm struggled to obtain sufficient quantities of work.

The years around the First World War, however, show a clear decline in incoming orders, followed by recovery from 1918 to 1924. Printing was subject to the vagaries of war: a decreased labour force and limited paper availability, for example, affected Edinburgh’s book trade more broadly, with ramifications extending into the 1920s and beyond, as discussed in Chapter Three. These responses to outside economic conditions are less apparent in Bartholomew’s own work. With a small amount of exceptions, their own publications typically comprised 50-100 orders per year. During the First World War, this average stood at 61 orders per year: far from a significant drop. Throughout the period 1888-1938, Bartholomew’s own work represented an average of 24% of the firm’s total number of orders with limited fluctuation, reaching a maximum of 38% in 1918, when outside orders amounted to just 78 for the year, the lowest point in the period [Figure 4.3]. Overall the pattern is relatively steady, despite the firm deciding, in 1919, to begin publishing more of their own work. It seems, then, that although producing work to commission was a more

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22 NLS, Acc.10222/BR/238, inventories/valuations and summary statements of sales and profits, 1888-1934.
reliable source of profit, the firm were more easily able to control the amount of work carried out under their own name, maintaining a steady flow of publications that was less vulnerable to outside economic conditions than was demand from external customers. Balancing the advantages and disadvantages of both types of work was key to the firm’s success.

This example of economic factors also demonstrates the role of outside influences, as positioned in the centre of the production cycle [Figure 4.1]. The process of commission also, provides an illustration of the other outside influences. Alongside ‘economic and social conjuncture’, these are ‘intellectual influences and publicity’ and ‘political and legal sanctions’. The latter is considered in least detail in what follows: there is no evidence that Bartholomew were subject to political or legal sanctions during the period in question. The role of intellectual influences — which occurred on a variety of scales, from a working relationship with a prominent figure, to a disciplinary shift such as a new discovery or theoretical framework — is significant, however, and can be seen throughout the production cycle. Discussions between the firm and their customers were often complex and show the difficulty of establishing a single author for a map: multiple interests were at stake and the process of negotiation, seen also at the point of editing and re-drafting, was complex and influential. The rest of this chapter shows that the demand provided by external customers, publishers or otherwise, was crucial in determining Bartholomew’s output throughout the period in question. Essentially, both internal and external relations shaped manufacturing techniques and the finished product: customers’ specific requirements or interventions at each stage of the production cycle are the most obvious manifestation of this.
Figure 4.2: John Bartholomew & Co.: work to commission and own work, 1888-1938.


Figure 4.3: John Bartholomew & Co.: own work as percentage of total orders, 1888-1938.

Draughting: compilation, skill and wages

Draughtsmen carried out the early stages of manufacture, beginning with a process called compilation. Bartholomew maps were based on as wide a range of information as the firm could amass. Draughtsmen used extant maps — particularly those of the OS — along with town plans, technical drawings, images, reports, articles and data to draw a base map. They actively sought and developed this information: where necessary material was not available, they contacted urban administrators, engineers, planners and relevant interest groups, such as the Cyclist’s Touring Club (hereafter CTC), discussed below. This is an example of spatial knowledge ‘in transit’: from their base in Edinburgh, Bartholomew were able to compile information from a range of sources both nationally and internationally, which then informed maps for a broad geographical market. In this respect Edinburgh, or even Bartholomew’s premises, could be considered a ‘node’ of knowledge. The latter theme is developed in the following chapter.

Unlike the OS, Bartholomew never formally surveyed the land, but they certainly took personal experience of landscapes into account when producing maps. Replying to a letter published in The Scotsman in 1890, which suggested a road was incorrectly marked as a public right of way, John Bartholomew (Junior) wrote that ‘All I can say is, that when I walked over the road there was no obstruction, and, knowing it to be an old turnpike road, I had no hesitation in marking it as one still to be used by pedestrians’. In the early twentieth century, they also actively cultivated relationships with organisations such as the CTC, who provided the draughtsmen with a means of ‘testing’ their maps. Members of the CTC were given Bartholomew maps and asked to comment on their accuracy. CTC comments were highly specific: in 1913, for example, they undertook revisions on Bartholomew’s Half-Inch Map of Surrey, and in returning it, ‘corrected, as I have pretty well exhausted our revisers,’ also commented on maps of the Lake District and Wales. In each of these places they found marked roads which did not exist, unmarked but ‘quite rideable’ roads, and misplaced roads.

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24 On ‘nodes’ in the context of Bruno Latour’s ‘centre of calculation’, see Chapter Two, 46.
26 NLS, Acc.10222/BR/940, incoming correspondence from Cyclist’s Touring Club, letter from W. Burke, CTC Secretary, 25 January 1913.
The comments and sheer quantity of detailed correspondence between Bartholomew and the CTC in the early decades of the twentieth century suggest that the CTC took their responsibilities seriously: correspondence went between Bartholomew and the club every month during this period, and often included detailed annotations [Figure 4.4]. In return, Bartholomew provided CTC members with discounted half-inch maps. Other correspondents also frequently referred to mistakes or suggested modifications and additions based on their own experiences. Bartholomew often actively sought this information — from, for example, railway engineers, who referred in correspondence to providing ‘the information you want’, and marking track extension lines ‘as requested’. The firm were evidently aware of the benefits of obtaining local and specialist knowledge (in this respect they were similar to Charles E. Goad, producer of fire insurance maps, whose work and surveying practices are discussed in detail in the following chapter). They also received hundreds of unsolicited comments and corrections from members of the public with no formal connections to the firm: a letter sent from Cardiff in September 1889, addressed to ‘My dear friend Bartholomew’, points out ‘a slip’ in the placement of a particular Welsh village in the firm’s Gazetteer of the British Isles. Clearly, although Bartholomew did not undertake large-scale surveying themselves, they made significant use of the knowledge of groups and individuals, amounting to surveying by correspondence. They may not personally have known a given area, but they knew who did. This was a reciprocal relationship, formalized in the case of the CTC, but informal elsewhere: Bartholomew essentially performed an early version of ‘crowdsourcing’ or community empowerment, working on the assumption that their chosen correspondents had a shared interest in ensuring the accuracy of the finished product.

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27 NLS, Acc.10222/BR/921, letters received by JGB, 1884-1894, letter from James Casswell, North British Railway Company Engineer’s Office, 29 January 1890; letter from Finn Valley Railway General Manager’s Office, 3 February 1890.

28 NLS, Acc.10222/BR/921, letters received by JGB, 1884-1894, letter from F. Sorley Johnstone, 13 September 1889.
Figure 4.4: Annotated map returned to Bartholomew by the Cyclists’ Touring Club.

Source: NLS, Acc.10222/BR/940, incoming correspondence from Cyclist’s Touring Club, letter dated 12 February 1920.

In their light and spacious offices in Bartholomew’s premises, draughtsmen used this information from correspondents along with extant maps and plans, newspaper articles, technical drawings and more to draw base maps. Here, the experience of Thomas Grindlay, who served as an apprentice and assistant draughtsman at Bartholomew from 1884-90 and 1890-93 respectively, illuminates the level of skill involved in this role, and the economic and social implications of this. Grindlay’s experience is a singular case: the following analysis does not assume typicality, but rather uses the example to investigate Grindlay’s life and, in so doing, learn something of the broader context within which he worked.29

After spending nine years at Bartholomew, Grindlay moved to Edinburgh’s other large cartographical firm, W. & A. K. Johnston, where he worked for ten years as ‘geographical draughtsman’. He then moved to London to work for George Philip &

29 Personal information relating to individual employees is scarce. A selection of Grindlay’s papers are held in the British Library (hereafter BL), MSS. Add. 60511; no such information is held in the Bartholomew Archive.
Son for over six years, and, in 1908, emigrated to Canada to work for the Department
of the Interior, where he became principal draughtsman. Writing retrospectively,
Grindlay described his experience at Bartholomew as ‘essentially geographical, not
map draughting in the ordinary sense from a copy supplied, but compiling the map’. He went on to explain that the process of compilation consisted of ‘considerable
technical correspondence, reference to foreign publications and maps, and co-
ordinating the work of various authorities, requiring special geographical and
technical training and experience’. This highlights that the draughtsman’s role was
not only extremely physically skilled, requiring a high degree of accuracy in drawing,
but was also intellectually demanding.

Correspondingly, draughtsmen undertook a long apprenticeship — Grindlay’s
six years of training were typical — and worked under careful supervision from senior
draughtsmen and JGB himself. Grindlay refers to having been ‘under the immediate
supervision of the late Dr. Bartholomew’. A photograph of draughtsmen at work in
1895 [Figure 4.4] shows a row of younger men working close to the windows on the
left of the photograph, while a map is inspected in the foreground. Their smart
clothes indicate the prestige of their work, and suggest it was not messy — none
appear to be wearing protective garments. Likewise, the predominance of large
windows and natural light shows the importance of vision and the necessary precision
of their work. The latter theme is developed further in Chapter Five.

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30 BL, MSS. Add. 6051l, papers of Thomas Grindlay, letter from Thomas Grindlay to Mr. Lynch,
Department of the Interior, Canada, 29 November 1926.
31 Ibid.
32 Ibid.
33 Ibid.
A draughtsman’s role commanded respect: this was reflected not only in the workspaces they occupied, but also in their wages. Although Bartholomew employee James Bain, who worked for the firm in the 1880s and 1890s, described the pay as poor — citing this as his reason for leaving — Grindlay experienced regular pay rises.\(^\text{34}\) As an apprentice in 1887 (when detailed records of wages begin), Grindlay earned 4s. 6d. for between 48 and 50 hours of work a week.\(^\text{35}\) He received pay rises in the following two summers and earned 10s. 6d. per week by May 1890. His transition from apprentice to assistant draughtsman appears to have taken place a few months later: his wages rose to £1 per week in August 1890.\(^\text{36}\) His weekly rate then increased consistently each summer by around 3s. Grindlay’s last week working for Bartholomew was in March 1893, by which point he earned £1 10s. per week: the equivalent of at least a £30,000 annual salary in 2016.\(^\text{37}\) From 1909-1913 Maud Pember Reeves, as part of the Fabian Women’s Group, conducted an investigation into

\[\text{Source: NLS, Acc.10222/BR/1901, Box 3, photographs of Bartholomew personnel.}\]

\[\text{34 NLS, Acc.10222/BR/351, notebook of James Bain, 1880-1890s.}\]
\[\text{35 NLS, Acc.10222/BR/500, wage book, [1883]-1888.}\]
\[\text{36 NLS, Acc.10222/BR/501, wage book, 1888-1891.}\]
working class households that questioned the possibility of living on £1 per week and made a powerful case for increased state support.38 By this point, however, the value of the pound and the cost of living meant that earning £1 per week in 1909 was approximately the equivalent of earning a £17,000 annual salary in 2016.39 In 1893 Grindlay’s salary was, in fact, slightly above that of the average British worker.40

Colleagues in other departments did not experience the same rate of increase in their wages. In 1893, James McVicar, the firm’s indexer and librarian, wrote to JGB, cautiously requesting a pay rise:

I hope that I shall not be thought over assertive or disrespectful if I once more invite your attention to a subject of extreme delicacy ... that of the present wages I am receiving in your establishment ... when I reflect that I have now been for nearly six and a half years in your employment, and when I consider that the time has now arrived when I must make up my mind as to what lies before me in the future, I feel I should not be doing justice to myself were I not again to bring this disagreeable matter under your notice ... the present rate of wages is much below that which is usually given for work requiring so much intelligence and attention.41

Evidently, McVicar had previously discussed the topic of a pay rise with JGB, and appears to have been uncomfortable doing so again: he ends his letter by assuring JGB that ‘any defects you may discern in this letter arise from no want of respect, but from my inexperience in this form of letter-writing’. He also mentions spending evenings studying in order to ‘qualify myself to deal intelligently with any work required of me’, portraying an intellectual commitment to his job.42 His employment at the firm began in 1887, when he earned 25s. per week. He received a pay rise in September of that year, which took his earnings to 27s. 6d. per week.43 At this point, he earned significantly more than Grindlay. By 1893, however, when McVicar wrote to JGB, Grindlay’s wages had risen consistently over six years, whereas McVicar’s remained at 27s. 6d. McVicar did not receive his requested pay rise and still earned the same amount two years later.44 Nonetheless, he worked as the firm’s librarian for 49 years

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38 Maud Pember Reeves, Round About a Pound a Week (Oxford: Clio Press, 1992). Originally published in 1913 by G. Bell & Sons Ltd.
41 NLS, Acc.10222/BR/921, letters received by JGB, 1888-1894, letter from James McVicar, 23 January 1893. 
42 Ibid.
in total, earning him a place on a list detailing 'loyal and devoted service' produced in
the second half of the twentieth century.\textsuperscript{45}

Bartholomew employees’ wages reached a peak at different stages in their
career: the skilled McVicar earned more than an early career draughtsman, but
appears to have had no scope for progress, while Grindlay’s wages rose year by year.
This inference is reinforced by the fact that, despite having become one of the firm’s
highest paid draughtsmen by 1893, Grindlay left Bartholomew for their only local
competitor, W. & A.K. Johnston, where he then remained for ten years. Records of
wages at W. & A.K. Johnston have not survived, but it seems reasonable to suppose
that they offered Grindlay enough to encourage him to leave Bartholomew, where he
appears to have been otherwise content and well-liked: according to a written
testimony from JGB, Grindlay was considered ‘intelligent, obliging and attentive to his
work’.\textsuperscript{46}

Unlike other employees in the printing industry, who were highly unionized by
the late nineteenth century, there is no evidence of labour disputes or disruption at
Bartholomew until 1919. In this year, minute books show the firm in discussion with
the Amalgamated Society of Lithographic Artists and Designers regarding the wages
of draughting and engraving apprentices returning from active service. These
discussions were, however, much less confrontational than those occurring at a
similar time elsewhere in the industry.\textsuperscript{47} Here, it is relevant to note that cartographic
employees in Edinburgh were also set apart from their fellow printers by their lack of
viable alternative work. The various stages of mapmaking were specialized and
distinct to procedures carried out in book printing; moreover, while the local
economy supported numerous printing firms, Bartholomew were one of just two
cartographic manufacturers.

Although Grindlay left Bartholomew for Johnston, staff were generally long-
serving, which may, in part, be explained by being employed by one of only two
available employers. More general printing employees, by contrast, could move
between Edinburgh’s many firms (discussed in Chapter Three) with relative ease,
which, along with a heavy union presence, forced wages to be more competitive in the

\textsuperscript{45} NLS, Acc.10222/BR/1874, folder of memorabilia, n.d. but content suggests c.1950s-1980s.
\textsuperscript{46} BL, MSS. Add. 6051l, papers of Thomas Grindlay, letter from JGB, 24 March 1893.
\textsuperscript{47} NLS, Acc.10222/BR/202, Director’s Minute Book No.1, 1919-1964, minutes of meeting, 16 September
1919.
industry’s peak years of the early twentieth century. Bartholomew employees instead seem to have relied on internal communication such as McVicar's letter and, by the 1920s, occasional meetings with the newly-established Board of Directors. From this period, the directors appear to have been willing to negotiate and compromise on requests for wage increases, especially in the case of draughtsmen and engravers. While the tone of McVicar's letter clearly conveys nervousness and uncertainty — he explicitly refers to his discomfort and inexperience in wage negotiations — he did, nonetheless, feel able to exert some agency over his conditions of employment. Along with his level of skill, this should place him firmly in the category of the 'labour aristocracy'. The fact that his request was not granted, however, complicates the issue. If McVicar had been more assertive, or had viable alternative employment available, JGB may have been forced to consider his request. It is also relevant to note here that the size of the department may have played a role: McVicar was the firm's only indexer or librarian for the majority of his 49 years of employment, which makes his apparent lack of leverage more stark. The other highly skilled departments of draughtsmen and engravers had, through critical mass, more negotiating powers.

Negotiations did, however, continue to take place on an individual level, albeit on the other side of the Atlantic. In 1908, Grindlay emigrated to Canada, where he began working for the Department of the Interior. In so doing, he was part of a diaspora of 253,894 Scots who emigrated between 1901 and 1910. Of these, 109,500 settled in Canada. The exact circumstances of his emigration are unclear, but extant correspondence shows that he left Philip’s employment in London in 1908 after suffering a ‘bad accident’ to his arm and returned to Edinburgh to recover. In August 1908, Philip wrote to say he would not require Grindlay to ‘work out the usual fortnight’ and that he hoped Grindlay would ‘be successful and happy in your new life. We will be sorry to lose your services’. Upon arriving in Canada later that year,
Grindlay began work in the ‘Geographer’s Branch’ of the Department of the Interior, where his first project was the projection and compilation of a sheet of Halifax for the department’s *Standard Topographical Sheets of Canada*.54

In November 1926, after 18 years of employment in this department, Grindlay wrote to his employer requesting a pay rise alongside a re-classification from ‘Principal Draughtsman’ to ‘Economic Geographer’. The tone of his letter is markedly different to that of McVicar. Grindlay listed his education — he completed high school as well as attending extra classes at Heriot Watt College and the Royal Institution, both in Edinburgh — and described his employment to date, including specific examples of work he projected and compiled for Bartholomew, Johnston and Philip. He included original and printed samples of his work, written testimonials from previous employers, and ended by specifying his desired salary: ‘Considering my 42 years varied experience in geographical work, my length of service in the Government, the increased responsibility in my work ... I feel that I am fully justified in asking a reclassification to Geographer, with a salary range of not less than $2880 to $3600’.55 Unlike the cautious McVicar, Grindlay was clear about his experience and expectations. His confidence in negotiating and willingness to be assertive about his skills could well have been linked to the fact of his long career and experience in a variety — on a global scale — of cartographic departments. McVicar and Grindlay’s different letters show the importance of considering industry demographics and economies in terms of geographical scope: if mapmaking employees wished to remain in Edinburgh, they had limited negotiating powers. Grindlay, however, was clearly content to move around Britain and then emigrate, suggesting a clear spatial aspect to the potential of career progression.

Unfortunately, extant records do not make it clear whether Grindlay was promoted. The re-classification he hoped for is, however, telling in itself. ‘Draughtsman’ references the artisanal, physical aspect of his work — highly skilled though it was — whereas ‘Geographer’ emphasizes the cerebral and professional side. A tension is articulated here between industrial and intellectual work. This was, in fact, an inherent part of mapmaking. The activities necessary to see a map from conception to completion were wide-ranging and difficult to classify: this points, 54 BL, MSS. Add. 60511, papers of Thomas Grindlay, letter from Thomas Grindlay to Mr. Lynch, Department of the Interior, Canada, 29 November 1926. 55 *Ibid.*
again, to the need to consider the different specialisms present at various stages of the work. Grindlay himself emphasized his physical skills — he refers to learning ‘the technical intricacies of geographical map construction’ — alongside the mathematical skills required for projection calculations, and, to further augment his standing, his institutional affiliations. In Scotland, he was a member of the Royal Scottish Geographical Society, and in Canada he became a member of the Engineering Institute of Canada and also of the Professional Institute. This highlights how highly skilled and well-rounded successful draughtsmen were expected to be: Grindlay’s mix of skills was in fact similar to JGB’s, who trained as a draughtsman, and did carry out draughting work at the firm on occasion. In practice, however, managerial and other professional duties appear to have taken up much of JGB’s time. Although they only made up around 10% of Bartholomew’s total workforce, draughtsmen carried out a critical and complex role, and can be seen as a clear example of the distinctive mix of industry and intellect that was consistently present in cartographic production.

**Engraving and printing: materials, skill and gender**

Once a base map was completed, it moved into the engraving department, where it was engraved on to copper. Like draughting, engraving was a respected craft skill with a long apprenticeship: boys began aged 13 or 14 and trained for seven years. A photograph of the engraving department taken in the 1890s shows the range of employees’ ages [Figure 4.5]. Acquiring experience at Bartholomew made them highly employable. In 1894, JGB wrote to the Survey Office complaining that they had been ‘poaching’ Bartholomew’s engravers — they did so prior to the completion of training, by offering a higher rate of wages (albeit less than a fully qualified engraver would expect). Nonetheless, Bartholomew retained a highly skilled workforce, which enabled the printing of the draughtsmen’s base map.

In the early nineteenth century, Bartholomew printed maps directly from the engraved copper plates, which allowed fine details to be reproduced. The process involved a high level of physical skill: the image of the base map was transferred in reverse onto the copper plate and then engraved using a variety of tools and techniques. Copper plates allowed for maps to be reproduced accurately and

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frequently. They could also be altered by hammering a given area flat and re-engraving it. Such plates were, however, expensive, and wore down quickly. By the mid-nineteenth century, therefore, Bartholomew used copper plates in conjunction with lithographic stones: in 1860, John Bartholomew Jnr.’s letterhead described him as ‘Engraver and Lithographer’. In lithographic printing, instead of printing directly from the copper plate, the map image was first transferred from copper to paper, which meant the level of detail obtained in copper engraving was maintained. The image on paper was then transferred onto a lithographic stone. This was either done through an intricate process of drawing and painting by ‘litho artists’ or directly, by placing the paper image on top of the stone and using a solvent or acidic solution to transfer it. The latter necessitated the use of ‘transfer paper’ and specific types of ink and paint. From there the map image on the stone was ‘ coloured’ and printed. After elucidating the economic impetus behind lithographic printing and its concurrent impact on the workforce, the following analysis examines map colouring and printing in more depth.

Lithography was a durable and affordable means of printing: stones could be used to print thousands of copies of maps, whereas copper plates needed to be replaced after around 100 copies. Correspondingly, however, the importance of the engraving department diminished. In 1888, 14 men were employed as engravers; by 1930, the department consisted of just five men [Figure 4.6]. This pattern is made more significant when considered in relative terms: the average department size at Bartholomew was six in 1888 and 13 in 1930. Likewise, in total, the firm employed 67 workers in 1888 and 158 in 1930. While the latter two figures show that the average department size and total workforce size more than doubled, the pattern in the engraving department was the opposite. In 1930, it was around a third of its 1888 size.

Figure 4.6: Engraving department at Parkside, showing the range of ages in the workforce, 1890s.

Source: NLS, Acc.10222/BR/1901, Box 3, photographs of Bartholomew personnel.

Figure 4.7: Size of engraving department compared to size of average department, 1888-1930, with linear trendlines.

The growth of lithographic printing meant, in simple terms, that fewer copper plates were required. They were, instead, altered and re-used. Records of work done on copper plates show this to have been the case throughout the late nineteenth and early twentieth centuries. In 1888, Bartholomew’s *Edinburgh Directory Plan*, produced for the Post Office Directory, was engraved onto two new plates, which together cost £20. An additional £10 was spent on a plate for engraving extensions east to Portobello. The firm then worked on these plates at least every two years, into the 1920s. Associated labour costs show that the amount of work done varied significantly year by year. In 1894, for example, the firm did just 1s. 9d. worth of work on the plate, whereas, in 1902, labour costs amounted to £30 17s. 1d. In the case of the *Directory Plan*, the level of alterations changed yearly in line with Edinburgh’s growth and change, and it is clear that in some years the firm made very few changes to the plates. The significant initial outlay of £30 for three plates, then, was worthwhile as these plates were still in use 40 years later.\(^{59}\)

More broadly, records show that by the early twentieth century, the bulk of the engraving department’s work comprised corrections rather than engraving from scratch [Figure 4.7].\(^{60}\) This reinforces the supposition that plates survived longer as lithography became standard practice. Had they been printed from directly, they would have been replaced much sooner. The value of copper plates held by Bartholomew in the period 1890 to 1912 averaged £12,775, which explains the firm’s interest in keeping each plate in service as long as possible. By contrast, the value of the firm’s supply of lithographic stones averaged £560 [Figure 4.8].\(^{61}\) Stones were cheaper than copper, more durable — polishing them in order to remove the image and re-use the stone took just millimeters off the surface — and facilitated printing on a larger scale than had previously been possible. Nonetheless, engraving onto copper remained a crucial part of the process of mapmaking, and the firm continued to invest in machinery, such as a copperplate press (£21 5s. 6d.) and a copperplate heating stove (£3) purchased from John Greig & Sons in 1899. Engraving did not die out; technological changes simply meant it needed to be done less frequently.

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59 NLS, Acc.10222/BR/460, plate ledger no.1, 1887-1925, 12.
61 NLS, Acc.10222/BR/605, private ledger no.1, 1888-1912.
Figure 4.8: Engraving and correcting of copper plates, 1888-1891 and 1904-1910.62

Source: NLS, Acc.10222/BR/605, private ledger no.1, 1888-1911

Figure 4.9: Value of copper plates and lithographic stones held by Bartholomew, 1890-1912.

Source: NLS, Acc.10222/BR/605, private ledger no.1, 1888-1912.

62 The equivalent data for the period 1892-1903 was not recorded in Bartholomew’s ledger.
With the durability of lithographic stones came a new type of physical demand on Bartholomew employees. Though they came in a variety of sizes, most lithographic stones were extremely heavy: a pair of 56 by 91 centimetre stones purchased in March 1899 each weighed 111 kilograms. A 25 by 30 centimetre stone weighed around 73 kilograms. These were not exceptional: a list of stones held in the late nineteenth century shows they weighed anything from 9 kilograms (a small map of North America for the Elementary Atlas) to 191 kilograms (the Post Office Plan of Edinburgh and Leith). Moving the heavier stones from storage rooms to the printing machines required multiple employees and a level of physical strength and manual labour not typically associated with other mapmaking practices.

Replacement of stones occurred relatively rarely — in a decade, only seven were listed as broken. Even these could occasionally be fixed: a double demy (61 by 91 centimetre) stone 'broken in Jules' machine' in 1910 was declared 'good but unequal in thickness' and could be made even, while the fate of a stone left with 'one corner high' is unknown. A double demy stone 'broken by Girl letting Comb fall' was, however, irreparable. Nonetheless, the economic benefits of lithographic stones are clear: though records show periods of investment in stones in the late 1890s and again around 1909, their value remained relatively steady throughout the period in question [Figure 4.8]. This was in part due to their capacity to be re-used: as discussed, removing one map image from a lithographic stone had minimal impact on its surface. Bartholomew actively corresponded with customers to enquire as to whether they would require further copies of maps or whether the firm were free to remove the image from the stone. The benefits of this system were twofold: as well as the stones providing good value, maintaining this system of correspondence allowed Bartholomew to ascertain the likelihood of repeat orders and predict their financial situation accordingly.

Manufacturing roles changed as stone, rather than copper, became the material that Bartholomew employees encountered most frequently. In simple terms, the shift from the delicate, artisanal work of copperplate engraving to the physically demanding work of lithographic printing echoes developments elsewhere in the

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64 NLS, Acc.10222/BR/476, list of lithographic stones, n.d. but subject matter suggests late nineteenth century.
65 NLS, Acc.10222/BR/475, record of printing from stones, 1906-1930.
66 NLS, Acc.10222/BR/474, record of maps 'taken off the stone', c.1899-1907.
printing industry, where, for example, the introduction of the typesetting machine, or ‘iron compositor’ was seen as an ‘attack’ on the skilled workforce.\(^67\) In the case of mapmaking, however, the situation was more complex. Lithographic printing created a number of new, highly skilled roles. Bartholomew wage books show the existence of departments for ‘litho writers’, ‘stones’ and ‘tint stones’ from 1888, ‘colourists’ from 1891, and ‘litho draughtsmen’ or ‘litho artists’ from 1893.\(^68\) This apparent range of roles was simplified by the late 1890s, when lithographic writers, draughtsmen and artists were consistently referred to as ‘litho writers’ in the firm’s wage books. Their work consisted of transferring the image from copper to stone. Unlike draughtsmen and engravers, litho writers often did not undertake a formal period of apprenticeship; job advertisements in *The Scotsman* show that Bartholomew sought employees with existing experience. They occasionally specified extra skills such as ‘experienced in colour work’, ‘young man well up in lettering’, and in one case, stated a preference for somebody ‘accustomed to map work’.\(^69\) This shows that Bartholomew considered it possible to recruit experienced young men within the local area — that is, boys who had received sufficient training elsewhere. W. & A.K. Johnston also took on mapmaking apprentices, who may have then been ‘poached’ by Bartholomew, and more general printing firms in the city carried out lithographic work, albeit not specifically cartographic. This would have provided workers with the experience in ‘colour work’ or ‘lettering’ that Bartholomew hoped to find. Again, this highlights the broader importance of the printing industry as a provider of skilled employment in Edinburgh.

Once the map was ‘on the stone’, colourists applied layers of coloured ink to it. As well as their durability, lithographic stones had significant technical benefits: they allowed for colour to be built up in layers when printing. This aided the development of contour layer colouring, in which a graduated colour palette represents land height or sea depth [Figure 4.9]. Applying colour to the stones was a technical process, affected by temperature and light, and was carried out by a highly-skilled, all-female department of colourists. Training to be a colourist lasted five years. When colourists were first listed in the wage books in 1891, seven were employed. The firm recruited a

\(^{67}\) Morris, “Bargaining with hegemony,” 60.
\(^{68}\) NLS, Acc.10222/BR/500-502, wage books, [1883]-1894.
\(^{69}\) Classified Adverts, *The Scotsman*, 19 May 1906, 4; 1 August 1906, 3; 6 January 1912, 14.
mix of ‘learner girls’ and experienced colourists throughout the following decades.\textsuperscript{70}

By 1930, the department comprised 21 employees — a faster rate of growth than that of the total number of Bartholomew employees.\textsuperscript{71} This shows the increasing relative importance of lithographic printing techniques, and the new opportunities it afforded for women to undertake technical training and skilled employment. The colourists’ level of skill was reflected in their wages: this is considered in greater depth below in comparison to male and female printers.

The final stage of printing saw the map image transferred from stone to paper by ‘machine men’ and ‘machine girls’. These terms were used in Bartholomew’s wage books and are discussed below.\textsuperscript{72} The male printer applied gum and resin to the lithographic stone to ensure colours transferred appropriately to paper, and then pulled it back and forth through the printing machine. The female printer fed paper into the machine. The physical aspect of their work can be seen to have a gendered aspect: men carried out the ‘heavy’ work of moving the stone, while women ensured paper was fed precisely through the machine. Collectively, male and female printers formed the second largest of Bartholomew’s various departments.\textsuperscript{73} The various stages of production considered here show the gendered nature of work at Bartholomew: all-male or all-female teams generally carried out specific roles. Where men and women worked together, as was the case in printing, their roles were clearly defined and physically delineated.

The distinction between ‘men’ and ‘girls’ (rather than women) should be noted here, and highlights the paternal — or, arguably, patronizing — attitude Bartholomew held regarding female employees in particular. This was reflected in women’s wages. In 1888, ‘machine men’ earned between £1 12s. 6d. and 16s. 4d. per week, depending on their experience. The highest amount earned by a ‘machine girl’ was significantly lower than the lowest amount earned by her male counterpart: female wages in this department ranged from 9s. to 4s. 6d.\textsuperscript{74} By 1928, when wage books listed printing staff as ‘printers’ and simply ‘girls’, men earned between £4 13s. 8d. and 12s. per week, while women earned between £1 14s. and 9s. per week.\textsuperscript{75} Low

\textsuperscript{70} Classified Adverts, \textit{The Scotsman}, 29 July 1897, 9; 29 September 1920, 3.
\textsuperscript{71} NLS, Acc.10222/BR/500-510, wage books, 1888-1930.
\textsuperscript{72} \textit{Ibid.}
\textsuperscript{73} \textit{Ibid.}
\textsuperscript{74} NLS, Acc.10222/BR/500, wage book, [1883]-1888, entries for 1888.
\textsuperscript{75} NLS, Acc.10222/BR/510, wage book no.10, 1927-1939, entries for 1928.
wages for women were prevalent throughout the printing industry. Edinburgh’s female compositors were paid at a similar rate to Bartholomew’s female printers throughout the late nineteenth century; they, too, received significantly lower wages than their male counterparts.\textsuperscript{76}

\textbf{Figure 4.10:} Section of \textit{Bathymetrical Survey of the Fresh-Water Lochs of Scotland}, 1897-1909.

Bartholomew were unusual, however, in continuing to recruit women after 1910. In this year, Edinburgh’s major printing firms agreed to stop hiring women. Prior to this, female printers had provided cheaper labour than male printers, which encouraged firms to hire and train them. The male printers, however, were unionized and, after years of labour disputes, forced an agreement that the city’s printing firms would no longer take on female employees. Existing female printing employees did not lose their jobs, but a previously significant form of skilled work became inaccessible to

\textsuperscript{76} Reynolds, \textit{Britannica’s Typesetters}, 54-6.
women and their presence in the city’s printing industry quickly dwindled.\textsuperscript{77} This suggests that female Bartholomew employees were perceived as less of a threat than other female printers; this is perhaps because their roles were clearly and consistently delineated by gender and, therefore, unlike employees elsewhere in the printing industry, there does not appear to have been cause for conflict between men and women. Furthermore, by remaining separate to this dispute, Bartholomew differentiated themselves from more general printing: this is a recurrent theme in their outward actions.

\begin{table}[h]
\centering
\caption{Weekly wages of male printers, female printers and colourists at Bartholomew, 1888 and 1928.}
\begin{tabular}{ |l|c|c|c|c| }
\hline
 & \textbf{1888} & & \textbf{1928} & \\
 & \textbf{Highest wage} & \textbf{Lowest wage} & \textbf{Highest wage} & \textbf{Lowest wage} \\
\hline
\textbf{Male printers} & £1 12s. 6d. & 16s. 4d. & £4 13s. 8d. & 12s. \\
\textbf{Female printers} & 9s. & 4s. 6d. & £1 14s. & 9s. \\
\textbf{Colourists} & 17s. & 8s. 6d. & £2 14s. & 5s. \\
\hline
\end{tabular}
\end{table}

Source: NLS, Acc.10222/BR/500 and 510, wage books, entries for 1888 and 1928.

Higher wages came with more skilled roles for women as well as men although, in monetary terms, skilled women still lagged behind skilled men. Colourists (an entirely female department) earned more than female printers but significantly less than male printers, despite carrying out work that was technically more intricate and required a longer period of training [Table 4.1]. Here, notions of ‘skill’ can be seen to be strictly gendered: women ‘learned the job’, while men ‘acquired a skill’ and its attendant rituals, language and social value.\textsuperscript{78} This was not just the case in the printing industry, but also in many other trades. In metalworking, for example, male and female work was consistently delineated both in terms of the factory spaces occupied by employees of each gender, and in terms of how skill was construed.\textsuperscript{79} The difference between male and female wages is most noticeable in all cases with regard to the highest wage commanded within each department. Men earned a much greater range of wages than women, showing clearly that men could progress further in this regard. Bartholomew’s highest paid colourists, however, were — by the standards of

\textsuperscript{77} Ibid., 67-87.
\textsuperscript{78} Ibid., 137.
typical wages for women at the time — unusual in their skill and wages. Relative to the earnings of the average worker, a weekly wage of £2 14s. in 1928 was the equivalent of taking home £452 in 2016. Over the course of the year, even allowing for some unpaid leave, this was the equivalent of earning at least £21,000 as an annual salary in 2016. This could have a profound effect on a woman’s life, even to the extent of removing any perceived necessity of getting married in order to achieve financial stability. Given that female printers (who earned roughly half the wages of colourists) considered their own wages to be relatively high — one female printer’s mother allegedly responded, when told that her daughter planned to get married, ‘that if she had been earning that kind of money, she would not look at any man’ — the money that colourists earned certainly was exceptional and its potential impact should not be underestimated.

External relationships: ink, paper and local suppliers

While processes of conception and publication were largely conducted through external relationships, the majority of manufacturing processes examined thus far occurred internally. This neglects suppliers, who were of course critical to production. Bartholomew’s suppliers were predominantly local. In January 1900, for example, they purchased materials from 19 different suppliers (in addition to ink and paper, which were purchased in large quantities throughout the period in question and are considered in greater detail below). These materials included paraffin oil, pine rollers, various types of twine, tins of stain, soft soap, glue, sable brushes, and a ‘large reel of pink tape’. This does not include other supplies such as furniture or office equipment: the furnishing of the firm’s premises is considered in the following chapter. Just four of the firm’s suppliers in this month were based outside of Edinburgh, showing the breadth of the city’s printing and publishing industry and its potential capacity for local self-sufficiency. More broadly, this allows another geographical scale to be added to the production cycle, and enhances it by considering not simply where maps were made and sold, but also where their component parts were acquired.

8c Reynolds, Britannica’s Typsetters, 142.
The pattern of local purchasing for ink was similar. By 1912, when Bartholomew first recorded the specific ink — and its providers — used for that year’s edition of the Comparative Atlas, this was a highly specialized product. For this one project, Bartholomew required two different types of black ink, for example, along with two types of tinting ink and five shades of red ink. Of the eighteen types of ink for which they recorded purchasing details, eleven were sold directly in Edinburgh by the firms Dane & Co., who had an administrative base at 3 East Register Street, though their ink manufacture took place in London, and Fleming & Co., who produced ink at their factory in Granton. Further, one of Bartholomew’s tinting inks was purchased in Edinburgh from Mander Brothers, who, though based at a factory in Wolverhampton, sold ink from premises off Portobello Road. Ink was priced by colour: yellow inks (‘Golden Chrome’ and ‘Lemon Chrome’) were cheapest, at 2s. 6d. per lb, while red inks were significantly more expensive than other colours: ‘Scarlet Lake’, ‘Crimson’ and ‘Deep Crimson Lake’ cost up to 13s. 6d. per lb. The Edinburgh firm Fleming & Co., in particular, supplied Bartholomew with a wide range of colours, but records show them purchasing ‘Black Ink (Special)’, for example, from Shackell & Edwards, who were based in London. This suggests, initially, that Bartholomew had to look further afield for more specialist products. It should be noted, however, that this ‘special’ ink was, at 4s. per lb, much cheaper than many of the coloured inks purchased in Edinburgh. It is unclear whether Bartholomew were unable to obtain it from their local suppliers, or whether it was simply cheaper to purchase it elsewhere. These examples show that Bartholomew had a role within this sector of the local industrial economy without being reliant on it. This speaks more broadly of an increasing professionalization across the period.

Of the various supplies Bartholomew bought in, paper was acquired in the largest quantity — and almost entirely from local suppliers. Between 1888 and 1897, Bartholomew used nine ‘standard sizes’ of paper, including, for example, double demy, double royal, and double crown. The index to the firm’s ‘Paper Book’ lists 71 projects which used ‘special papers’. These papers were recorded under ‘various’ and ‘miscellaneous’ headings in the body of the stock book, but essentially comprised

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non-standard sizes and weights. These records also show the firm making use of card, boards, and various sizes of ‘letter’ and ‘writing’ paper, all of which were recorded separately.\textsuperscript{84} Between 1897 and 1907, the firm used eight standard sizes, and recorded 114 projects using special papers.\textsuperscript{85} Throughout the period 1888-1907, the firm’s four main suppliers of paper were Cowan & Sons; A. Whyte & Son; Tullis & Co., and Macniven & Cameron. Each of these firms is listed in the \textit{Post Office Directory} for Edinburgh and Leith over the period in question. Macniven & Cameron are listed as paper-rulers, and the others are all listed as papermakers, meaning they produced it as well as supplied it. Bartholomew also bought less frequently from J. Trotter & Son Ltd; Young, Trotter & Co.; I. Dickson & Co.; Henry Schlesinger & Co., and J. A. Weir.\textsuperscript{86} None of these firms is listed in the Directory, and probably supplied specialist papers in smaller quantities. It is instructive, however, to know that all of Bartholomew’s main paper suppliers had bases in Edinburgh. Figure 4.10 shows the locations of these four suppliers, who provided the majority of Bartholomew’s paper. Six locations are marked on the map due to the fact that both Cowan & Sons and A. Whyte & Son also had larger premises: at Craigside Works (close to Bartholomew’s own premises), and Easter Road (the most northern marker on the map), respectively. This latter point is, in itself, indicative of a larger scale of proceedings and the corresponding use of city space, echoing ideas discussed in Chapter Three. More broadly, the preponderance of Bartholomew’s transactions taking place within the city’s printing and publishing industries may have had a multiplier effect on the local economy, with corresponding mutual benefits for the firms in question.

\textsuperscript{84} NLS, Acc.10222/BR/410, paper book, 1888-1897.
\textsuperscript{85} NLS, Acc.10222/BR/411, paper book, 1897-1907.
\textsuperscript{86} NLS, Acc.10222/BR/410-411, paper books, 1888-1907.
By purchasing paper made in Edinburgh, Bartholomew bought into an industry with a local history spanning three centuries. Scotland’s first paper mill was established at the end of the sixteenth century. By the 1830s, around 60 paper mills were in existence in Edinburgh, Perth, Berwick, Glasgow and Aberdeen. In Edinburgh at this time, the industry was concentrated around the Water of Leith, outside the city centre and close to a plentiful water supply. Bartholomew’s main suppliers operated from slightly further afield: Cowan & Sons, for example, owned, amongst others, the Valleyfield Mill in Penicuik and the Inveresk Mill at Musselburgh — approximately eleven and six miles from central Edinburgh, respectively. Their paper was then transported into the city and sold from their offices on George Street or their factory

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88 Morris, “Papermaking,” 17.

89 Ibid.
at Craigside, which they also used for the manufacture of stationery.\textsuperscript{90} Cowan & Sons began their papermaking business in 1779, and by the late nineteenth century they operated on a much larger scale than Bartholomew — in 1888 they employed 396 workers at their Valleyfield Mill alone.\textsuperscript{91} Like Bartholomew, Cowan & Sons bought many of their supplies locally. As well as the rags necessary for making paper, their records show that they held business accounts with, primarily, local firms. Their coal came from suppliers in Gorebridge, Penicuik and Leith; their gas fittings were provided and maintained by the Penicuik District Gas Co., and Alexander Stewart, also of Penicuik, and they also used local grocers, drapers, blacksmiths and chemical providers, amongst others.\textsuperscript{92} The local economic impact of printing and publishing evidently extended beyond its immediate environs, benefiting other areas of the local economy and thus enhancing the overall embedded nature of the industry.

Cowan & Sons were, in turn, the principal paper supplier for many of Edinburgh’s printing firms as well as Bartholomew. In 1910, Banks & Co., lithographic and letterpress printers based at the Grange Printing Works, close to Bartholomew’s own premises, were carrying out a printing job for ‘Bainbridge’.\textsuperscript{93} Bartholomew were asked to produce the maps for the publication in question. As Banks & Co. had responsibility for the overall project, they offered to provide the paper for Bartholomew, writing ‘We will order the paper to-day, and ask Messrs Alex. Cowan & Sons to deliver it to you as soon as possible’.\textsuperscript{94} It was not typical for the commissioning firm to supply materials, but this was evidently preferable for Banks & Co. who, like Bartholomew, held an account with Cowan & Sons. This illustrates the importance of considering geographical scale when adding a spatial element to the production cycle and the potential ambiguity that this adds to an examination of ‘internal’ and ‘external’ relationships. The three relationships in question here — between Bartholomew, Banks & Co. and Cowan and Sons — were all technically external, conducted between separate businesses. On a city-wide or national scale,

\textsuperscript{90} National Records of Scotland (hereafter NRS), GD3II/7/66, Cowan & Sons, notes on the history of Alex. Cowan & Sons, 1827-1944.
\textsuperscript{91} NRS, GD3II/4/24, Cowan & Sons, wages books, 1888-1890.
\textsuperscript{92} NRS, GD3II/3/114, Cowan & Sons, accounting records, 1897-1899.
\textsuperscript{93} The letter does not make it clear who Messrs. Bainbridge are, but Post Office Directory records list A.F. Bainbridge as a contact for the printers Morrison & Gibb, Tanfield Works, Edinburgh: he is the only Bainbridge listed in 1910-11. This would add an extra local connection to this particular example. See Post Office Edinburgh and Leith Directory 1910-11 (Edinburgh, 1911), General Directory, 19.
\textsuperscript{94} NLS, Acc.10222/BR/1000, letters received, 1910, letter from Banks & Co. Ltd, 21 June 1910.
though, these relationships could arguably be considered to have remained internal: the transactions took place within an area of one or two miles.

The clear predominance of local relationships within the printing and publishing industries is perhaps unsurprising; it was easier and cheaper to obtain goods and services locally than to transport them from further afield. Purchasing paper primarily from Cowan, for example, allowed Bartholomew to benefit from economies of scale. This relationship is mutually supportive: the presence of one industry encouraged and supported the presence of related, complementary trades, as well as other local services and suppliers such as the provision of fittings. In printing and publishing specifically, large and heavy products such as machinery, or those bought in bulk, such as paper, were difficult to transport and so especially likely to be bought locally, therefore sustaining a specialist market. Regardless, this local aspect adds another facet to the understanding, advanced throughout the thesis, of mapmaking in Edinburgh as a practice deeply embedded in a particular locality, and reinforces ideas of place as a determining factor in the specifics of the production of goods and services.

**Processes of finishing: editing and mounting**

Mounting was the final stage of manufacture. In 1888, Bartholomew's mounting department comprised five of Bartholomew's total 62 workers, or 8% of the workforce; by 1930 it employed 46 of Bartholomew's 158 workers, or 29% of the workforce. This made it the fastest growing department, which reflects the fact that the firm more commonly provided maps as finished products by this point. The mounting department's work was varied and depended to a great extent on the purpose of the map in question: they attached large wall maps to rollers for use in classrooms, for example, as well as hand-folding smaller maps and mounting individual maps onto linen or other forms of backing cloth. Before a map could finally be mounted, however, it had to be declared satisfactory — by Bartholomew's own overseers but also, in the case of commissioned maps, by external customers.

The production cycle [Figure 4.1] does not explicitly take into account editing procedures, which could complicate any stage of manufacture. These occurred most

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commonly after printing, when proof maps were examined. As JGB acknowledged in his list of the stages involved in map production, revisions were common at this stage. When working to commission, Bartholomew sent proof maps to the relevant firm prior to printing the full run of copies. Such firms frequently requested changes, which could involve significant extra work.

In February 1910, for example, Bartholomew produced a map of Dumfriesshire for Witherby & Co., a publisher specializing in ornithology and natural history. Upon receiving proofs of this map, Witherby & Co. noted, initially, eleven changes they required Bartholomew to make. These ranged from the specifics of mounting — they thought linen was too bulky as a backing material — to requests for the width of the printing margins to be altered. Primarily, however, their concerns related to elements of the map which would potentially take it back to the draughtsmen’s office. They asked for place names to be added, noticed spelling errors (‘Hoddom’ instead of ‘Hoddam’), and requested that county boundaries be made thicker.96 Bartholomew evidently objected to this: a few days after their initial letter, Witherby & Co. wrote again, stating that in response to ‘what you say about the inconvenience caused by the extra corrections and also the expense, we beg to point out that we find that in making one correction you are liable to make a mistake’. They suggested Bartholomew should incur the cost for the corrections, as they believed these were ‘due to errors which we think should not have occurred’, adding ‘you had better send us a final proof before printing off, but you can either do this or else take entire responsibility yourselves, which you may decide’.97 The latter point, especially, shows the ambiguity present in the commissioning process. The fact that the cost of correction, and processes surrounding this issue, could be a point of contention in the later stages of production suggests that terms were not set out clearly from the beginning. Orders were placed in person, through discursive correspondence or, later in the period, telephone calls, and their specifics were discussed as they arose. Initially, the commissioning firm or individual simply requested a particular map — whether from Bartholomew’s stock of pre-engraved plates, or specially engraved — and a number of copies. Bartholomew then established further details and likely dates of completion. There is no evidence of formal contracts being exchanged: the

96 NLS, Acc.10222/BR/1000, letters received, 1910, letter from Witherby & Co., 7 February 1910.
97 NLS, Acc.10222/BR/1000, letters received, 1910, letter from Witherby & Co., 11 February 1910.
agreement of terms appears to have been, in part, tacit. This led to a potential lack of clarity — on who should be responsible for costs incurred in editing, for example — if disagreements occurred later in the production process.

This is in contrast to the care the firm took in producing estimates: as discussed above, they typically calculated the time likely to be taken on manufacturing processes in great detail, and charged customers accordingly [Figure 4.12]. Physical manufacturing was, of course, easier to predict and cost than stages that revolved around interactions between individuals and a customer’s own expectations. This highlights, again, the importance of considering both people and objects as part of the production cycle: maps were produced as much by social relations and negotiation — and the attendant ambiguity of these interactions — as they were by quantifiable physical procedures.

**Figure 4.12**: Sample of Bartholomew estimate, n.d.

In the case of Witherby & Co.’s map, Bartholomew undertook revisions as requested, but the publishers continued to find fault with proofs. In late March they wrote again, complaining that they had found ‘a very serious and really absurd omission’. Bartholomew’s map, they claimed, made ‘no reference to Peebles and no division between that county and Selkirk, while the “S” of the name of the latter county is actually in the county of Peebles’.\textsuperscript{98} Bartholomew’s copy of this letter is annotated in blue pencil: this sentence is underlined, with a cross and ‘not the case’ written next to it. Witherby & Co. appear to have accepted this, but continued to complain about the spelling of ‘Hoddam’, which Bartholomew printed on the map as ‘Hoddom’:

> With regard to the spelling of Hoddom, you say that this will not affect the map in the least, but this is written in ignorance of the use to which the map is to be put. [...] The word occurs throughout the book, and has been spelt “Hoddam”. Perhaps you would care to go through the whole of the book and alter it to “Hoddom”? We might further say that had not the proofs been carefully revised by us there would have been several other mistakes, and that in your letter accepting our final instructions you took up every responsibility to carry out all our directions in the matter.\textsuperscript{99}

Bartholomew’s apparent disdain regarding this particular issue may have related to the size of the order: Witherby & Co. required just 400 copies of the map. In 1910, this was an inconsequential order for Bartholomew, who more typically received orders for 10,000 or more copies of a given map.\textsuperscript{100}

Bartholomew’s correspondence with larger publishing houses relating to finishing procedures highlights the fact that commissioned maps were often just one element of a publication. Correspondence with John Walker & Co., the London-based publisher, emphasized the simultaneity of procedures involved in book production. Walker & Co. wrote to ask whether Bartholomew could produce a ‘dummy copy’ of their maps in order to ‘represent the bulk’ of the atlas in question. This would allow Walker & Co. to have a cover made and use this dummy copy to illustrate a promotional list. While Bartholomew were then ‘finishing off the edition’, they suggested, ‘we could be preparing circulars and illustrated matter for distribution’.\textsuperscript{101}

In fact, Walker & Co. wrote to Bartholomew regularly between February and April 1910, attempting to obtain their envisaged dummy copy and repeatedly explaining what they required. The correspondence suggests that these requests met with only

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\textsuperscript{98} NLS, Acc.10222/BR/1000, letters received, 1910, letter from Witherby & Co., 31 March 1910.
\textsuperscript{99} NLS, Acc.10222/BR/1000, letters received, 1910, letter from Witherby & Co., 7 April 1910.
\textsuperscript{100} NLS, Acc.10222/BR/318, order and cost book, 1909-1914.
\textsuperscript{101} NLS, Acc.10222/BR/1000, letters received, 1910, letters from John Walker & Co., 3 and 11 February 1910.
limited success. By the late nineteenth century, editing and negotiating by letter-writing meant, in principle, that business relationships could be conducted with relative ease within Britain. Nonetheless, transactions appear to have been smoother between Bartholomew and fellow Edinburgh-based firms, such as Banks & Co., as discussed above.

Walker & Co. had more success in direct negotiations in person with JGB, mentioning more than once that JGB had ‘expressed extreme satisfaction at the design’ and that ‘we have had the pleasure of seeing Dr. Bartholomew, who has kindly undertaken to give this proposal careful consideration’. Here, location plays an important role in the effective functioning of the production cycle. In this case, it initially appears to have been mode of communication, rather than location per se, that made a difference to the speed and efficacy of negotiations. Communication was, however, inherently affected by location in this period. Face-to-face discussions were more plausible for fellow local firms: even by 1910 regular travel between Edinburgh and London was time consuming. This episode also further complicates the production cycle by showing multiple located cycles taking place in the process of making one book: Bartholomew’s cycle of map production in Edinburgh was only one aspect of Walker & Co.’s cycle of atlas production in London.

Conclusion

This chapter offers a link between the history of cartography and the history and geography of the book. It does so by modifying Darnton’s communications circuit to take account of the specific conditions of map production. Following Secord, Withers, Ogborn and others, it also suggests ways of incorporating spatial considerations into the analysis of processes of physical manufacture. Existing scholarship on the history of the book, such as the contrasting approach of Adrian Johns and Elizabeth Eisenstein, reveals a tension between accounts of printing focused on the agency of technology, on the one hand, and of people, on the other. The binary constructed in

102 NLS, Acc.10222/BR/1000, letters received, 1910, letters from John Walker & Co., 11 February and 6 June 1910.
a number of these debates is, as Chapter Two argues, unnecessary. The relationship between the two — including its negotiations and occasional contestations — in fact had a formative effect on the nature of printed material. Furthermore, this chapter shows that place should also be seen as a critical influencing factor in the production cycle. By considering relationships as ‘internal’ or ‘external’ (and acknowledging attendant complexities: that is, that the geographical scale in question may alter how a given relationship can be classified), a spatial element can be integrated without losing sight of the fundamentally social nature of map production — relations and interactions remain the focus, while their location is shown to be more than a ‘setting’.

While interactions between Bartholomew’s management — predominantly JGB and publishers, collaborators and suppliers shaped the firm’s eventual output, the experience of mapmaking employees in Edinburgh was distinctive and the specific conditions of their work should not be neglected. The highly specialized nature of cartographic production differentiated Bartholomew staff from Edinburgh’s large printing workforce as a whole. Their experience, for example, challenges a dominant narrative of mechanization as an attack on craft skill and an explanation for its subsequent decline in certain branches of printing. In mapmaking, by contrast, the introduction of lithographic printing necessitated the creation of new, highly technical roles. Here, too, there is a local element: Bartholomew’s job advertisements in *The Scotsman* show that they believed it was possible to find suitably skilled workers in Edinburgh, though they were also willing to train apprentices for five years or more. These changes, moreover, had a potentially profound effect on female employees who, unlike female printers elsewhere in the city, were never in direct competition with men for work and therefore never encountered the labour disputes that subsequently prevented women from entering the printing industry. In this respect, Bartholomew’s practice of delineating departments by gender can be seen as having advantageous elements for female employees when considered against the broader local context. The specialized nature of mapmaking also played a role in the wages Bartholomew were prepared to offer, as employees such as McVicar had little

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104 The most notable advancement of this apparent binary can be found in Elizabeth L. Eisenstein’s response to Adrian Johns’ critique of her work: see Elizabeth L. Eisenstein, “An unacknowledged revolution revisited,” *The American Historical Review* 107:1 (2002), 87-105.

in the way of bargaining power, unless they were prepared to move to a different city, or — as in the case of Grindlay — a different country. Evidently, the shared location and multiple business relationships did not equate to a shared experience for mapmaking and printing employees, but rather demonstrates differences between the two interlinked trades, and the necessity of focused studies of each.

The examination of internal and external relationships in this chapter has shown that the physical production of maps depended upon negotiations and interactions, which took place across a range of locations. The following chapter goes on to show how ideas of place and space were used with regard to specific sites: it considers especially how Bartholomew's own premises epitomized many of their values, and moves into a study of the social and cultural production of maps through the manipulation of ideas about urban space.
Chapter 5

Constructing cartographic authority: the conceptualization and mapping of urban spaces in Edinburgh, c.1880-c.1920

This chapter examines how, in the production and use of cartographic items, urban space and local knowledge were brought together to construct authoritative representations of place. Its approach is twofold. The first half of the chapter is an examination of the mapmakers John Bartholomew & Co.’s changing premises across Edinburgh, which shows that the firm carefully curated their business properties in order to convey credibility and gain trust: in this sense, what follows is an assay into the architecture of cartographic knowledge. The second half of the chapter introduces the London-based firm Charles E. Goad Ltd, producers of fire insurance plans, and considers their acquisition of urban information and their use of local knowledge to achieve similar aims. Both cases illustrate the importance of close attention to locality and the spatial dimensions of knowledge construction.

The idea that knowledge is clearly ‘made and sustained through situated practical activity’ can be seen in the activities of both Bartholomew and Goad.\(^1\) Both firms relied heavily on various aspects of locality to construct their reputation and, in so doing, add to the credibility of their maps and plans. This focus on locality appears to counter the idea of knowledge being produced, primarily, in established ‘truth spots’: that is, as discussed in Chapter Two, apparently ‘placeless places’, which encourage the belief that ‘claims from there are true anywhere’.\(^2\) Truth spots and their supposed universality are, however, always constructed: Thomas Gieryn exposes the effort inherent in doing so.\(^3\) Knowledge should thus be considered within the local context of its production. Moreover, the production of cartographic knowledge is distinctive. Mapmaking was reliant upon the acquisition of a high degree of local knowledge. For a cartographic firm to embed their image firmly in the local context,

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then, reflects the specific expertise of the profession, rather than rendering output inauthentic through its close connection to a particular locality.

It is productive to think of the ‘site, region and circulation’ of scientific knowledge, or, more simply, to consider it in terms of its production and consumption ‘in place’, and its movement ‘over space’.\(^4\) This includes the places in which knowledge was physically produced as well as ‘discursive sites’ where it was made significant, validated or contested.\(^5\) The fact that knowledge production occurs in and across places highlights the importance of scale to the geography of science. By considering location and movement, the ‘possibilities of working across different scales’ are shown to be profitable: scale can be seen as a ‘relational matter’ rather than as a set of prescriptive boundaries.\(^6\) The studies of Bartholomew and Goad presented here operate across multiple scales: Bartholomew’s premises can be seen as a ‘site’ of knowledge, and here, the contemporary conceptualization of their architectural features is shown to be telling. Alongside this, the city of Edinburgh (the ‘region’) served as a crucial scale for establishing credibility and thus allowing cartographic knowledge to circulate on a national and global scale. Focusing on Goad’s plans of Edinburgh allows a consideration of the city as a specific region for the production of cartographic knowledge — especially in the context of Goad’s local dealings — but also as the object of this knowledge. Through the development of highly detailed fire insurance plans, the architectural features of individual sites across the city were cartographically ‘realised’. The local is shown here to play a crucial role in making this knowledge credible and thus allowing it to circulate. Mapmakers may not have worked in laboratories, or other sites traditionally considered as places of knowledge production, but their premises were nonetheless, like larger-scale industrial works,


sites of ‘invention and intervention’. They correspondingly highlight questions concerning the ‘emplacement of legitimate knowledge’ in the urban sites and regions of maps’ production and use.

Mapmaking premises and the architecture of cartographic knowledge

In the late nineteenth and early twentieth centuries, print was the conventional means of establishing claims of knowledge: the activities and objects of exploration, for example, counted ‘for little unless one’s results made a yet further voyage — into print’. The expression of epistemological credibility, however, can take many forms. Mapmaking premises, as sites of physical production processes, serve as a vehicle for getting knowledge into print, but they are also an agent in the formation of validity and authoritative knowledge. In cartography, such values were based upon the accuracy and utility of the map in question. This should not be seen simply in terms of the end product. Notions of accuracy and precision are shown here to have imbued every stage of the mapmaking process.

Buildings are one stage in this process — and a vital one for forming identity and constructing authority. Here, Bartholomew’s changing premises across Edinburgh became not only internally ordered, with departments occupying separate rooms or floors, but were also conceptualized, documented and insured in a systematic manner. This demonstrates a need for space to accommodate more complex procedures — such as advanced printing techniques — and shows that the premises played a role in the nature of the firm’s physical output. This relationship, however, also operates on an epistemic level. Just as maps became more accurate — or more self-consciously accurate — in their representations of space so, too, were

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buildings and their contents considered in a more rational, methodical way. Changes in the structure of buildings, attitudes towards them, and the cartographic products made within them, all show how attention to space can illuminate the social as well as physical production of spatial knowledge.

Location played an important role in establishing reputation and credibility. Knowledge’s ‘irremediably local dimension’ could be manipulated through the careful siting of business premises to garner trust. In March 1889 Bartholomew moved from their premises at 7 Brown Square — later to become known as 31 Chambers Street — to take up residence in the Parkside Works: larger, purpose-built premises in the south-east of Edinburgh, which were rented from the printer and publisher Thomas Nelson & Co. They stayed in these premises until 1911 when, as shown in a circular advertising the move [Figure 5.1] they moved to a site on Duncan Street, just a few streets away from Parkside. Prior to 1888 the firm had been resident at East St James Street and 4 North Bridge, both on the northern edge of Edinburgh’s Old Town [Figure 5.2]. This move south across the city corresponds directly with the firm’s growth. Their workforce more than doubled, for example, between the 1880s and 1930s. Away from the congested Old Town, increasingly spacious and industrially-equipped premises were available. As shown in Chapter Three, moves of this nature are indicative of fluidity and flexibility in the city. This was a conscious decision on Bartholomew’s part: the notice to sell or let the premises at 31 Chambers Street described the firm’s intention to move to ‘new and more extensive works’. Likewise, Nelson’s advertisement for the Parkside Works, produced after Bartholomew announced an intention to move, explains that the previous occupants ‘have found it necessary to build larger works in the neighbourhood’.

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14 NLS, Acc.10222/BR/251b, plans of Brown Square/Chambers Street premises, notice to let or sell, 1889.

15 NLS, Acc.10222/BR/252, papers relating to Park Road (Parkside) premises, notice to let on lease, 1911.
considerations were an important part of the decision to move, but were not the only factors. The reputation of the locality also formed part of the appeal.\textsuperscript{65}

Figure 5.1: Section of “PLAN SHOWING POSITION OF BARTHOLOMEW’S NEW GEOGRAPHICAL INSTITUTE”, 22 March 1911. Parkside Works and the new premises at Duncan Street are shown in red.

Source: NLS, Acc.10222/BR/1861, folder 1, letterheads and promotional material.

\textsuperscript{65} Forgan, “Building the museum,” 583; Forgan, “But indifferently lodged...”, 205; Forgan and Gooday, “Constructing South Kensington,” 438.
Figure 5.2: Section from John Bartholomew, *Plan of Edinburgh and Leith With Suburbs*. Edinburgh: Bartholomew, 1889. Annotations in black show the firm’s five premises in Edinburgh from c.1820.

In the context of a firm dealing specifically in knowledge — in this case, cartographic knowledge — a site’s location and ‘the particularity of place’ played an important role in establishing credibility. The reception of scientific work could be shaped by how its reader or user imagined its place of provenance. JGB was fully aware of this factor, and knew the locality well. His personal experience of Edinburgh bestowed authority — ‘credibility through nativity’. In 1887 JGB helped to compile a report on the ‘Newington and Grange’ area, under which category both Parkside and Duncan Street fall, as part of his role as a Director in the Warrender Private Baths Company Limited. This report aimed to justify the building of swimming baths, but its content has

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17 Forgan, “‘But indifferently lodged...’” 574.
broader significance. It described the district as ‘populous and influential’ and notes that ‘the number of dwelling-houses with a rental of £30 and upwards, in the Newington and St Cuthbert’s Wards alone, is 3232, while in Pollokshields, Glasgow, there are only 973 ... and a prosperous Bath Company is in operation there’. With this information in mind, when the time came to move from Parkside, Bartholomew had no intention of leaving the area. Plans and drawings show that a site on Grange Loan was also under consideration, 1.1 miles from Parkside and 0.5 miles from the eventual premises on Duncan Street. When the Duncan Street premises came up for sale in the spring of 1908, Bartholomew quickly secured them. Negotiations followed with the city council relating to the precise positioning of the building. In Bartholomew’s Dean of Guild petition against setting the building further back from the road than the firm desired, their solicitors appealed to the council’s sympathy by declaring that the firm had ‘been searching for a suitable site for over two years, and have found great difficulty in getting one at all in the locality’. There is an implication here that the firm went to considerable lengths to secure this property, based on a strong desire to be in this particular locality. Evidently, JGB was aware of the particularity of place and prepared to use this to the firm’s advantage.

With the site chosen, design commenced. The architect of the Duncan Street premises was Henry Ramsay Taylor, of the architects Cousin, Ormiston and Taylor. Before receiving the Duncan Street commission, Ramsay Taylor had already been involved in a number of projects for Edinburgh’s book trade. He worked on additions to Ballantyne, Hanson & Co.’s printing works on Causewayside in the 1890s, and produced internal alterations for John Grant’s bookshop on Chambers Street, together with a new building for the firm on George IV bridge in 1903. He also designed and built Nelson Public Hall and Library in Edinburgh in 1898, and won competitions to design Stirling Public Library and Carnegie Public Library in 1901 and 1902 respectively. He was elected a Fellow of the Royal Institute of British Architects in

20 NLS, Acc.10222/BR/45, John George Bartholomew’s financial documents, shareholdings in the Warrender Private Baths Company, 14 March 1887.
21 NLS, Acc.10222/BR/252, papers relating to Park Road (Parkside) premises, sketch of proposed Grange Loan site.
22 NLS, Acc.10222/BR/261, papers relating to Duncan Street premises, letter from Auld and Macdonald, W.S., to Thomas Hunter, Town Clerk, 24 May 1909.
By the time he worked for Bartholomew he was well established, respected, and had experience of working with printers’ industrial premises, and, through his multiple library designs, intellectual institutions. Bartholomew combined the two.

As the architect, Ramsay Taylor was accorded a prominent place in discussions surrounding the building. In a report in *The Evening Dispatch* in April 1909, on the design of the building and plans for completion, he and JGB are the only two people named. His importance is shown by the fact his name was considered worth the space in the newspaper. The press played a role in generating assumptions relating to credibility and, as a reputable name, Ramsay Taylor also contributed to the prestige of the project, helping to garner confidence in Bartholomew’s business.

Establishing a broad sense of trust at this stage of proceedings would have implications for the reception of the eventual activities and output of the finished premises. The element of trust is especially important to knowledge-based industries. The inclusion of Ramsay Taylor’s name also shows the importance of the building, more broadly: it was evidently considered a significant enough local venture to warrant a fully detailed report.

The nature and complexity of the project necessitated collaboration. An abstract of the Duncan Street building statement between 1909 and 1911 shows 27 separate open accounts with tradespeople, indicating the variety of work going on simultaneously. Different firms and individuals carried out tasks such as masonry, joinery, plastering, glazing, plumbing, electrical installation and painting. For each category of work, Bartholomew obtained up to 17 quotations from different firms, showing the need for firms to offer competitive prices as well as the sheer scale of the organisational and administrative side of the project. Others were involved less directly: J.H. Holmes & Co., electric light engineers, suggested to Bartholomew that through ‘private negotiations with the Corporation’ they believed they could get ‘very much better terms ... as we know of other works in Edinburgh that are getting power

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27 Schaffer, “Accurate measurement is an English science,” 164.

28 NLS, Acc.10222/BR/260, papers relating to Duncan Street premises, abstract of building account, 1909-1911.

29 NLS, Acc.10222/BR/260, papers relating to Duncan Street premises, estimates for work, n.d. but c.1909.
at about 3/4d. per unit.\textsuperscript{30} Bartholomew did not accept Holmes & Co.’s quotation for the installation work, but nonetheless it was clearly commonplace to negotiate deals with the council through the procurement of local business knowledge. The firm also worked closely with their solicitor to purchase the site and, following its acquisition, to negotiate the precise location and height of the proposed building with the Dean of Guild through the council (as discussed above).\textsuperscript{31} Evidently, multiple actors were involved in the processes of designing and erecting the building, and multiple interests were at stake. Here, then, although Ramsay Taylor was respected, there is a sense in which the Duncan Street premises have more than one ‘author’. This reflects the activity that took place inside the building: mapmaking, too, was an inherently collaborative process, with multiple crucial stages of production.

The trust of those outside a building played a role in warranting ‘the credibility of claims made inside’.\textsuperscript{32} Bartholomew used various means to acquire this trust, as we have seen: this included the design of their premises. The physicality of a building conveys meaning through symbolism and visual association.\textsuperscript{33} The features of the building itself could, therefore, help it serve as a vehicle for authority. In this case, the form of the building reflected Bartholomew’s desire for intellectual prestige rather than conveying an impression of the light industrial action taking place inside. Despite being designed by architects from the same practice, Bartholomew’s Duncan Street premises [Figure 5.3] are visually distinct from Parkside [Figures 5.4-5.5]. The features of the building on Duncan Street include a neo-classical temple-front portico transposed onto a fairly simple two-storey façade with projecting wings at each end. It was, and remains, visibly different in style to the buildings that surround it, both on Duncan Street itself and the adjoining Causewayside. Alternative designs [Figure 5.6] show the building with more decorative elements — most notably, above the windows — than were included in the original design, showing a process of visual simplification. At Parkside, by contrast, Bartholomew were resident in a long, low building with elements of Scottish Baronial styling such as turrets with candle-snuffer conical roofs, tourelles with small, narrow windows redolent of a gun-opening, and

\textsuperscript{30} NLS, Acc.10222/BR/260, papers relating to Duncan Street premises, letter from J.H. Holmes & Co., 16 March 1909.
\textsuperscript{31} NLS, Acc.10222/BR/261, papers relating to Duncan Street premises, letter from Auld and Macdonald, W.S., to Thomas Hunter, Town Clerk, 24 May 1909.
\textsuperscript{32} Livingstone, \textit{Putting Science in its Place}, 29.
\textsuperscript{33} Markus, \textit{Buildings and Power}, 35.
crow-stepped gabling. This was typical of similar firms in the city. The printers R. & R. Clark’s premises, for example, also incorporated Scottish Baronial details: the building has crenellations above the bay windows, parapets, and decorative spires [Figure 5.7].

**Figure 5.3**: Exterior of Edinburgh Geographical Institute, Duncan Street entrance, 1981. The frontage is unchanged from its original design in 1909.

*Source: NLS, Acc.10222/BR/269, drawings and photographs of premises.*
Figure 5.4: Parkside Works seen from the south prior to demolition, 1972. Bartholomew’s premises were those to the right of the main entrance, which is under scaffolding, extending along Park Road.

Source: Canmore, SC 1470455.

Figure 5.5: Architect’s drawing, elevation of machine room at Parkside Works, n.d.

Source: NLS, Acc.10222/BR/269, drawings and photographs of premises.
Figure 5.6: Proposed design for Bartholomew’s Duncan Street premises, 1909-10. Note the decorative elements above the upper windows on each wing, which were simplified in subsequent designs.

Source: NLS, Acc.10222/BR/266, engravings of Duncan Street premises.

Figure 5.7: Premises of printers R. & R. Clark, Brandon Street, Edinburgh. Photograph by Jim Cairns, former employee, 2004.

Source: Peter Stubbs, “EdinPhoto”. [www.edinphoto.org.uk/0_B/0_buildings__clark_r_and_r_brandon_street.htm]
When presented with the opportunity to create purpose-built premises, JGB showed a desire to differentiate the firm from other printers and publishers in the city. The Duncan Street premises were strikingly grand considering a large proportion of the building housed the map printing industry. The front portico plays a significant role in creating this impression. This section of the building was originally built as part of the façade of Falcon Hall, in Edinburgh’s prosperous Morningside area, which the Bartholomew family rented in the early twentieth century. When Falcon Hall was demolished to erect tenements in 1909, JGB offered a local builder, J.M Cruickshank, £275 to move the portico in order for it to be incorporated into Duncan Street’s façade.34 Here, Bartholomew again mixed personal and business interests. The portico had been part of a beloved family home, and there is an element of nostalgia to be found in Bartholomew’s desire to re-erect it. There are also elements of conscious business-mindedness here: away from a relationship with Nelson, perhaps (the two firms were in a formal co-partnership between 1888 and 1892, after which their relationship was that of tenant and landlord). This corresponds broadly with a period in which Bartholomew began publishing more maps in their own name, rather than relying on commissions from other publishers. This suggests an independent-minded approach to business.35

Bartholomew were acutely aware of the importance of reputation. JGB needed a site that demonstrated his firm’s burgeoning worldwide standing and his own institutional and associational accolades. The Duncan Street premises were designed to set his firm apart from other printers and publishers in the city. An image commissioned by the firm shortly after its building shows the premises set in what appears to be parkland more redolent of the Falcon Hall estate [Figure 5.9]. This is a rare example of explicit disconnect from the urban environment, which otherwise constituted a crucial part of the firm’s identity formation. In reality, the building was one part of a road of buildings, with one corner to the right of the Duncan Street frontage leading to South Gray Street. In both imaginings and in reality, however, the façade of the building does not suggest that industrial activity took place inside. The implication, rather, is of grandeur and elegant professionalism — and, for those who knew the story of the portico, the intermingling of personal and business concerns.

34 NLS, Acc.10222/BR/260, papers relating to Duncan Street premises, letter from J.M. Cruickshank to J.G. Bartholomew, 6 October 1908.
35 NLS, Acc.10222/BR/313-322, order and cost books, 1886-1944.
Different kinds of architecture presuppose different kinds of inhabitant. The Duncan Street premises’ visual elements accurately reflect the intellectual nature of the work carried on within, albeit not necessarily the physical aspects of mapmaking. Instead, they emphasise intellectualism and thus aim to construct authoritative representations of the value of the firm’s output. If truth-spots can be formed through skilled literary rhetoric, here visual rhetoric is at play: architecture as a display of commercial and reputational power. As was the case with the decisions over location, the design aimed to establish an independent status and, through neoclassical references, give architectural credibility to cartographic practice.

Figure 5.8: Architect’s impression of the Edinburgh Geographical Institute, Bartholomew’s Duncan Street premises. An image similar to this was used as Bartholomew’s letterhead from March 1911.

Source: NLS, Acc.10222/BR/266, engravings of Duncan Street premises.

If visitors to Bartholomew’s premises saw mapmaking in action, and watched the accuracy and precision with which employees worked — in other words, if the building had served as a ‘demonstrative truth-spot’ — they would potentially have acquired a clear understanding of (and thus, according to such theories, an

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augmented belief in) the finished product.\footnote{Ibid., 124.} Instead, publicly visible elements of cartographic production were separate from industrial activity. Visitors saw a grand foyer and meeting rooms rather than printing presses. This implies that the cultural and social aspects of mapmaking were those Bartholomew wished to emphasise in visitors’ immediate impressions. These impressions were closely curated: interaction was crucial to establishing reputation and authority.\footnote{Gooding, Pinch and Schaffer, “Introduction: some uses of experiment,” 2, 13.} The internal design of a building was often manipulated in order to articulate its inhabitants’ key philosophies.\footnote{Livingstone, Putting Science in its Place, 35-37, discusses this in the context of Patrick Geddes’ Outlook Tower in Edinburgh (1892). Four years later JGB and Geddes worked closely together on the design for a suggested National Institute of Geography, in which the internal layout would, similarly, have articulated Geddes’ key beliefs: see Charles W.J. Withers, Geography, Science and National Identity; Scotland since 1520 (Cambridge: Cambridge University Press, 2001), 225-235; Christopher Fleet and Daniel MacCannell, Edinburgh: Mapping the City (Edinburgh: Birlinn, 2014), 233-235.} The development of separate entrances for members of the public and employees, for example, can be seen to reflect increasing professionalization in business.\footnote{Forgan, “But indifferently lodged...,” 577.} In mapmaking, this shows the development of the strong social and institutional connections that JGB had. Personal and business relationships formed an important part of the culture of cartography, as was the case with other aspects of scientific culture in this period.\footnote{Gieryn, “Two faces on science,” 431.} Floor plans of Parkside and the Duncan Street premises show this aspect of mapmaking to have been largely conducted separately from the physical, industrial processes carried out within the buildings.

Entrances are especially telling: they make a building’s intended entrants clear.\footnote{Ibid.} At Parkside, visitors entered through a decorated doorway underneath a circular tower on the corner of two main roads [Figures 5.9-5.10]. The entrance hall itself was octagonal with tiled marble flooring.\footnote{Gieryn, “Two faces on science,” 431.} The entrance for employees, by contrast, was at the rear of the building, off Parkside Terrace [Figure 5.10]. It took the employee past three small cloakrooms and directly into the machine room, the largest and noisiest room on the premises, where the bulk of staff were employed: in 1900, 33 employees worked in the machine room, whereas engraving, the next largest department, had 17 employees.\footnote{NLS, Acc.10222/BR/252, papers relating to Park Road (Parkside) premises, notice to let on lease, 1911.} At Duncan Street, the official entrance was a doorway set into the grand portico from Falcon Hall [Figures 5.3, 5.6, 5.8]. As was the
case at Parkside, floor plans show that employees entered through a different door, this time around the corner on South Gray Street, undecorated and roughly one-third of the width of the main entrance [Figure 5.11]. These separate entrances could be conceptualised as epitomising the 'front' and 'back' of the business: for visitors and for workers, respectively. It follows that the 'front' of a business can be a performative space, where desired identities are acted out or visually represented. While the official entrance took the visitor, in both cases, into a grand entrance hall designed to demonstrate the firm’s global standing, the workers' entrance took employees straight to work, via only a cloakroom. This separation amply illustrates two sides of mapmaking in this period, namely intellectual and industrial activity. This was a clear move away from Bartholomew’s practice thirty years previously: insurance documents from the property at 31 Chambers Street describe the fittings and furnishings of the lobby as being simply ‘two wheelbarrows’. The level of detail supplied for other rooms in the Chambers Street premises — such as the precise quantity of inkbottles in the office — suggests this was a careful and broadly accurate report. It seems, then, that upon their move to purpose-built (albeit rented) premises at Parkside, Bartholomew made a decision to give the building a suitable public face in the form of an official entrance. This move toward professionalization, toward the public and social nature of an intellectually-based business, was continued at Duncan Street, where the grand entranceway reflected the firm’s growing reputation and ambition.

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46 Forgan, “But indifferently lodged...”, 577.
48 NLS, Acc.10222/BR/238, inventories and valuations, valuation of fittings at 31 Chambers Street, 30 June 1888.
Figure 5.9: Section of Bartholomew’s 1893 calendar, showing public entrance to the Parkside Works on the corner of Dalkeith Road and Park Road.

Source: NLS. Acc.10222/BR/1861, folder 1, letterheads and promotional material.

Figure 5.10: Floor plan showing Bartholomew’s premises in Parkside Works. Bartholomew occupied the rooms running along Park Road. Rooms left unlabeled in this plan were occupied by Thomas Nelson & Sons. The public entrance to the building is on the corner of Park Road and Dalkeith Road (see Figure 5.9) and the workers’ entrance was situated close to the machine room, at the rear of the premises.

Source: NLS. Acc.10222/BR/255, ground plans, sketches and drawings relating to Park Road (Parkside) premises.
Although entrance systems were broadly similar at Parkside and Duncan Street, the interiors of the buildings differed considerably. The respective footprints of the two buildings give the impression that the Parkside Works were roughly the same size, or slightly bigger, than the premises on Duncan Street. In fact, the height of the building at Duncan Street — it occupied three storeys, and had basement storage — gave Bartholomew substantially more space than they had occupied in previous premises. Increased space and a changed layout altered employees’ experiences of working for the firm. Embodied experiences of sites could have a direct influence on the circulation of knowledge, especially in terms of the ease and comfort with which it could be absorbed.\(^4\) In this case, they also played a role in employees’ activities and thus the nature of Bartholomew’s output.

Figure 5.11: Floor plan showing ground floor of Duncan Street premises. The public entrance to the building is on Duncan Street (see Figure 5.3) and the workers’ entrance is around the corner to the right, on South Gray Street.

Source: NLS, Duncan Street Explorer. [http://digital.nls.uk/bartholomew/duncan-street-explorer/]

At Parkside, all rooms had windows on just the east side, and the shape of the building meant rooms were long and narrow, all opening onto one long back corridor. At Duncan Street, all working spaces had increased light, whether natural or electrical (the latter was installed by the firm at a cost of around £990, the equivalent of around £98,000 in 2016).59 The building was also, as its larger scale necessitated, clearly internally organised, with separate departments occupying separate rooms and

appropriate spaces given to certain types of task. Draughtsmen and engravers, for example, occupied much of the front of the first floor, and their large rooms had windows both to front and back. The provision of copious light reflected both the practical importance and the prestige of their work. They occupied a prime space on the first floor, next to the library and JGB’s personal office. The noisy, heavy printing machinery was at the back of the ground floor, kept separate from the more expert processes carried out upstairs.

With its increased internal space and carefully delineated ‘zones’ of the building (such as quiet and loud), Duncan Street was clearly different to Parkside. The mode of circulation also differed between the two buildings. At Parkside, with its one long corridor, employees from different departments were likely to pass each other’s rooms frequently. All employees entered through the machine room, as noted, and to get to his desk a draughtsman walked past not just the printers working in the machine room, but also stone polishers, lithographic artists, copperplate printers and engravers. This meant JGB, whose office was immediately adjacent to the entrance hall, was situated in a simultaneously public and private space. Though his office was the first room a visitor would have passed after walking through the entrance hall, it was also the least likely to have employees walking past during the course of the day. Here, the layout of the building renders the supposed dichotomy between public and private spaces complex: by placing himself in a public-facing position, JGB acquired more privacy from the day-to-day noise and business of his firm.

Although the circulation system at Duncan Street was more complicated, with multiple corridors and stairways, there was no obvious natural flow to the circulation as with Parkside’s single corridor. Space had become more specialized, meaning employees were less likely to regularly walk past other departments. Clearer demarcation of departments went hand-in-hand with a more straightforward relationship between public and private space. While still being the public face of the firm, JGB, as noted, now occupied a relatively secluded space on the first floor, accessible only through the library or a long passageway. These changes to internal space dynamics meant that rather than necessarily taking place in his office, meetings could be conducted in any one of three spaces on the ground floor, all of which could

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be reached directly from the building’s main entranceway. Elsewhere, too, the new scale of proceedings was reflected in the need for employees’ provisions such as lavatories and cloakrooms on each floor. This change corresponds with a broader attention, nationally, to workers’ day-to-day welfare. Moreover, the increasing complexity of space led to an increased need to document space in order to understand it and use it efficiently.\(^5\)

The way these buildings were documented — in floor plans and insurance documents, for example — has importance beyond the boundaries of the premises themselves. The very act of documenting a building’s layout is meaningful. Creating a floor plan requires a systematic practice that is, in itself, telling.\(^5\) It suggests a need for precision, in order to use space effectively and, crucially, the privileging of this particular type of knowledge as a means of acquiring one’s aims. In the case of insurance documents, precise knowledge — which is the focus of the following section — allowed for the assessment of risk and thus supposedly increased financial security.\(^5\) This broadly follows the process of increasing ‘abstraction and objectivity’ visible in maps in this period.\(^5\) The significance of systematic practices also relates to things that may initially seem mundane, such as administrative tasks like filing. In fact, index cards and filing cabinets can be crucial in the shaping of businesses, both in terms of practicality, or, essentially, making things more efficient, and, in epistemic terms, by encouraging certain values. This can extend to how authority is exercised: how the ‘things of the state’ began, in the nineteenth century, to shape ‘the state of things’.\(^5\)

This also applies to the technology found in the buildings. More advanced technical capability increased Bartholomew’s ability to produce increasingly accurate and detailed maps. In printing, the use of lithographic stones meant that, from the 1880s, multiple layers of colour could be printed, allowing for the development of now-standard contour layer colouring. But elsewhere, too, technology had a role to play. At Duncan Street, Bartholomew became one of the first businesses in Edinburgh to have internal telephone lines installed. In November 1910, they discussed the

\(^{52}\) Miller and O’Leary, “The factory as laboratory.” 473.
\(^{54}\) Paul Fyfe, By Accident or Design: Writing the Victorian Metropolis (Oxford: Oxford University Press, 2015), especially 1-27, 100-24.
\(^{56}\) Joyce, The State of Freedom, 34.
prospect with Glyde Chaffey & Co., consulting electrical and mechanical engineers, who sent a list of rooms in the building which could have telephones installed. This included JGB’s office, the building’s two other offices, and each of the separate departments. This would mean, the engineers told Bartholomew, ‘that you could ring up any of the offices mentioned and give your instructions, and also that any of the offices mentioned could ring up any other offices and ask for any information regarding work they were required to do’. Bartholomew were early adopters of the external telephone line — a letterhead from between 1900 and 1909 gave their telephone number as ‘6II Central’ — so were aware of its advantages as a means of communication. Internal telephone systems would, as Glyde Chaffey & Co. implied, speed up discussions between departments and could help to increase efficiency (and in turn, potentially, have a positive impact on income). But they also had the potential to play a role in how the building was used and experienced. As discussed above, Duncan Street’s layout resulted in fewer straightforward opportunities for workers to pass each other’s departments than there had been at Parkside. The introduction of telephones further reduced the necessity and likelihood of circulation around the building, contributing to the broader trend of compartmentalising departments and, consequently, delineating different areas of the premises. People’s conceptualisation of the building was likely to change accordingly, reinforcing this systematization: the allocation of different telephone numbers to different rooms made these spaces clearly separate entities. Furthermore, this additional means of communication required documentation of its own, such as lists of numbers and operation manuals, thereby increasing the overall complexity of the building’s documentation.

In terms of physical production, there is a link between technology, premises and output. Buildings, by necessity, were adapted to accommodate changing processes, such as the introduction of heavier and more complex machinery. Improved facilities and a clearer layout had the potential to dictate the nature and quality of the maps produced in Bartholomew’s properties across Edinburgh. Maps were, however, produced socially as well as physically. This section has also shown how the firm’s awareness and use of both Edinburgh, as region, and specific elements

57 NLS, Acc.10222/BR/260, papers relating to Duncan Street premises, letter from Glyde Chaffey & Co., 2 November 1910.
of their properties, as site, constituted attempts to construct ‘truth-spots’; that is, the belief that the knowledge emanating from these spaces was accurate. Nonetheless, this did not equate to the development of a ‘placeless’ image. The nature of their business was emphasized in the design of their buildings. The neo-classical design of Duncan Street differentiated Bartholomew from other printers and publishers in the city by firmly emphasizing the intellectual nature of their business. Its internal layout showed the clear organization and demarcation of space, reflecting the firm’s cartographic activities. The siting of their premises within Edinburgh shows an awareness of the link that could be forged between the reputation of a locality and their own credibility. The buildings served to demonstrate, physically and visually, the values the firm wished to convey, namely trustworthiness, respectability, and intellectualism — and this was done by embedding the firm’s image in the local context, not by creating a sense of removal from it. Close attention to premises, then, shows that JGB was aware of the importance of local, social and cultural factors in knowledge production and the construction of authority, and that he articulated the firm’s chosen identity through careful production of space.

The conceptualization of urban space in Charles E. Goad’s fire insurance plans

Charles E. Goad (1848-1910) produced fire insurance plans of British cities from 1885. His company, Charles E. Goad Ltd, which was based in London, had covered most large British cities by the end of the nineteenth century. This section explores the mechanisms by which Goad became authorities on specific aspects of urban space in the late nineteenth and early twentieth centuries. Like Bartholomew, Goad’s status determined the success of their plans (and vice versa). Status was constituted of ‘credibility, authority, and expertise’. Here, each of these constitutive parts is shown to have a local, spatial dimension, encouraging the development of a reputation of reliability and cartographic expertise.

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58 Samuel J.M.M. Alberti, “The status of museums: authority, identity, and material culture,” in Geographies of Nineteenth-Century Science, ed. David N. Livingstone and Charles W.J. Withers (Chicago and London: University of Chicago Press, 2011), 52. Graeme Gooday, “Liars, experts and authorities,” History of Science 46 (2008), 431-456, cautions against the use of the word ‘expert’ in this context, showing its rather different meaning in the nineteenth century: the contemporary use of expert was often in the context of an ‘expert witness’ in court, where the individual was not seen as ‘an impartial authority’ but as someone who was ‘prepared to lie to serve the interest of a paying patron’.

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Fire insurance offices across Britain used Goad plans to inform their processes of risk evaluation and the consequent pricing of insurance policies. The plans show, primarily, the main industrial areas of cities and, through a system of colour-coding, symbols and abbreviations, provide a detailed picture of the buildings in the area. Goad’s team of surveyors examined the construction of walls, doors, passages, windows, floors, skylights, hoists and lifts, roofs, and ‘sundries’ such as boilers, chimneys, fire alarms and hydrants. The development of the Goad plans came at a time when fires, and other urban accidents, were increasingly reported and commented upon; the expanding written discourse surrounding ‘accidents’ was a factor in growing concerns about understanding causation and risk.59 Certainly, fire was a prevalent occurrence in nineteenth-century cities, and this was undoubtedly a factor in the widespread use of Goad’s work. In Edinburgh, for example, where 26 fire insurance companies subscribed to Goad’s plans during the period in question, fire destroyed the premises of Thomas Nelson & Sons in 1878 and those of Dobson, Molle & Company, stationers, lithographers and printers in 1902. Further outbreaks damaged a paper-ruling factory and printing office off the High Street in 1910, and did ‘considerable damage’ to Parkside in 1916.60

It should be noted, however, that Goad was neither the first nor the sole developer of fire insurance plans, though his firm rapidly dominated the market. In 1857 John Thomas Loveday produced the London Waterside Surveys for the Use of Fire Insurance Companies, which established conventions, later used by Goad, relating to colour-coding and the use of symbols.61 Loveday was employed by the Phoenix Assurance Company as a ‘surveyor of risks’, and published the London Waterside Surveys as an altruistic aside to his work for Phoenix.62 He believed these plans would ‘materially lessen LABOUR, — encourage TIME, — secure IDENTITY, and admit of UNIFORMITY OF ACTION’, and that they also had the potential to ‘facilitate that

59 For an overview of this idea see Fyfe, By Accident or Design, especially 10 and 25-27.
62 Ibid.
mighty engine of commercial prosperity'. The detailed information contained in the plans themselves is, of course, presented as highly useful, but their uniformity is arguably equally important for its influence on practice. The development of supposedly universal standards shows a belief in the power of conformity and the minimizing of local variation. Goad, likewise, described the main benefit of his plans, for insurance companies, as ‘the possession of some acknowledged data upon which to approximate a fair premium rate for the risk assessed’. By describing the data in his plans as ‘acknowledged’, Goad employed a ‘legitimating rhetoric’, implying that this information was accurate and — importantly — trusted and accepted. The subsequent publication of this information under Goad’s name secured authorship, therefore, of facts acquired from a range of sources. The following sections explore these notions of knowledge production and circulation, with a focus on local, ‘useful’ — and, indeed, marketable — knowledge, and the implications of the Goad plans for broader conceptions of urban space in this period.

Goad made use of contemporary information when compiling plans. The ‘Key Plan’ to the Insurance Plan of Edinburgh (1892) gives the city’s population as 267,000, an increase of 5,775 from the 1891 census figure of 261,225. It is unclear, however, how the firm acquired this particular statistic: earlier drafts of this plan give a different figure, which has a pencil annotation alongside it, requesting a correction and the use of census data. This shows a concern for precision and the provision of statistics commensurate with those of a reputable source. As discussed above, Charles Goad described the value of his plans in terms of their provision of ‘acknowledged data’. Here, the firm made use of other ‘acknowledged data’ to reinforce the accuracy of their own information. Presenting methodologies as pre-established — in this case,

67 Secord, Victorian Sensation, 19.
68 BL, Cartographic Items Maps 145.h.6.(1). Fire Insurance Plans of Edinburgh, 1892, Key Plan. The Census of Scotland shows Edinburgh’s population was 261,225 in 1891 and 316,867 in 1901, meaning a steady rate of growth would see an increase of 5,561 per year: this is only 214 less than Goad’s increase of 5,775, suggesting their figure is reasonably accurate. An equivalent calculation for the 1881 (228,357) and 1891 census figures — in which a ten-year increase of 32,868 implies annual growth of around 3,286 — would be less accurate if used to forecast population increase. This suggests Goad had access to demographic information other than published censuses.
69 BL, Maps GOAD.MSS Edinburgh Proof Maps, 1892, Key Plan.
by reference to the census — was a means of acquiring authority.\textsuperscript{70} Elsewhere, the
firm collected ‘masses’ of newspaper cuttings relating to ‘natural disasters such as fires
and floods together with related notes’.\textsuperscript{71} They also kept a library of publications
relating to contemporary fire safety engineering practices, including a number of
collections of essays compiled by the British Fire Prevention Committee, which
feature reports on experiments on specific aspects of buildings, such as a comparative
test between ‘a 2-in. framed Honduras mahogany door, with 2-in. solid panels; a 2-in.
framed poplar door, with 2-in. solid panels’.\textsuperscript{72} Goad’s acquisition of these volumes
reflects the contemporary cultural authority of experimentation as a means of
establishing scientific fact.\textsuperscript{73} The broader processes of gathering information seen here
are redolent of Bartholomew’s method of ‘compilation’, discussed in Chapter Four.
The locally specific needs of Goad’s clients, however, rendered this material
insufficient: unlike Bartholomew, they also had to directly survey the ground.

To produce plans for cities away from the firm’s base in London, Goad gave
instructions to a team of assistant surveyors who carried out the work and sent their
findings back to London.\textsuperscript{74} Goad described this as ‘field work’ and often made
reference to it in correspondence with insurance firms. Writing to G. Gillespie of the
Northern Assurance Company, Edinburgh in 1904, regarding plans of Edinburgh and
Leith, Goad explained: ‘the ‘field’ work for these Revisions is now in hand, and I sha
be pleased to receive your authority to add the name of your Company to the
Subscription Lists’.\textsuperscript{75} At times he also implied close personal involvement with these
surveying practices, describing in 1900 how he had ‘recently been carefully over the
ground’ in Glasgow’s Kinning Park district in order to produce three additional sheets

\textsuperscript{70} Schaffer, “Metrology, metrification, and Victorian values,” 442.
\textsuperscript{71} Rowley, \textit{British Fire Insurance Plans}, 22. Rowley conducted research in the Goad archive prior to its
partial removal to the BL from the company’s own stores. The BL’s collection does not include these
newspaper cuttings, but there is no reason to doubt Rowley’s assertion that Goad gathered this
material.
\textsuperscript{72} The British Fire Prevention Committee, Fire Tests with Doors: A 2-in. Framed Honduras Mahogany
Door, with 2-in. Solid Panels; A 2-in. Framed Poplar Door, with 2-in. Solid Panels. Particulars of
Committee, 1900). This, along with six other similar volumes, is held in the BL’s collection of
uncatalogued Goad material at Maps GOAD.MSS.
\textsuperscript{73} Gooding, Pinch and Schaffer, “Introduction: some uses of experiment,” 5.
\textsuperscript{74} Rowley, \textit{British Fire Insurance Plans}, 43.
\textsuperscript{75} BL, Maps GOAD.MSS, Letter Book AB, letter to G. Gillespie, Northern Assurance Company, Edinburgh,
19 July 1904, 30.
of the area. The firm’s surveying practices were detailed: the finished plans show the level of local knowledge they amassed during the process of surveying, making it clear that surveyors went inside the buildings to assess the construction and state of floors, walls, windows and more. Evidence for these practices is shown, contrarily, by the firm’s correspondence relating to occasions when access was in fact refused to a building they wished to survey. Sheet 16 of the Edinburgh plans, for example, notes ‘Admission refused, April 1906’ above the 'Edinburgh Electric Lighting Sta.' The fact this is noted shows it is exceptional: clearly the norm was to be given access. Likewise, sheet 17 shows that the firm were also denied entry to the Royal Lyceum Theatre, though in this case the finished plan shows that they were evidently still able to gather significant detail about the building, such as its ‘automatic alarms’ and ‘stone stairs’. One means of doing so was to make use of local knowledge and connections for negotiating. In July 1908, Goad wrote to a contact at the North British & Mercantile Insurance Co. (hereafter NBM), Edinburgh:

Regarding Edinburgh sheet 3, block 17.
In connection with the Revision of Edinburgh now in progress, one of my assistants advises me that this firm still refuses admission and “will have nothing to do with us”. This is the firm about which you spoke to the writer in 1904 after you had seen the Proprietor, who did not seem to remember having refused admission.
I shall be glad to hear from you as to whether you can give any assistance.

This letter makes it clear that Goad had a team of assistants working in various cities who kept in regular contact with him, even on a building-by-building basis where necessary: his close personal involvement with the making of the plans is evident. It also shows that his own customers played a role in the gathering of necessary information. In this case, his contact at NBM appears to have spoken to both the ‘writer’ (a member of Goad’s team) and to the proprietor of the building in question — which, from consulting sheet three of Goad’s Fire Insurance Plan of Edinburgh (1892), was likely to have been 126 Princes Street, the only building on the street with no internal details given. It is unclear whether the contact at NBM was able to

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79 BL, Maps GOAD.MSS, Letter Book AI, letter to NBM, Edinburgh, 3 July 1908, 436.
80 BL, Goad’s Fire Insurance Plans of Edinburgh, 1892, sheet 3. Cartographic Items Maps 145.b.6.(1.).
Social relations are thus shown to be a vital constitutive part of the meaning and use of the final plan: Goad could not represent geographic realities in print without being granted access to them.

The use of local knowledge was not limited to problem areas. Regarding the additional sheets of Edinburgh and Leith made available in 1906, Goad used the fact that they had ‘been prepared after careful consultation with managers in Edinburgh’ as a selling point. In 1912, too, Goad requested ‘remarks’ upon a draft tracing of the Bonnington Bonds in Leith from H.J. Scott of the Royal Insurance Co., Edinburgh, who duly obliged, facilitating the revision of the relevant sheet. This adds complexity to the relationship between the firm and its customers: it might be expected that the firm were the producers of knowledge, and the customers were simply consumers of this knowledge, but in these three cases, at least — which are not presented as atypical — the customer played a significant role in the production processes.

Local knowledge, then, was a means of establishing accuracy. This gives insight into Goad’s conceptualization of scale: obtaining this level of urban understanding was more plausible for individuals based permanently in the city. The acquisition and possession of local knowledge correspondingly built social credibility and trust by giving the customer agency relating to the nature of the finished product. Fire insurance offices outside of Edinburgh, whose staff had not necessarily directly experienced Edinburgh themselves, may have been more likely to trust their fellow insurers to provide Goad with the most pertinent information for the task at hand, allowing them to obtain knowledge ‘by courtesy’. As an ‘interpretive community’, the insurers gave meaning to the knowledge presented in Goad’s plans, showing the importance of social connections and reputation. Broadly, this case may also indicate that Goad was especially in need of ‘outsourced’ local knowledge for cities a

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81 The BL’s collection of Goad material does not include revision slips.
84 Shapin, “Placing the view from nowhere,” 5.
long way from London, which would have made the northern British experience distinctive.

The finished product presented this urban knowledge in a codified and systematic manner. The index sheet of each published volume contains an 'Explanation of Signs used on Insurance Plans of Towns and Cities', which lists abbreviations; colour-coding; symbols used to describe the specificities of walls, openings, windows, floors, skylights, hoists and lifts, roofs and sundries, and reference numbers such as those giving street widths or storey heights [Figure 5.12]. Goad provided additional cards containing the explanation of signs when companies requested them, and did not charge, writing simply in 1911 that these cards would hopefully ‘increase the usefulness of the Plans’. This system gives an insight into how these plans were read: in conjunction with the explanation, a reader could reasonably quickly establish what a given building was made of and its internal composition, as well as gathering details about its surroundings.

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Figure 5.12: Charles E. Goad Ltd., “Explanation of Signs Used”. This was sent to subscribing fire insurance companies, and was used consistently across the plans.

The coding does not appear to have changed in the given period, suggesting that more experienced users of the plans could have eventually learned to read them without needing to consult the explanation. The codification of knowledge here, then, is essentially a form of visual jargon, or ‘tacit rule of procedure’, efficient and sufficient for those who understand it but potentially incomprehensible without the
explanation. The explanation, however, removes much of the exclusivity of this knowledge. This example thus provides an insight into the notion of authoritative knowledge — in this case, embodied in an insurer, who could ‘read’ the Goad plans in order to produce an informed policy — and the role of expertise. The development of ‘objective’ or standardized measurement more broadly in this period has been seen to remove the role of judgment and skill — in actuarial sciences, for example. Here, though, skill is not about the acquisition of the information, which an educated non-specialist could also do if provided with the explanation of signs, but its interpretation. Goad did not ascribe levels of risk: this was left to the insurer’s discretion. The plans thus provided companies with the means necessary to exercise due skill and judgment. This, however, required actuarial skill, knowledge of probability and valuation: professional skill was evidently not rendered unnecessary by these plans.

Though this codified, systematic form of presenting urban knowledge was highly detailed on a micro — that is, building-by-building — scale, in macro terms, city-wide coverage was not comprehensive. Plans of Edinburgh provide relatively thorough coverage of the central area of the city, encompassing premises between Princes Street and George Street; the length of Lothian Road; from George IV Bridge east to Canongate, and a small area close to Haymarket Station [Figure 5.13]. They exclude, however, manufacturing districts such as that around Causewayside, where Bartholomew, along with a number of other printing and publishing establishments, were based. R. & R. Clark’s Brandon Street premises also fell outside Goad’s coverage of the city, but records show they had a complex system of insurance, holding multiple policies acquired from NBM, the Law Union and Crown Union Insurance Company, and the Law Union and Rock Insurance Company Ltd, for which they provided minutely-detailed accounts of the contents of each room of their premises. NBM, at least, certainly held copies of Goad’s plans of Edinburgh, but in R. & R. Clark’s case, the particular location of the premises outside of the plans’ coverage

87 Livingstone, Putting Science in its Place, 158.
89 NLS, Dep.229/101, R. & R. Clark, insurance papers.
means that insurers must have made use of other forms of information in order to compile the policy.\textsuperscript{90}

This omission shows that Goad’s focus on what they deemed to be industrial areas of the city meant that the plans were not always comprehensive. In this respect cities such as Edinburgh, not considered to be conventionally industrial, were disadvantaged: cities with heavy industry such as Manchester, Glasgow and Liverpool had significantly more complex coverage.\textsuperscript{91} This was a conscious decision on Goad’s part, and coverage of specific industrial areas, heavy or otherwise, was often a selling point: in a letter from 1904, for example, persuading Allan Cook, Scottish Union National Insurance Co. (hereafter SUN), to pay for additional volumes of London plans, he wrote: ‘I notice that London VI is not in your list, and as I understand that this Vol. would be useful, I mention it lest it was omitted unintentionally; it is immediately to the north of Volumes I., II., III., and takes in the Cabinet-making district: Clerkenwell, Charterhouse, Old Street, St Lukes, Finsbury, &c.’\textsuperscript{92}

Here, although smaller districts are named, the overall area is distinguished by its industry — ‘the Cabinet-making district’ — rather than being given a name or specific geographical descriptor. In Edinburgh, Goad produced plans of the city centre, Granton and Leith, giving a skewed geography of the city that, if the plans were viewed as a seamed whole, contained apparently blank areas. Despite their emphasis on the reasonably small-scale, skilled practice of cabinet-making in London, above, they neglected equivalent spaces in Edinburgh, such as the city’s Southside, as mentioned above, and the area around Leith Walk — the mapping of Leith and Edinburgh showed the two as separate, ignoring this important linking road and its significant small-scale industry. This could have been influenced by the demands of insurers or Goad’s limited personal knowledge of the city. This dialectic relationship between Goad as producers and insurance companies as consumers had the potential to play a role in influencing the development of ‘zoning’ in the city. Mapped areas were more quantifiable in terms of the fire risk posed by their buildings, which increased the ease with which they could be insured, and thus made these areas more desirable sites for industrial premises. From afar, Goad could be seen to have

\textsuperscript{90} BL, Maps GOAD.MSS, Goad Plan Register, entries for Edinburgh.

\textsuperscript{91} Glasgow’s coverage, by 1906, comprised 215 sheets, compared to Edinburgh (22), Leith (15) and Granton (2)’s combined total of 39.

exercised some agency in more general urban development, whether deliberately or not. The firm would not have had the capacity to do so, however, without local knowledge.

Figure 5.13: Coverage of Charles E. Goad’s Fire Insurance Plan of Edinburgh. Location of sheets 2-22 (sheet 1 is the ‘Key Plan’) plotted onto section of J.G. Bartholomew, Bartholomew’s Plan of Edinburgh and Leith with Suburbs Constructed from Ordnance and Actual Surveys. Edinburgh: Bartholomew, 1901-1902.

Source: NLS, Acc.10222/PR/32b folio 120; BL Maps GOAD.MSS, Edinburgh Proof Maps, 1892 and 1906.

Goad began producing plans in a period of rapid urban change, from the growth and consolidation of industry to increasing proportions of the population living in cities. Edinburgh was no exception to this: the population increased by 40% between 1881 and 1911 (228,357 to 320,318).\(^93\) This widespread urban growth both necessitated and justified the development of the Goad plans. More specifically, the pace of change required the development of systematic revision procedures. As implied in much of the correspondence quoted above, Goad plans were regularly revised; their Edinburgh

\(^93\) Census of Scotland: population figures for 1891 and 1921.
plans were updated every three years. In relative terms, this meant Goad plans were technically less up-to-date, though significantly more detailed, than the Post Office plans, which were revised annually, but that they were considerably more up-to-date than Ordnance Survey plans, which were revised at intervals of ten to thirty years. Goad plans were revised through a system of ‘correction slips’. Any areas that had seen sufficiently substantial changes were re-drawn on slips of paper, which was pasted onto the original plan. The revision system itself resulted in a visible topography of change, whereby areas on the map requiring regular revisions became more built up — in layers of paper — over time, giving a physical and cartographic form to the concept of the city as palimpsest.

The complexity of providing revisions justified the firm’s policy of operating a subscription system, rather than selling the plans as individual items to be owned. Upon payment of an annual subscription fee, insurance companies would have their plans kept up-to-date, either by attaching revision slips themselves, or from sending their plans to Goad’s London office to be updated in-house. The bulk of Goad’s correspondence relates to revisions and negotiations over ongoing subscriptions. Though maintenance of the plans and running the subscription system was evidently time-costly, it allowed Goad a level of control over the use of their plans that they would not otherwise have had: they knew exactly who held each copy. Subscribers part-funded the production costs of each plan, meaning they then had a vested interest in not sharing the information shown. Goad emphasized this in a statement attached to a number of volumes: ‘Please see that plans in your possession are used solely for your company’s business, not allowing Tracings or Copies to be made. Every company should bear its share in the expense of a common benefit’. The specifics of this expense, however, were often negotiable: Goad proposed a ‘very favourable offer’ to companies who were ‘prepared to extend their support appreciably’ by paying, for example, for the use of second-hand copies of plans.

95 Fleet and MacCannell, Edinburgh: Mapping the City, 262.
96 BL, Maps GOAD.MSS, Goad Plan Register. This register lists all copies of the plans for each city alongside subscribing insurance firms, giving details of all dates of revision.
The emphasis on the exclusivity of the plans — presented as a common benefit — necessitated, as described above, the development of close working relationships between Goad and the subscribing firms. This meant that Goad regularly consulted branches before commencing work on new projects, to ascertain their potential use. In 1905 a company that made ‘systematic use’ of the plans contacted Goad suggesting that the absence of outline sheets, upon which memoranda could be made, for certain sheets of the Glasgow plans ‘causes much inconvenience’. Goad responded by contacting multiple existing subscribers — in Edinburgh, NBM and CI — explaining this complaint, and stating ‘I therefore propose preparing them and shall be glad to hear that you will accept them for your copies at the ordinary rate of 3/6 each’. 99 P.R.D. Maclagan of NBM, along with other firms, declined to pay for the outline sheets; Goad consequently delayed printing, pending the acquisition of sufficient support. 100 This shows the agency of individual firms in the operation and output of Goad’s business, largely as a result of the subscription system. It also shows a consequent need for Goad to estimate likely rates of subscription prior to commencing production: his pool of potential subscribers was relatively small, by the very nature of the scale of the insurance industry, but subscriptions were still a more reliable source of income than selling, because they initiated continued revenue and, ideally, loyalty. Subscription represented commitment, and thus a level of projected trust in Goad’s continuing cartographic expertise.

The language of mutual support seen more broadly across Goad’s correspondence is interesting. It indicates, perhaps, that Goad perceived the plans as a project more than a profit-making business — or, indeed, presenting them as such may have been a particularly savvy business practice. Goad consistently requested ‘support’ when contacting firms speculatively to suggest they increase their subscriptions. This support was often presented as mutually beneficial. In September 1899, writing to James Cowan of CI, for example, Goad asked: ‘As your support during this year … only amounts to £18.10.0, can you kindly consider whether further subscription would not be of benefit to you as encouraging the maintenance of the

99 BL, Maps GOAD.MSS, Letter Book AC, letter to multiple recipients (in Edinburgh, NBM and CI), 27 May 1905, 428. The sheets in question were for plans of Glasgow: vol. 5, sheets 211 to 215.
work’. Likewise, in a letter to A. Duncan of SUN, Goad wrote: ‘Can you not consider whether further support to my work would not be of advantage to your Company’. The relationship between producer and consumer is again highlighted here. Goad was quite explicit about the necessity of financial ‘support’ from the insurance offices to maintain the viability of producing the plans. In this respect, as with the seeking of local geographical knowledge, it is clear that the insurance firms played an active role in shaping the precise operations of the company and the nature of output they had access to in consequence. Requesting an increased annual subscription from Charles Lee of CI, Goad highlighted that these higher payments would be ‘somewhat commensurate with the value of the work, if London is to be properly planned’. He suggested that the quality of surveying and planning directly related to the sum paid by individual firms, alluding to their own interests. He also frequently compared the value of various firms’ subscriptions and suggested to firms paying less that they come into line with others — in the spirit, it is implied, of fairness.

The combination of regular revisions and a subscription system meant that a considerable volume of Goad’s correspondence related to the maintenance of plans. Goad frequently pressured firms to keep their plans in a ‘modern condition’, and encouraged them to take into account ‘how rapidly these Volumes become obsolete if the periodical Revisions are not attached’. In October 1908, Henry Brown of CI, Edinburgh, declined Goad’s offer of revisions to certain plans. Goad quickly responded: ‘With reference to your copy of this volume which is held at your Glasgow Branch I can quite understand that it is hardly ever used, because reference to it would so frequently be found to be a waste of time by reason of the many changes which have taken place since it was last revised in 1895’.

In correspondence with other firms, he cautioned that ‘plans which are not kept up to date naturally become distrusted, then fall into disuse, and the original outlay is lost sight of’. There is an issue here of accuracy and trust — a thread that runs throughout the thesis — showing a keen awareness on Goad’s part of the rapid

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103 BL, Maps GOAD.MSS Letter Book T, letter to James Cowan, CI, Edinburgh, 16 September 1899, 111.
105 BL, Maps GOAD.MSS Letter Book AE, letter to James Cowan, CI, Edinburgh, 23 February 1906, 162.
107 BL, Maps GOAD.MSS Letter Book AI, letter to James Allan Cook, SUN, Edinburgh, 6 April 1908, 193.
changes taking place in British cities in the period. Plans that were not up to date would be potentially useless. Evidently, it was in Goad's own interests for all plans to be kept current. Companies who maintained their plans carefully provided Goad with a consistent source of income. But he also commented that 'experience proves that unrevised Plans are far from satisfactory to those who use them, and do not assist the Reputation of the system generally'. The mention of reputation here is key: insurance policies based on information from outdated plans would be potentially inaccurate, and although he would not be liable for this — it was the insurance firms' own decision whether or not to update — he nonetheless felt a vested interest in ensuring that firms claiming to use his information were, in fact, doing so as precisely as possible. The frequency with which they did so also had financial implications, but this was not the only consideration Goad took into account. In this case Goad seems to display genuine professional interest in accuracy alongside financial interest in obtaining regular income. Issues of accuracy were, in fact, further complicated by the lack of legal status surrounding notions of liability in this period. The concept of negligence was only introduced into Scots delict law in 1932, meaning that the use of inaccurate data was unlikely to implicate Goad in any sense other than a reputational one. Scientific reputation, however, 'hinged on cultures of communal trust', meaning the maintenance of relationships was crucial. It seems evident, then, that Goad's impetus to achieve accuracy was motivated by concerns beyond legalities. The firm was aware that accuracy and reputation went hand in hand, and that local social factors were highly significant in the creation of both: their interactions with customers were as important in establishing cartographic authority as the details of the plans themselves.

**Conclusion**

This chapter reflects the aims of historians and geographers of science by investigating a set of mechanisms used by cartographic firms in order to acquire credibility and, in turn, afford increased validity to their output. Bartholomew and Goad illustrate different aspects of the spatial and, specifically, local elements of knowledge production and circulation. When designing, building and working in

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109 Schaffer, "Accurate measurement is an English science," 164.
their premises, Bartholomew used various tactics, all informed by an element of local knowledge, to ensure they embodied authority, which, by constructing a ‘truth-spot’ within the city, played a role in imbuing their output with credibility. Goad acquired highly specific local knowledge, often through a network of ‘expert’ connections who knew the city well, in order to make their fire insurance plans authoritative and precise. For both firms, the end product was a map, in which the city became the subject of knowledge. When knowledge production is taken into account, however, the complexity of the city’s role emerges. It serves as more than a mere setting for action. The individual and commercial reception of these representations of space was influenced by the acquisition of authority through localized, situated practices.

The Bartholomew material demonstrates that the authority crucial to the reception of their cartographic products could be articulated — in part, at least — through careful curation of the built environment. The decision-making processes involved in choosing a setting for their premises show a keen awareness of the meanings attached to various parts of the city; the fact that they chose to locate their first purpose-built premises in an area with a pre-existing reputation of being prosperous, rather than one in which they would be in close proximity to other, similar businesses, gives an insight into their priorities. Likewise, the design of the Duncan Street building, which mixed personal elements with a pared-down neoclassicism, articulated Bartholomew’s identity as a professional, personable family firm. The practical elements of their business were notably ignored: the building was set in a predominantly residential area, with little indication from the outside that it housed light industrial activity. Inside, embodied experiences of the building varied drastically depending on the person’s status. Visitors experienced spacious neoclassical grandeur, while the majority of employees, who stepped through a separate entrance, immediately experienced busy and loud spaces. Bartholomew’s desire to express their status as a firm dealing in knowledge, over and above the physical side of their work, is highlighted throughout. Emphasizing the intricate practices of mapmaking was not a priority: instead, a more general sense of grandeur, intellectualism and professionalism, along with attentiveness to locality, was employed to foster trust.

For Goad, local knowledge was key in order for their plans to acquire authority. From their base in London, the firm had to cultivate close working relationships with fire insurance companies throughout the country in order to obtain sufficiently detailed information about each city and thus produce accurate plans. The firm’s customers therefore played a role in providing the information they were then expected to purchase: this perhaps influenced Goad’s decision to present the plans as a collaborative effort, in which all companies bore their share ‘in the expense of a common benefit’. This highly social, localized element of knowledge production thus aided precision and encouraged trust. Like Bartholomew, the success of their maps relied on their accuracy — and, in both cases, accuracy was, in part, a socially constructed value, and one that could be emphasized through close attention to local practices. A focus on the spatial dimensions of knowledge production, therefore, provides an insight into both firms’ own conceptualization and use of urban space in the construction of cartographic authority.

Selling maps: the geography and economics of John Bartholomew & Co.’s dispatches, c.1890-c.1900

This chapter explores the dispatches and distribution networks of John Bartholomew & Co. between 1890 and 1900 and shows that the distribution of maps can be clearly understood in spatial terms. A specific focus on one decade allows the detailed archival material of Bartholomew’s dispatch books to be analysed in depth, albeit within the broader context of the period c.1880 to c.1920. This decade represents the peak of Edinburgh’s printing and publishing industries, when both the number and size of firms were at their greatest, making it a particularly fertile period for analysis: Bartholomew’s relationships with other local firms have been explored in previous chapters and this thread continues here.1 It is also the point at which the market for Bartholomew maps significantly expanded beyond the previously dominant centres of London, Edinburgh and Glasgow. This is the focus of the first section of the chapter.

Following an analysis of the national market for maps, the chapter investigates the Edinburgh market, from two interlinked perspectives. First, it looks at the nature and spatial distribution of the customer base, which is shown to be diverse but, importantly, consistently so. It then focuses on the content of maps sold in Edinburgh: although the customers did not vary significantly, the type of maps they ordered did. The demand for local maps decreased, while series sheets of Britain and global maps increased. In this respect, the chapter builds on the arguments of preceding chapters, by showing a clear overlap between production, both physical and intellectual (that is, publishing-based decisions which related to content), and sales, which correspondingly provides a way into readership and usage — the focus of the next chapter. The following introduction situates the Bartholomew example within broader literature on this topic, and shows throughout the overlap between publishing decisions and sales decisions, as well as interactions between cartographic, socio-economic and political perspectives.

Bartholomew’s pattern of dispatches in the 1890s reflected broader industry trends of the period in which printed material came to be dispatched further afield.

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1 See Chapter Three, Table 3.4, 65.
Prior to this, during the eighteenth century, the market for maps in England and France, for example, rarely extended beyond the urban centre of their making — that is, London and Paris. Distribution networks and, crucially, methods, were not sufficiently established. The market for this inherently global (in content) product was, at this point, largely local. By the middle of the nineteenth century, the delivery of printed material was possible on both a national and international scale; in studies of Britain, this is largely credited to the development of the railway system and steam-powered transport. Explanations of growing networks of printed material place a primacy on practicalities: changing technology in both production and distribution, along with developments in the British postal system, allowed for the delivery of books, newspapers, periodicals and maps to take place on a larger scale than ever before. There is a clear link between mass production and the expansion of distribution networks. The capacity to systematically reproduce greater quantities of maps — linked to the growth of lithographic printing techniques examined in Chapter Four — meant there was, quite simply, more need for transport able to carry goods in bulk. Alongside this, new transport networks increased the amount of potential customers, thereby encouraging larger scale production. More specifically, railway systems in particular necessitated in themselves the development of new, specialized maps to aid users. Essentially, the period saw spatial horizons broaden. This can be understood both in terms of the increasing production and availability of maps, and as a function of widening social horizons in the context of broader trends such as increasingly national markets for leisure and tourism as well as consumer goods. The relationship between the production, distribution and consumption of maps is multi-faceted and evidently has a spatial dimension. Since Mary Sponberg

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4 This can also be linked to the changing aesthetics of cartography. See, for example, Susan Schulten, *The Geographical Imagination in America, 1880-1950* (Chicago and London: University of Chicago Press, 2001), 24.

Pedley’s study of the eighteenth century, however, there has not been a sustained attempt to understand cartographic markets from a geographical perspective.  

Here, approaches construed as ‘geographies of the book’ can usefully be applied. The following analysis considers ‘a range of geographies at a series of scales’ — from the local particularities of production, as explored in the preceding chapters, to further-flung distribution and the eventual location of maps — in order to better understand the nature of cartographic production. These scales can be seen to overlap and interact: the local and the national, for example, are examined here in relation to each other, rather than as wholly separate categories of analysis. In this respect maps make for a particularly productive focus for enquiry. A geographical — and, specifically, urban — history of sales necessitates an understanding of the location of dispatches, both within Edinburgh and on a national and global scale. This cannot, however, be separated from the content of the maps — that is, an approach broadly grounded in publishing history. To focus on cartography as national and international processes, more so than in the case of other forms of printed material, therefore makes apparent the complexities of the ‘local’ market. This should not be seen simply to refer to Bartholomew’s Edinburgh-based customers, but also to the quantity of local maps the firm sold. Both are shown here to comprise a decreasing proportion of sales throughout the 1890s, which points to an increasingly national market. The local focus was, however, retained in the case of customers who required highly specialized products, such as Edinburgh Town Council (via the Burgh Engineer), which hints at the importance of local social and professional networks in

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8 Charles W.J. Withers, “Scale and the geographies of civic science: practice and experience in the meetings of the British Association for the Advancement of Science in Britain and in Ireland, c.1845-1900,” in Geographies of Nineteenth-Century Science, ed. David N. Livingstone and Charles W.J. Withers (Chicago and London: University of Chicago Press, 2011), 103. Adrian Johns and Elizabeth Eisenstein’s fundamental disagreement, discussed in Chapter Two, can in part be characterized as a difference in focus relating to scale: see Ogborn and Withers, “Introduction: book geography, book history,” 9, who argue that viewing this historiography through a geographical lens allows for the prospect of ‘reconciliation between these perspectives’.  
sustaining business that relied on the firm’s specific expertise. Overall, this analytical framework allows for an in-depth understanding of map sales despite a lack of material on the external pricing of Bartholomew maps — though where internal costs and charges are extant and relevant they are included.

A study of cartographic production evidently enriches existing understanding of the book trade, especially through a geographical lens, and there is overlap between many of the central concerns of both approaches. In the specific context of sales and distribution, the technological capacities that allowed for the mass production and greater distribution of books and the spread of printed material also applied to maps. The particularities of cartography do, however, warrant specific consideration. The market for maps was multifaceted. Not all cartography was produced for ‘commercial’ purposes — that is, sales to a public readership — and ‘public sector’ customers, such as local councils or government bodies, played an important role in providing demand for maps. This is key to understanding Bartholomew’s business practice. Nonetheless, all printed maps should be seen as being ‘in some way commercial’, regardless of sales-related intentions.\textsuperscript{10} Maps were, of course, highly specialized, with their own economics of production, which must be taken into account in any examination of sales and distribution networks. As discussed in Chapter Four, Bartholomew also produced their own publications as well as making maps to commission: this allowed them to manage the risks inherent in any commercial project. The distribution networks considered here are, unless otherwise specified, those ‘external’ customers, for whom Bartholomew produced around 77\% of their total output during the period in question.\textsuperscript{11} These customers then took responsibility for sales, including the financial implications, whether directly or as one stage of further distribution (overseas, for example). In this respect, Bartholomew, a private company from 1889, and other similar firms should be considered separately to the Ordnance Survey, which operated a specific system of allocating ‘agents’ for sales: from 1885, the national Stationery Office was responsible for their sales, and appointed Edward Stanford and W. & A.K. Johnston (succeeded in 1886 by A. & C. Black) to the role of agent for, respectively, England and Wales, and Scotland.\textsuperscript{12}

\textsuperscript{10} Sponberg Pedley, \textit{The Commerce of Cartography}, 9.
\textsuperscript{11} NLS, Acc.10222/BR/314-316, order and cost books, 1888-1903.
\textsuperscript{12} McKitterick, “Organising knowledge in print,” 543.
Clearly, diversity was a key characteristic of Bartholomew’s business practice in this period. Their range of work — in terms of content, customer base, or the intellectual and physical demands of production — was fundamentally varied. Previous chapters have emphasized the important differences between the various types of work Bartholomew carried out. This chapter continues that analytic thread around the ‘communications circuit’ presented in Chapter 4. There was no ‘typical’ order, for example: the size of dispatches within Edinburgh in 1890 ranged from one map to 40,800, and the time taken to produce each order depended not just on size but also on content.\(^{13}\) Sales were not entirely separate from production: instead, a dialectic relationship operated between content, customer and use. To some extent, the mapmaker, by providing cartographic material, created a market, and customers responded to availability.\(^{14}\) In this respect, understanding the mapmakers’ agency is key. That said, many maps were certainly created with particular customers in mind — self-evidently so in the case of commissioned work.\(^{15}\) This can profitably be considered in terms of supply and demand, which overlap: maps ‘both created and responded to perceived markets’.\(^{16}\) The mention of perception here also has broader importance. Considering sales and content together also provides an insight into the fact that much of Bartholomew’s day-to-day work consisted of the reproduction of series sheets. Although the making of series sheets — or more accurately, the adaptation of existing Ordnance Survey maps — was an intellectual process, the subsequent large-scale reproduction was not. This day-to-day activity stands in stark contrast with the firm’s intellectually driven self-perception, or outward image, as explored in the previous chapter. Nonetheless, this type of work provided a valuably regular income, which allowed them to also produce innovative and highly specialized products. Essentially, high-volume and bespoke production of maps formed two complementary sides of cartographic manufacture and sales.

\(^{13}\) NLS, Acc.10222/BR/314-316, order and cost books, 1888-1903; Acc.10222/BR/390-391, 394 and 398-399, dispatch books, 1888-92, 1894-6 and 1899-1902.
\(^{16}\) Sponberg Pedley, *The Commerce of Cartography*, 154.
National patterns of distribution

Examining the nationwide patterns of dispatches across the decade shows a clear change in Bartholomew’s distribution network [Figure 6.1]. The number of places receiving five or more dispatches over the course of one year increased by 60% between 1890 and 1900. Within this overall expansion, the places receiving 100 or more dispatches (London, Edinburgh and Glasgow) remained consistent: their importance is considered in more detail below. The most noticeable patterns are the increase in places receiving between 10 and 99 dispatches, and the marked decrease in dispatches north of Edinburgh, and a corresponding increase in dispatches to England. In 1890, customers in Oban, Kirkcaldy and Sutherland all received between five and ten dispatches annually, while Fife was Bartholomew’s largest centre of distribution after London, Edinburgh and Glasgow with a total of 31 dispatches. No customers in these places received regular dispatches in 1900. Instead, customers in cities such as Liverpool (69), Manchester (51), Oxford (41), Birmingham (29), Newcastle (26) and Bradford (25) placed an increased proportion of Bartholomew’s total orders. The prominence of English cities in Bartholomew’s customer lists for this period indicate the firm’s dominance of the cartographic market: it suggests a lack of local equivalents in these places. Although customers in London received an increasing number of dispatches over the period, the city’s market share decreased as customers in the aforementioned English cities came to play a more important role in the national map trade.

This represents an overall diversification in Bartholomew’s market, and their capacity to reach customers in urban places beyond London, Edinburgh and Glasgow suggests an element of professionalization in the outlook and management of their business, as does the seemingly diminished role of provincial markets. This theme informs much of the following analysis. This pattern reflects the nature of the book trade in Britain in this period, in which the overwhelming trend was the increasing dominance of wholesalers such as J. Menzies & Co. and W.H. Smith. These large firms absorbed many regional businesses, and became a consistent presence in the development of a national system of distribution.

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17 Where Sutherland and Fife are listed, this reflects Bartholomew’s own descriptions of locations: dispatch books only reliably recorded street addresses for firms based in Edinburgh and, as shown by these examples, did not always record details beyond the county in question.
Figure 6.1: National patterns of distribution, 1890-1900.

The majority of Bartholomew’s dispatches were sent to customers in Edinburgh, London and, to a lesser extent, Glasgow. These three cities dominated Bartholomew’s distribution network throughout the period in question, receiving, between them, 78%, 70% and 62% of the firm’s total dispatches in 1890, 1895 and 1900 respectively.19 The absolute number of dispatches to Edinburgh and London, in particular, grew in this period. By 1900, London overtook Edinburgh as the place with the most dispatches [Table 6.1].20 The latter pattern reflects the broader book trade in this period: the development of British printing and publishing in London is well understood.21 Edinburgh’s continued prominence is, however, unsurprising. The city retained a significant book trade until the First World War (a concern of Chapter Three), which included map publishing. Despite the apparent decline in the provincial Scottish market for maps, the persistently high number of dispatches to firms within the city shows a distinctive local urban market, especially when considered alongside the fact that Glasgow also retained a prominent place in this list. As discussed in the following section, this was reflected in the firm’s output: the production of maps of Scotland formed an increasing proportion of the work Bartholomew produced for customers in Edinburgh.

The relationship between Edinburgh and London’s respective roles in the map trade changed in this period. The information below [Table 6.1], which relates to the number of dispatches sent to each location, appears to show a straightforward switch in the late 1890s, in which London overtook Edinburgh as the main recipient of Bartholomew maps by 1900. London’s share of the dispatches hovered around 30%, while Edinburgh’s dropped from 38% to just 24% between 1890 and 1900.22 The size of each of these orders, however, varied drastically and it is therefore instructive to consider the number of individual items sent to each location in these years. The nature of these items also varied, and it should be noted that the number of items does not necessarily reflect the amount of work involved in an order. The following sections explore the nature of specialist cartographic production, and show that individual maps requiring the most work were also often ordered in the smallest

20 It should be noted that, unless otherwise indicated, these figures reflect external demand for maps: they do not include Bartholomew’s own publications, which are considered separately.
quantities. A closer interrogation of the figures for Edinburgh and London in this period shows that the supposed switch in the late 1890s is less straightforward than it initially seems. In fact, London consistently received the largest number of items from Bartholomew, whether in absolute numbers or percentage terms [Table 6.2]. London’s importance as a central part of Bartholomew’s distribution network was, in fact, already in place by 1890, when 41% of the items Bartholomew sent were to customers in London.\(^{23}\) Clearly, London firms placed fewer but larger orders.

**Table 6.1:** Number of dispatches to Edinburgh, London and Glasgow, 1890-1900.

<table>
<thead>
<tr>
<th>Year</th>
<th>Edinburgh</th>
<th>As % of total dispatches</th>
<th>London</th>
<th>As % of total dispatches</th>
<th>Glasgow</th>
<th>As % of total dispatches</th>
</tr>
</thead>
<tbody>
<tr>
<td>1890</td>
<td>510</td>
<td>38</td>
<td>409</td>
<td>31</td>
<td>115</td>
<td>9</td>
</tr>
<tr>
<td>1895</td>
<td>519</td>
<td>32</td>
<td>460</td>
<td>29</td>
<td>138</td>
<td>9</td>
</tr>
<tr>
<td>1900</td>
<td>555</td>
<td>24</td>
<td>741</td>
<td>33</td>
<td>109</td>
<td>5</td>
</tr>
</tbody>
</table>


**Table 6.2:** Number of items sent to London, Edinburgh and Glasgow, 1890-1900.

<table>
<thead>
<tr>
<th>Year</th>
<th>London</th>
<th>As % of total items sent</th>
<th>Edinburgh</th>
<th>As % of total items sent</th>
<th>Glasgow</th>
<th>As % of total items sent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1890</td>
<td>923582</td>
<td>41</td>
<td>375646</td>
<td>17</td>
<td>285067</td>
<td>13</td>
</tr>
<tr>
<td>1895</td>
<td>643663</td>
<td>28</td>
<td>548503</td>
<td>24</td>
<td>485475</td>
<td>21</td>
</tr>
<tr>
<td>1900</td>
<td>1104208</td>
<td>50</td>
<td>508789</td>
<td>23</td>
<td>302747</td>
<td>14</td>
</tr>
</tbody>
</table>


This highlights the role of distance and practicality in defining the size and nature of Bartholomew’s distribution networks. This is reinforced by the fact that in 1895, for example, Edinburgh and Glasgow received 29% and 9% of the total annual dispatches, respectively, which seems to place Edinburgh’s share of the market considerably ahead of Glasgow’s [Table 6.1].\(^{24}\) In terms of the number of items sent, however, their share was similar, at 24% and 21% [Table 6.2]. This means the average


\(^{24}\) *Ibid.*
order size between the two places differed significantly: in Edinburgh, the average order comprised 1240 items; in Glasgow, 3517. Glasgow firms, like London firms, appear to have ordered from Bartholomew in greater individual quantities but with less frequency. The Edinburgh firms’ smaller but more frequent orders can be easily explained by their location and the comparative ease of delivery: despite Glasgow being relatively local, in practice Bartholomew consistently used a combination of book post and passenger rail to send maps to cities across Britain, whether 50 or 400 miles away. It is therefore possible to see locality as a relational matter. Compared to London, Glasgow provided an additional, reasonably local and reliable market to Edinburgh. When compared to Edinburgh, however, distance and practicality, along with Bartholomew’s significant local networks, had a role to play in ordering habits.

The dominance of these major cities can also be explained in part by the ambiguity of maps’ eventual location. It is notable that very few places outside Britain appear in Bartholomew’s dispatch books. Many of the firm’s dispatches were, however, sent to publishers or wholesalers, such as Edward Stanford (London). They would therefore then go on to farther-flung places. What initially appear to be domestic orders may well have been intended for global readerships. This links to broader trends in the industry whereby, as shown in Chapter Three the role of intermediaries such as agents became increasingly important. In February 1890, for example, Bartholomew produced 5150 maps for an encyclopedia published by the firm Lippincott & Co., based in Philadelphia, U.S.A. — but the order itself was sent to them via W. & R. Chambers, who were based in Edinburgh at Warriston’s Close, just off the High Street and close to Bartholomew’s own premises. Clearly, Chambers operated an individual relationship with Lippincott. This particular listing makes it possible to trace maps’ movements a little further than Bartholomew’s records normally allow. The same principle applied to regional markets, and sounds a note of caution regarding London’s dominance. London-based wholesalers, such as Edward Stanford or W.H. Smith & Sons, operated their own distribution networks across Britain. London, therefore, could be seen as a point at which the ‘communications

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25 Bartholomew also occasionally used steamers to send particularly large orders to London and beyond. The role of steam-powered transport in the nineteenth century printing industry is explored in detail in Fyfe, Steam-Powered Knowledge.
26 See, for example, the increasing number of agents in the printing industry shown in Chapter Three, Table 3.4, 65.
circuit’ diverges and Bartholomew’s control over the trajectory of their maps diminishes. Correspondingly, so does the possibility of tracing it. This also explains in part why towns and cities that might be expected to show a large demand for maps, such as those with large educational institutions — Oxford and Cambridge, for example — do not feature in these lists until 1900. Even in that year they received fewer dispatches than seemingly less relevant places (Cambridge received 18 dispatches while Bradford received 25). Other publishers made attempts to develop their business on a global scale in this period: W. & R. Chambers, for example, took their educational publications to the American market, while Thomas Nelson & Sons made forays into French publishing. Bartholomew, by contrast, appear to have been content to allow other publishers and booksellers to supply their product to a global audience. Publishing and bookselling relationships, and the geography of these maps, clearly continued long after items left Bartholomew’s premises.

Evidently, the market for Bartholomew’s maps became increasingly national in scope throughout the decade. By 1900, the firm sent orders to a greater number of places, in greater quantities. Their market in 1890 combined high levels of centralization in London, Edinburgh and Glasgow with limited custom from small and predominantly Scottish places. At the end of the period in question, a clear shift had occurred which saw more cities across England placing orders for maps. As London, Edinburgh and Glasgow’s relative dominance decreased, and the provincial Scottish market became less significant, these large and often industrial cities represented the emergent ‘middle’ of Bartholomew’s customer base. This reflects the firm’s growing mass-market appeal and conscious professionalization, which are explored in greater depth in the following section.

The map trade in Edinburgh

Interrogating this geography on a closer scale reveals a range of local patterns. The previous section showed that Edinburgh’s share of Bartholomew’s total dispatches decreased from 38% to 24% across the 1890s; in this respect it was overtaken by

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28 NLS, Acc.10222/BR/398-399, dispatch books, 1899-1902.
London in the middle of the decade. In terms of quantity of individual items dispatched, the city's share of the total remained at about 20% throughout the 1890s. This period, as discussed in Chapter Three, was an especially important decade for the printing and publishing industries: the number of firms peaked, as did their average number of employees. In the early decades of the twentieth century, however, the industry saw a decline. Labour troubles led to women being barred from becoming compositors from 1910, and there were lock-outs in 1912 and 1916. During the First World War, the focus on wartime production damaged Edinburgh’s ‘staple’ industry, though, as shown in Chapter Four, Bartholomew did not suffer to the same extent — and indeed thrived in the first half of the twentieth century, becoming known for large, well-received publications such as the *Survey Atlas of Scotland* (1912) and the *Times Survey Atlas of the World* (1920). Nonetheless, it is important to see mapmaking alongside the broader context of printing and publishing, which makes the 1890s a good period for an analysis of city-wide trade patterns. The focus here is on how and where sales networks operated around the city: this shows the importance of regularity in custom, rather than the size of individual orders; and the content of the maps dispatched, and what this reveals about booksellers’ perceptions of the local market. Bartholomew’s capacity to manage a diverse range of order sizes and types is shown here to be fundamental to their continued success.

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31 Siân Reynolds, *Britannica’s Typesetters: Women Compositors in Edinburgh* (Edinburgh: Edinburgh University Press, 1989), 54-6. This is also discussed in Chapter Four, 126-127.
Figure 6.2: Addresses of Bartholomew’s customers in Edinburgh. [Red markers denote customers who received more than ten dispatches over the course of this year].

The Edinburgh market for Bartholomew maps in terms of number of customers — comprising businesses, organisations and individuals — expanded overall by 11% from 1890 (94) to 1900 (105). The largest number of individual customers actually came in 1895, when the firm sent dispatches to 123 different customers. This expansion can be viewed geographically. The three maps [Figure 6.2] show the growth of the firm’s customer base from a clear clustering in the centre of the city (the streets surrounding the High Street and Princes Street) to a visibly broader range of customers, with expansion into north Edinburgh and Leith as well as increased custom in the south of the city, especially the streets around Causewayside, where many of the city’s printers were based, and, in 1895, the largely residential areas of Bruntsfield and Morningside. The overall lack of custom in the west of the city reflects Edinburgh’s industrial districts: this was where larger-scale industry, especially brewing, was located. These patterns are broadly similar to those seen in the addresses of the printing and publishing trade, examined and mapped in Chapter Three, and indeed these firms feature fairly prominently on Bartholomew’s customer lists over the period in question. Clearly, the existing prevalence of printing and publishing in the city provided Bartholomew with a ready market for maps. This is considered below in greater depth in the context of the firm’s most regular customers.

Examining the number of individual customers each year does not, however, give the whole picture. In fact, though 1895 saw the most customers, the least dispatches were sent in this year (498 as opposed to 509 and 553 in 1890 and 1900, respectively), and the average size of an individual dispatch was the smallest of the period (614 as opposed to 729 and 920 in 1890 and 1900, respectively). The expanded customer base of 1895 actually placed fewer and smaller orders, which was not necessarily beneficial to Bartholomew. The evidence discussed below suggests that, in fact, regularity of orders along with the maintenance of a diverse — but stable — business model was key to the firm’s success. The regularity of small-scale orders was especially important. Overall, the pattern across the three sample years is one of steady growth, with an anomalous peak in number of customers in 1895. This peak is

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34 This can be seen clearly on maps from the period. See, for example, the area around and to the west of Haymarket Station in John Bartholomew & Co., Ltd, Plan of Edinburgh & Leith with Suburbs, from Ordnance and Actual Surveys. Constructed for the Post Office Directory (Edinburgh: Morrison & Gibb, 1895-6). NLS, Acc. 10222/PR/22b folio 92b.
visible when mapped but could, if taken alone, misrepresent the firm’s fortunes in this particular year. Nonetheless, the pattern of geographical expansion shown across the three maps is significant and demonstrates that the nature of the firm’s customer base was expanding: dispatches were being sent to a greater range of locations, from residential properties to differing scales of industrial or wholesale operation. There is also clearly a continuing central cluster around the High Street, which was made up primarily of city officials (such as the Burgh Engineer and Burgh Assessor, based at Parliament Square) and publishing offices (such as Oliver and Boyd and W. & R. Chambers, based at Tweeddale Court and Warriston’s Close, respectively, both just off the High Street), and around Princes Street, which included booksellers and wholesalers such as J. Menzies & Co., based at 12 Hanover Street. This shows that the core of the firm’s business was relatively consistent — in nature and location — across the decade.

Addresses marked in red in the three maps denote a customer who received more than ten dispatches over the course of the year in question. These regular customers clearly warrant further examination, and are listed below [Table 6.3]. The majority of customers in this category were directly involved in the book trade, whether as producers or sellers. The most regular customer throughout the period was J. Menzies & Co., wholesale bookseller and publisher. The city’s Burgh Engineer’s department also appears in each of the three years, along with the North British Railway Co. (1890 and 1895). This shows a market for municipal and, specifically, transport-related maps: these themes are discussed in detail below. The Royal Scottish Geographical Society (RSGS), founded in 1884 by JGB along with Agnes Livingston-Bruce and Professor James Geikie, was also a regular customer throughout the period in question; given the RSGS’s leadership it is perhaps to be expected that Bartholomew appear to have operated effectively as their ‘in-house’ printer, supplying them with diagrams and diplomas as well as maps. The majority of these regular customers are unsurprising in their nature. The exception, however, is C. Mackinlay and Co., who were listed in the Post Office Directory (1895-6) as a wine merchant and ‘general agent’ based in Leith. They received 14 dispatches over the course of 1895, which included 1,000 copies of a Distillery Map of Scotland. This map, first printed in

36 Ibid. Additional details from Post Office Edinburgh and Leith Directories 1890-91, 1895-6 and 1900-01 (Edinburgh: Morrison & Gibb).
1882 and reproduced regularly until 1901, showed distilleries marked in red over Bartholomew’s plan of Scotland, and included a ‘Reference to the Distilleries’ in place of a key, along with (in 1895) 44 adverts for different distilleries placed around the border of the map. The *Distillery Map of Scotland* provides an illustration of Bartholomew’s ability to use their existing maps to create specialist products, which was an important part of their business practice and is explored throughout many of the examples that follow.

Table 6.3: Regular customers (10 annual dispatches or more), 1890-1900.

<table>
<thead>
<tr>
<th>Customer</th>
<th>No. of dispatches</th>
<th>Customer</th>
<th>No. of dispatches</th>
<th>Customer</th>
<th>No. of dispatches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burgh Engineer’s department Municipal engineers</td>
<td>41</td>
<td>T. Nelson &amp; Sons Printer and publisher</td>
<td>24</td>
<td>Andrew Elliot Bookseller</td>
<td>42</td>
</tr>
<tr>
<td>Andrew Elliot Bookseller</td>
<td>34</td>
<td>North British Railway Co. Railway firm</td>
<td>19</td>
<td>Burgh Engineer’s department Municipal engineers</td>
<td>37</td>
</tr>
<tr>
<td>A. &amp; C. Black Printer and publisher</td>
<td>29</td>
<td>Burgh Engineer’s department Municipal engineers</td>
<td>15</td>
<td>T. Nelson &amp; Sons Printer and publisher</td>
<td>27</td>
</tr>
<tr>
<td>T. Nelson &amp; Sons Printer and publisher</td>
<td>21</td>
<td>Andrew Elliot Bookseller</td>
<td>14</td>
<td>James Thin Bookseller</td>
<td>17</td>
</tr>
<tr>
<td>Royal Scottish Geographical Society Intellectual association</td>
<td>21</td>
<td>C. Mackinlay &amp; Co Wine merchant and general agent</td>
<td>14</td>
<td>R.W. Hunter Bookseller</td>
<td>15</td>
</tr>
<tr>
<td>Oliver &amp; Boyd Printer and publisher</td>
<td>19</td>
<td>Thomas Marwick Architect</td>
<td>13</td>
<td>Oliver &amp; Boyd Printer and publisher</td>
<td>14</td>
</tr>
<tr>
<td>North British Railway Co. Railway firm</td>
<td>18</td>
<td>Royal Scottish Geographical Society Intellectual association</td>
<td>13</td>
<td>W. Blackwood &amp; Son Publisher</td>
<td>14</td>
</tr>
<tr>
<td>Nimmo, Hay &amp; Mitchell Publisher</td>
<td>10</td>
<td>Banks &amp; Co. Printer</td>
<td>12</td>
<td>E.C. &amp; T.C. Jack Printer</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>James Thin Bookseller</td>
<td>12</td>
<td>Royal Scottish Geographical Society Intellectual association</td>
<td>10</td>
</tr>
</tbody>
</table>


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37 NLS, Acc. l0222/PR/4 folio 42 (1882), Acc. l0222/PR/23 folio 32a (1895), Acc. l0222/PR/33a folio 9 (1901).
The difference between the number of dispatches sent to J. Menzies & Co. and the rest of Bartholomew’s most regular customers is particularly striking. In 1895, Menzies received more dispatches than the combined total of the remaining regular customers (and were close to doing so in 1890 and in 1900).\(^\text{38}\) Wholesale booksellers such as Menzies and, in England, W.H. Smith & Sons dominated distribution networks from the 1880s onwards.\(^\text{39}\) These larger firms often absorbed smaller businesses and developed their own regional and national distribution networks. In terms of the movement of these maps, then, Menzies formed a crucial part of the ‘communications circuit’: a point from which tracing the map’s trajectory becomes more difficult. The maps’ eventual locations — as in the case of national publishing houses working for global audiences — are therefore ambiguous. From Menzies’ warehouse on Hanover Street, these maps were distributed onwards to a nationwide chain of bookstalls, many of which were in railway stations. The question of local loyalty is pertinent here: Bartholomew and Menzies’ prolific working relationship can be explained in part by the practical ease with which they could communicate, order and receive goods. Bartholomew’s domination of the market for half-inch series sheets, which formed the bulk of Menzies’ orders, is also relevant.\(^\text{40}\) Location certainly has a role to play in the explanation of business practices, but is not the only factor — the following analysis shows that the type of map mattered too.

Another — and rather different in nature — regular customer was the city’s Burgh Engineer’s department, who received 41 dispatches in 1890, 15 in 1895 and 37 in 1900.\(^\text{41}\) These dispatches were small, averaging 18 items each across the period. This, for comparison, is around a quarter of the equivalent figure for J. Menzies & Co., for whom a typical dispatch contained 77 items. The items ordered by the Burgh Engineer were, however, labour intensive in comparison with the production of RO sheets or other series. This again highlights the need for caution in examining both number and size of dispatches: the nature of individual orders varied greatly and therefore the hours spent on any one order/dispatch — or indeed any one item — would have been very different. The intensity of the Burgh Engineer’s orders related

\(^{38}\) NLS, Acc.10222/BR/390-391, 394 and 398-399, dispatch books, 1888-92, 1894-6 and 1899-1902.

\(^{39}\) Colclough, “Distribution,” 278.


\(^{41}\) NLS, Acc.10222/BR/390-391, 394 and 398-399, dispatch books, 1888-92, 1894-6 and 1899-1902.
to the need for highly specific maps, with particular production demands. They typically ordered city plans relating to the development of transport, infrastructure, or specific Acts of Parliament. In 1900 one of their orders comprised 12 ‘books of plans’ of the Edinburgh Improvement Scheme, with sheets and tracings, bound. This took Naples, a map munter, 45 hours, and the books required a further six hours of work from a ‘girl’ (unnamed). Elsewhere, the Burgh Engineer clearly intended to annotate Bartholomew’s work: plans were regularly ordered with ‘drawing paper all round’ or ‘joined to foot’ in order to allow for adding notes and modifications to the maps. This addition meant the map could be annotated for specific planning purposes. These examples provide an indication of the links between the specifics of production and the eventual use of maps, and shows Bartholomew’s role in presenting current urban knowledge in print for infrastructural and improvement purposes.

The Burgh Engineer’s department appear to have required Bartholomew’s work predominantly on large-scale — that is, city wide — projects. Maps of this nature included Edinburgh Street Tramways: Routes Proposed to be Cabled (1895) [Figure 6.3] and Street Lighting: Plan of Mains (1898) [Figure 6.4]. The latter, which shows the contemporary development of electric lighting, and was used by the Town Council for planning purposes, is based on Bartholomew’s Plan of the City of Edinburgh with Leith and Suburbs (1891) [Figure 6.5] and therefore shows economical production techniques in action. The original map, described by Bartholomew as ‘The finest and most elaborate map of the city and suburbs ever produced’, was expensive and time consuming to produce, but could be re-used as a template for multiple future purposes, as well as being a highly successful plan in its own right. The plan of tramway routes is also similar in style to the plan of 1891 — the most immediately visually striking element of both is the preponderance of green spaces. The tramways map, however, shows significantly less extraneous detail and takes a more abstract approach. Streets, for example, are shown without the detail of

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45 Fleet and MacCannell, Mapping the City, 205.
individual buildings, and more blank (though of course not empty in actuality) space is visible, which allows the tramways to be the focus.46

This map shows more active design taking place, whereas the street lighting map consists of lines marked onto an existing base. The Burgh Engineer's department appear to have only commissioned Bartholomew where they required specific cartographic skills or the use of the firm’s existing high quality base maps: they were clearly willing to pay for this when the subject matter demanded it. They also, however, made their own maps, usually plans of smaller areas, such as the proposed widening and improvement of Ravelston Dykes Road (c.1903), for which a highly abstracted map of the specific area was produced in-house [Figure 6.6]. The fact the Burgh Engineer's department did not outsource all their mapping requirements serves to highlight the level of skill Bartholomew were able to offer to those projects which were commissioned. Their expertise was necessary to the projects they worked on for the Town Council; otherwise the department would simply have produced their own maps and reduced expenditure.

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Figure 6.3: J. Bartholomew & Co., *Edinburgh street tramways. Routes proposed to be cabled* (Edinburgh, 1895).

*Source:* NLS, Acc.10222/PR/22a, folio24a.
Figure 6.4: J.G. Bartholomew / Edinburgh Town Council, *Street lighting: plan of mains* (Edinburgh, 1898).

*Source:* NLS, Acc. 10222/PR/20b folio 161a.
**Figure 6.5:** Section of J.G. Bartholomew, *Bartholomew’s Plan of the City of Edinburgh and Leith with Suburbs* (Edinburgh, 1891).

*Source:* NLS, EMS.s.772.

**Figure 6.6:** Edinburgh Town Council, *Plan of Section Showing Proposed Widening & Improving of Ravelston Dykes Road* (Edinburgh, c.1903).

*Source:* Edinburgh City Archives, SL/145/1/23.
Evidently, Bartholomew’s work for J. Menzies & Co. and the Burgh Engineer was very different in nature. For Menzies, Bartholomew primarily undertook large-scale reproduction, supplying multiple copies of their existing series sheets. For the Burgh Engineer, by contrast, the firm produced highly specific maps — both in terms of their geographical content and their production requirements, such as mounting — to commission. This brings any distinction between commercial and public sector cartography into question. A focus purely on sales — and numbers thereof — is somewhat misplaced in the case of maps, as not all cartography was designed with a public market in mind. Bartholomew’s work for Menzies was intended to be sold across the country, while their work for the Burgh Engineer, and other similar organisations, was never for sale as such: the economics of production simply had to be robust. In some respects the latter was an easier type of product for Bartholomew to manage, economically, because they could work out their costs accordingly and there was little ambiguity or risk in terms of profit. The diversity of their business model is key to understanding their success: the firm were able to combine large-scale production of regular orders with highly specific one-off orders.

In this respect the map trade must not be considered a simple subset of the book trade: more work was undertaken in cartography for ‘public sector’ companies than elsewhere in the printing and publishing industries. The present focus on dispatches and the movement of maps as objects facilitates a recognition of the vital interplay between these two types of custom, and acknowledges that intellectual and industrial concerns were necessarily linked. Maps for the commercial market were mass-produced, and while their compilation and draughting was costly, complex and time-consuming, their printing and mounting benefited from economies of scale. Specialised maps for the Town Council and other similar customers took significantly longer, per item, to produce, and correspondingly incurred higher costs (though, as discussed above, an element of economizing can be discerned in Bartholomew’s re-use of existing plans as a base: this significantly reduced the labour involved in production). That is not to say there are no similarities between these two types of cartography, or indeed that ‘public sector’ cartography did not require a business-minded approach from Bartholomew. In both cases, for example, Bartholomew had to be aware of market competition: the Burgh Engineer also commissioned maps from
W. & A.K. Johnston, Carfrae & Belfrage and, of course, produced their own.\(^47\) Bartholomew could not afford to be complacent about the relationship, and their supplies to the Town Council required a business-minded approach no less than their dominance of the market for Reduced Ordnance Survey sheets.

The combination of work for a variety of types of market should be seen as an astute business practice on Bartholomew’s part: each came with associated costs, benefits, and risks, and managing these simultaneously was crucial. A further element of business management came in the balance they struck between seeking and accepting commissions — of either a public or commercial nature — and producing their own publications, which, as discussed in Chapter Four, formed an average of 24% of the firm’s total number of orders over the broader period of 1888-1938.\(^48\) In a local context, an average of 31% of the items produced for all Edinburgh-based customers listed in 1890-1900 were in fact ‘Publications’, making Bartholomew’s own share of the total Edinburgh map market roughly one-third across the decade.\(^49\) The proportion increased overall from 26% (1890) to 39% (1900), which shows the firm consciously developing its own publishing. It is important, however, to be aware that these publications were then sold nationally, and do not necessarily therefore constitute part of the Edinburgh market. The increased focus on publishing their own work also shows the firm responding to the fact that the external market for maps seems more broadly to have shifted away from Edinburgh in this period, with London and other English cities taking a more significant share of the firm’s commercial dispatches by 1900.

**Global, national and regional maps in the local market**

With clear patterns in place of a diverse and stable — indeed steadily growing, albeit at a slower rate than that of London — local market, the following analysis focuses on the content of maps sold in Edinburgh. These maps are revealing in relation to cartographers’ priorities, and consumer demand, including booksellers’ perceptions thereof. Of the maps Bartholomew dispatched to customers in Edinburgh in the

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\(^47\) See for example Edinburgh City Archives (ECA), SLI45/2/33/1-4, *Four Plans of Dean Park and Blinkbonny*, (Carfrae and Belfrage, 1887); SLI45/4/7, *Plan of Edinburgh from an Actual Survey by Alfred Lancefield* (W. & A.K. Johnston, nd. but c.1850).

\(^48\) NLS, Acc.10222/BR/313-322, order and cost books, 1888-1938.

\(^49\) These figures are not included in descriptions of the Edinburgh market elsewhere in this chapter, to provide a more accurate impression of the external demand for maps in the city.
period 1890-1900, the largest proportion was consistently what is designated here as 'global' maps [Figure 6.7]. This category, in the present analysis, covers all countries except Britain. This may seem to naturally skew the analysis given the difference in number of potential countries to be mapped in each category. In practice, however, the majority of maps in the global category here were produced to be part of atlases, and therefore were inherently global regardless of their specific content. The critical point in this case is the fact that map production for atlases made up such a significant part of Bartholomew’s business, rather than tracing quantities relating to particular individual countries outside of Britain. This section examines questions of scale in map production and purchasing: how many local, regional, national and global maps were sent to customers based in Edinburgh, and what this demonstrates about the concept of a local market and its relationship with local knowledge. In a global context, it is worth noting that American mapmakers’ disproportionate focus on their own country in the same period has been attributed to a distinctive national psyche, which raises the question of the deeper meaning of these figures. Here, notions of locality are shown to be relevant to the conditions of production and consumption of cartography as well as its content.

The charts below [Figure 6.7] show that the proportion of local maps of Edinburgh and its surrounding areas (a Guide to the Pentland Hills, for example, comes into this category) shrank across the decade. So too did the number of ‘non maps’ such as diagrams, charts and business cards. Concurrently, the proportion of global maps increased, as did the proportion of maps of Scotland, and timetable maps. The latter were British in content but are categorized separately below to illustrate their importance to Bartholomew’s business in the second half of the decade. In 1895, especially, Bartholomew undertook the production of a significant amount of railway timetable maps, which are discussed in more depth below. Overall, these patterns show a change in focus for Bartholomew’s customers. As noted in the previous section, the customer base itself remained relatively consistent in its composition, though it grew over the period. Similar types of customers — and many of the same names — appear throughout the list of regular customers [Table 6.3]. The change to track, therefore, is in the content of their orders. Between 1890 and 1900, the importance of local maps and non-cartographic printing to Bartholomew's

50 Schulten, The Geographical Imagination in America, 29.
Edinburgh trade declined: the firm produced 18,438 local maps in 1890, and 3875 in 1900. At the same time, the number of global maps and those of other Scottish places at a local, regional or national scale increased: production totals for Scottish maps (with a focus outside of Edinburgh) were 3033 in 1890, and 59,051 in 1900. This reflects a shift in focus for Bartholomew and their customer base. The relationship implicit here — that between production and consumption, and the role of each in dictating cartographic progress — is considered throughout what follows.

These figures warrant further inspection: categorising in this manner naturally simplifies a complex picture. As in previous examples, the distinction between total number of individual items (shown here) and total number of dispatches is important. The focus of the charts above is on the content of what was delivered in the largest quantities around Edinburgh in order to understand the nature of Bartholomew’s overall output. This, however, disguises the importance of regularity and, correspondingly, the importance of the production of series sheets to Bartholomew’s overall business. In each of the three sample years, significantly more global maps than series sheets were dispatched: this is clear from the charts above. It is also important to note, however, that in each of these years series sheets were dispatched more frequently than global maps.\(^5\) Despite variance in order sizes, both types of map were important to the firm, and each provided different means of managing funds and resources.

\(^5\) In 1890, 126 Edinburgh dispatches contained series sheets and 85 contained global maps, the equivalent figures for 1895 were 149 and 102, respectively, and for 1900 were 177 and 174. NLS, Acc.10222/BR/390-391, 394 and 398-399, dispatch books, 1888-92, 1894-6 and 1899-1902.
Figure 6.7: Content of maps dispatched to customers in Edinburgh, 1890-1900.

J. Menzies & Co., whose orders included a high proportion of series sheets, received an average of 14 dispatches per month across the period. Thomas Nelson & Sons, by contrast, whose orders predominantly consisted of global maps for atlases, ordered in larger quantities but much less frequently, receiving an average of two dispatches per month. These patterns are consistent across the decade. It is therefore clear that the regular sales of series sheets provided an especially predictable and reliable source of income for Bartholomew on a monthly or even weekly basis. These maps were, in themselves, not particularly lucrative: in 1895, for example, 1000 copies of Bartholomew’s Reduced Ordnance Survey sheets cost the customer between £18 and £24.\textsuperscript{52} As discussed, Menzies ordered in much smaller quantities than this: for an average order (87 items) in 1895, they would have paid £2 or less.\textsuperscript{53} Over the course of a typical month, then, Menzies’ orders for series sheets brought in around £28, which was roughly double that of the average customer’s monthly spend.\textsuperscript{54} Series sheets were manageable, could be printed in bulk, and, as a whole series, had a large potential customer base. They also, as noted above, had a significant influence on the firm’s growing reputation, and became well known in their own right.

As a product to be managed, global maps presented the firm with different benefits and challenges. They occupied another part of Bartholomew’s business and brought in larger, though less frequent sums of money. Maps produced in collaboration with Thomas Nelson & Sons for the Royal Shilling Atlas, for example, were worked on over a long period of time and then printed in bulk and dispatched in single orders: in October 1895, for example, Bartholomew sent 15,000 copies of maps in a single dispatch, for which Nelson paid £239 7s. 6d. in May, when the order was originally placed.\textsuperscript{55} For scale, Bartholomew’s income in May 1895 was £1393; this atlas order, which was typical of its kind, therefore comprised 17% of their monthly income in this instance.\textsuperscript{56} This particular publication was reproduced roughly every two years throughout the 1890s and 1900s, providing Bartholomew with commissions for over

\textsuperscript{52} NLS, Acc.10222/BR/301, day book, 1893-7.
\textsuperscript{53} NLS, Acc.10222/BR/394, dispatch book, 1894-6.
\textsuperscript{54} In 1895, an average of 80 different customers placed orders each month, and Bartholomew’s average total monthly income was £190. A typical customer, if all spent an equal amount, would therefore be expected to spend around £15. These figures are calculated from customers listed in NLS, Acc.10222/BR/394, dispatch book, 1894-6 and income listed in Acc.10222/BR/301, day book, 1893-7.
\textsuperscript{56} NLS, Acc.10222/BR/315, order and cost book, 1893-7.
The firm’s varied range of products meant that they could maintain a reliable income from series sheets and similar, while working on regular (though less frequent), larger, and more lucrative projects such as atlas production.

Many of the categories shown in Figure 6.7 also contain a subsection of Bartholomew’s highly specialized work. These maps, by their specific nature, were naturally ordered in smaller quantities and fall into broader categories in the charts above. Specialized custom was fundamentally local in its production, if not its content: most maps of this type were produced in close collaboration with other individuals, often combining the research of others with Bartholomew’s own extant cartography. Networks were therefore critical in this respect, and the value of local connections is clear. Specialist maps created ‘from scratch’ were frequently collaborative in nature. The firm’s collaborations with Dr. John Murray, oceanographer (and recipient of the Royal Geographical Society’s Founder’s Medal in 1895), were a prominent feature of their output throughout the late nineteenth and early twentieth century, in reputational and intellectual importance if not in order size. As discussed, another notable portion of the firm’s specialized work was undertaken directly for Edinburgh Town Council. Here, Bartholomew’s personal networks and associational relationships, strongest in a local context, had a role to play.

The content of maps also gives an insight into booksellers’ perceptions of likely popularity and sales. Here, too, the nature and location of Bartholomew’s commercial customers allows us to better understand the eventual reader’s choices and usage. Menzies, for example, predominantly ran a national network of railway station bookstalls. This should be seen within the broader context of the emergence of the railway as a service centre, and particularly alongside the development of complementary printed information such as George Bradshaw’s timetables. The scale of available information increased throughout the mid and late nineteenth century and was significant by the 1890s. Menzies’ focus on Reduced Ordnance Survey maps

57 NLS, Acc.10222/PR/16b folio 115c, Frontispiece, contents page and diagrams for the Royal Shilling Atlas (December 1891); similar records can be seen every two years until 1913: NLS, Acc.10222/PR/52b folio 220, Frontispiece, contents page, index and diagrams for the Royal Shilling Atlas (1913).
58 See for example NLS, Acc.10222/PR/29b folio 88b, South Polar chart by J.G. Bartholomew showing Sir John Murray’s proposed scheme for Antarctic exploration (October 1898); NLS, Acc.10222/PR/30c folio 203a, Bathymetrical chart of the oceans showing the “deeps” according to Sir John Murray (September 1899); NLS, Acc.10222/PR/32a folio 73a, Sheet with seven maps from the Bathymetrical Survey of the Scottish Lochs (March 1900).
reflects the likely needs and interests of a customer at one of these bookstalls. The prevalence of railway travel in the late nineteenth century provided a ready market for maps, whether those used to navigate newly accessible locations, such as the series sheets, or those used to navigate the railway system itself, such as network and timetable maps. The latter were produced by Bartholomew in large quantities: timetable maps formed 26% and 15% of the firm’s Edinburgh dispatches alone in 1895 and 1900. Here Bartholomew responded to external demand, as dispatch patterns show. Yet they also helped to facilitate that demand, by providing railway firms with the geographical information, such as technical plans, that helped them to develop their network and infrastructure, and build such a customer base — efficient railway travel was made possible in part by its attendant printed material. The relationship was clearly mutually beneficial and shows mapmakers to have had a dual role: they benefited from the increased custom, and transport possibilities, brought by expanding railway networks, but also helped to facilitate this development. To return to the relationship between production and consumption, the expansion in dispatches of maps of Scotland, whether the whole country or specific cities and regions, across the decade, which increased from 4.2% to 15.4% of Edinburgh dispatches between 1890 and 1900, reflects a change in the type of maps that Edinburgh-based commercial customers chose to order, and also seems to reflect Scotland’s growing tourist and leisure industries — much of which was accessed using Edinburgh as a base.

The preceding analysis has shown that the local market for maps was distinctive: Edinburgh had a high concentration of printers and publishers, as well as intellectual institutions, learned individuals and associational societies, all of whom provided a clear potential market for maps. Local factors such as distance and practicality acted upon buying practices, for wholesalers and commercial customers at least (the end customer is, of course, much harder to track). Yet despite this, the quantity of local maps — that is, plans of Edinburgh and its surrounding areas —


60 Ibid.

61 Map advertising promoted this image, which is explored in depth in the next chapter. For a brief overview of themes in leisure and the Scottish landscape into the twentieth century, see Ewen A. Cameron, Impaled Upon A Thistle: Scotland Since 1880 (Edinburgh, Edinburgh University Press, 2010), 138-42.
ordered by customers in the city actually declined during the period in question. In 1890, these local maps made up 9% of total dispatches within the city, but in 1900 this figure stood at just 0.8%. The overall number of items dispatched during this period did, of course, grow, thereby making the decrease in proportion appear more dramatic but, within this, the absolute number of maps of Edinburgh dispatched during this period fell significantly: from 21,548 in 1890 to 4058 in 1900. This trend, however, is not reflected in the number of dispatches of specialist maps of Edinburgh — those ordered by the Burgh Engineer, for example — which remained relatively consistent and did not follow this pattern. The decline, then, was in commercial sales of maps of Edinburgh.

An explanation can be found in Bartholomew’s increasing professionalization. As the firm grew under JGB’s leadership (from 1888), the nature of their work changed. This has already been traced in their developing production techniques (Chapter Four) and attitudes towards premises and the firm’s outward appearance (Chapter Five). This further reinforces the argument that Bartholomew were consciously moving away from operating as a local map printing firm, and developing their business as globally renowned cartographers. An increased focus on producing world maps was a natural corollary to this; the scale of a map’s content could be seen to reflect the scale of the cartographer’s ambition. Likewise, their production of non-maps decreased dramatically, showing a clear shift in priority from printers willing to undertake an assortment of work types, to specialist map producers. Evidence earlier in the chapter on the firm’s growing national distribution networks reinforces the idea of a conscious branching out. So, too, it seems, were Edinburgh’s other printers, publishers and booksellers. While Edinburgh firms’ share of Bartholomew’s overall market declined slightly in the period, the content of their orders showed much more marked change. Detailed local knowledge was increasingly important in ‘public sector’ cartography; this was certainly the case for the city’s Burgh Engineer’s department, for example, who focused on planning, rationalizing and cartographically ‘realising’ space. This was not reflected, however, in commercial cartography, which constituted the bulk of Bartholomew’s physical labour, if not the bulk of their intellectual work. Once again the distinction between the types of work Bartholomew

63 Ibid.
carried out is critical. It is possible to see the firm effectively balancing different scales and markets to sustain diversity — and concurrent strength — in their offerings.

This calls mapmakers’ broader roles into question. There is clearly a link between the demands of the market and the development of cartography: mapmakers’ and booksellers’ perceptions of the market dictated, to an extent, the direction cartographic production took. This is certainly true in the case of the commercial market for maps, in which consumer demand meant that Bartholomew produced large quantities of maps for atlases and fulfilled regular orders of series sheets. Both had broad, reachable markets and show astute business practices in action. Cartographers could also, however, play a role in creating demand by initiating intellectual change. In this respect, maps formed contemporary opinion as well as responding to it. Bartholomew’s specialist work, from bathymetric maps to municipal plans, represents a response to external demand, and can be seen as a product of collaborative dialogue. But on a deeper level, producing geographical information in printed form set knowledge and conditions in place for further exploration and understanding, providing an ordered and systematic view of the world. Previous chapters have shown that Bartholomew were acutely aware of this; JGB, especially, believed that cartography had a responsibility to further intellectual development. Nonetheless, the fact remains that the bulk of Bartholomew’s work in this period consisted of mass-produced series sheets, timetable maps and atlas sheets. The intellectually driven work that formed such an important part of the firm’s outward identity was evident in much smaller scale projects; their capacity to innovate in this manner came from the efficient management of time, resources and custom and a consistently diversified workload.

**Conclusion**

This chapter provides an insight into the changing patterns of distribution of Bartholomew’s maps in the late nineteenth century. The first section shows that the market became increasingly national in scope: while customers were largely concentrated in London, Edinburgh and Glasgow in 1890, the dominance of these three cities declined slightly across the decade, as did the provincial Scottish market.

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64 Sponberg Pedley, *The Commerce of Cartography*, 10-11.
65 Ibid.
which corresponded with the growing importance of cities such as Liverpool, Manchester and Birmingham by 1900. These places can be seen to represent the ‘middle’ of Bartholomew’s customer base. The firm’s capacity to reach these cities was dependent on increasingly efficient transport networks and a growing reputation which had, by the beginning of the twentieth century, clearly spread beyond the major centres of printing and publishing. At the same time, sales of maps to customers in Edinburgh declined considerably. Although this pre-dates the early twentieth century decline of the city’s printing and publishing industries, it should be noted that this period saw several publishers, such as A. & C. Black — who were, for Bartholomew, important customers — move their businesses to London, which may be seen to provide a precursory link to the industry-wide struggles of the inter-war period. Nonetheless, local customers, such as the Burgh Engineer, whose highly specialized maps required Bartholomew’s local expertise, and J. Menzies & Co., whose regular orders of series sheets provided a reliable source of income, continued to play a significant role in Bartholomew’s business, and represent the important diversity of the firm’s customer base.

In examining the geography of distribution networks along with the geographical content of maps, the chapter shows that Edinburgh cannot be considered simply on a local scale. As a place of production, its reach extended throughout Britain. As discussed, the changes in the national market and Bartholomew’s increasing professionalization were linked. Further examination of scale of the content of maps also shows the importance of seeing the local, regional, national and global scales and markets as interlinked. Within the city, comparing the production and sales of local and global maps provides insight into a fundamental distinction within cartographic production: that is, between ‘public’ and ‘private’ sector cartography and, indeed, between intellectual and physical labour and concurrent economic concerns. The examples of local maps produced for the Burgh Engineer’s department and global maps produced for atlases are particularly instructive here. The Burgh Engineer’s orders were specialized both in terms of the content — which was particular to each of their projects — and their production demands, such as additional tracings or paper adjoined at the edges of maps, which allowed them to use Bartholomew’s work for their own purposes. These maps were never intended for public sale and, as such, held very little risk for Bartholomew, who
could calculate production costs and charge the Town Council accordingly without the need to project potential sales. They did not, however, constitute the bulk of Bartholomew’s local custom in this period, which increasingly comprised the production of global maps for atlases for publishers such as Thomas Nelson & Sons. Although Bartholomew could also charge Nelson accordingly, therefore not taking as much of a risk as they would with their own publications, the extent of the profit depended on successful sales and thus the regularity of reprints, which were of course much cheaper than the initial production of the maps.

This, in turn, allows for a nuanced understanding of the relationship between Bartholomew’s outward identity and their day-to-day activities. While they projected an image of intellectualism which emphasized cartography as an august pursuit, much of their daily labour consisted of the reproduction of sheets of maps, whether series sheets or those produced for atlases. This work might not have fitted the firm’s own projected image, but was an important aspect of cartography. Moreover, this reliable, predictable source of income represents a willingness to carry out a diverse range of work, and can be seen as an important means of obtaining financial stability, which allowed the firm to also undertake innovative smaller scale projects. All the types of work discussed here, however, hinge on the importance of reputation, and in this respect production (content) and consumption (sales) are, of course, inherently linked: Bartholomew’s authoritative reproductions of series sheets and atlases made them known on a national and global scale, while a local reputation for specialized work built networks of returning customers. Credibility, however, also transcends these categories, and the relationship between the perceived utility and actual reception of maps is one focus of the following chapter. This chapter has built on the argument of previous chapters on the social, physical and cultural production of maps in order to explore sales and dispatches from a spatial perspective; the next chapter follows the ‘communications circuit’ round to the purchasing, ownership and usage of maps.
Chapter 7

The use of maps: the representation and reception of Scottish cartography since c.1880

This chapter examines how the geographical knowledge presented in maps was conceptualized, sold and used. It approaches the map's relationship with the world beyond the factory or publishing house from four linked perspectives. First, a study of advertising explores the terms used by mapmakers and publishers to sell maps. The map, however, is understood here as a communicative device or process. Although advertising can certainly be understood as a tool of communication in itself, building on this analysis to examine the role of reviewers and readers is critical to understanding the reception and use of maps. The chapter then considers newspaper reviews as an example of reception, before turning to the ownership and use of maps. A study of marked and annotated maps positions the reader as a crucial figure in constituting meaning, and accords them significant agency. Finally, the chapter turns to the importance of maps in cultural memory, and shows Bartholomew maps to have 'afterlives', understood here in the sense of their literary resonance. Overall, the chapter emphasizes the importance of understanding maps as socially constituted objects: their meaning was shaped not only by cartographers but also by the ongoing interactions and interventions of their owners or readers.¹

The late nineteenth and early twentieth centuries saw the development of commercial advertising and its corresponding role in the growth of consumer society: this period 'encapsulated the transition from advertising as suggestion to systematic

Advertisements for maps are used in this chapter as a means of exploring the terms under which maps were sold. The impact of these terms, however, on the consumer, cannot be assumed: on the surface, adverts reveal more about the mapmaker and publisher’s conceptualization of marketable aspects of geographical knowledge than they do about reception. Histories of advertising pay critical attention to how the medium works, and describe two frameworks for understanding its mechanisms. The first considers adverts as ‘hidden persuaders’, and relies on an assumption that they have the power to manipulate consumer behaviour. This model is problematic, however, in that it exclusively considers the creator of the advertisement, and neglects the consumer: it has been described as ‘condescending and illogical’. Not only does it assume consumers were ‘passive victims’; it also denies the possibility of individual agency playing a role in responses to adverts. The second framework, adopted in this chapter, considers advertising as an act of communication — and, indeed, as part of the ‘communications circuit’ discussed earlier in the thesis. This attributes agency to consumers, and allows them to be considered as individuals — a theme that runs throughout the chapter — who were likely to respond differently to adverts based on their own experiences and prior knowledge. While the impact of specific advertisements is difficult to trace, placing them within a communicative framework allows them to be used not only to consider how mapmakers and publishers conceptualized their own work, and which aspects of it they considered to be particularly appealing to the public, but also — in conjunction with a consideration of reviewing and reading — to what extent this represented consistency or otherwise in the transmission of knowledge from mapmaker to reader.

The relationship between production and consumption and the concurrent need to consider the two in dialectic corresponds to the relationship between writing

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5 Ibid.
and reading: Michel de Certeau describes the latter ‘binominal set’ as the ‘general equivalent and indicator’ of the former. Just as a critique of the supposed ‘inertia’ of the consumer accords them more agency so, too, should notions of authorial authority be approached with caution: following Roland Barthes, de Certeau suggests that reading, like writing, should be considered a ‘creative activity’ — one which can remake a text and can, as this chapter shows, add to or alter a map’s original meaning or purpose. In practical terms, however, evidence for the nature of reading — the ‘missing link’ in the communications circuit — is difficult to trace: printed materials themselves ‘rarely show readers at work, fashioning meaning’. This reflects the fact that reading is a highly subjective and individual practice; moreover, even on an individual level, specific environmental factors, ‘moments and places’, shape reader’s responses. One reader naturally differs from another, but even a single reader’s responses are not necessarily consistent. Broad conclusions on map reading practices, then, are not only difficult to suggest based on extant evidence, but would be likely to be misrepresentative: reading is shown here to be an individual and even idiosyncratic act.

There is a clear case, therefore, for considering individual instances of the ownership and reading of maps. Evidently, as Robert Darnton cautions, ‘a few exceptional cases may not be enough for one to reconstruct the inner dimensions of that experience’. This view, however, is tempered by James Secord’s argument that ‘to learn what is really important about reading, the limited and partial evidence of the situated case ... remains vital even when audiences number in the millions’. Singular cases, or what Roger Chartier refers to as ‘an infinity of singular acts’, are thus considered in the following analysis with full acknowledgement that they

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represent individual instances and that they are, in their survival, exceptional. They are, nonetheless, thematically linked by the uses they illustrate. Importantly, the examples discussed in this chapter are not assumed to be representative of a wider body of readers, owners and users of maps. Instead, they serve two connected purposes. The first is to add to an otherwise limited understanding of map use and ownership. The second is to provide a lens on the transmission of geographical knowledge between mapmaker and reader: this process was not reliably straightforward. This chapter therefore shows that acknowledging and exploring the reader’s role adds significantly to an understanding of the map and its purpose.

One means of examining the use of maps is through physical traces left by the reader. In book history, these are most commonly described as ‘marginalia’. Marginalia are often, but not exclusively, textual, and show reading as an interactive process, further denying the passivity of the reader or consumer. Marks on maps, the closest equivalent to marginalia, are rarely textual, and more frequently take the form of lines, crosses, or other tacit ‘expressive non-verbal codes’. Nonetheless, while maps are evidently a distinctive case, existing scholarship on marginalia highlights the value of this analytical approach, much of which can be profitably applied to a study of cartography. The question of whether annotation should be considered as ‘use or abuse’ is a pertinent one in the case of maps. H. J. Jackson notes that the provenance of marginalia can significantly add to or detract from the value of a book. Certain maps were designed for more active use than most books, but nonetheless, for many, annotation would have been considered as defacement. This relates to the price of maps, and ownership — or lack thereof — plays a role. The owners of books and maps would be more likely to annotate them than those who borrowed printed material; an element of class should therefore be considered in relation to readership.

Annotations add depth to the communications circuit by showing the reader playing a role in constituting the object’s meaning: these readers were ‘determined to

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13 Chartier, “Labourers and voyagers,” 47.
put texts to work’. Authors’ responses to annotations are instructive in this regard. Virginia Woolf described her dislike of ‘writing in the margin’; this may be explained by Jackson’s argument that in these cases ‘authority itself is at stake. Readers’ notes are unpredictable and unanswerable … The annotating reader always has the last word and the author has no recourse’. Here, the individuality of ownership once more plays a role. An ‘active’ reader becomes part of the history of the book or map as a physical object; one copy of an otherwise mass-produced object has the capacity to become an individual document in its own right. Annotation is therefore a tangible example of readers’ agency, and the role they play in constituting maps as social objects, with relation to both interpretation and materiality.

The user also plays a formative role in the survival of books and maps. The final section of this chapter examines maps in the context of their ‘resonance’. In so doing, it considers cultural rather than physical survival: this might be viewed as a map’s ‘afterlife’. The physical survival of printed objects is well understood, both in terms of conservation and the market for second-hand sales. These points, however, also relate to reputation: a book or map’s likelihood of surviving depends to an extent on public opinion. But reputation, too, counts as survival, albeit not physical. This is the point of departure for the final section, which focuses on occasions of Scottish maps escaping the confines of their production and playing a role in novels. The fact that maps feature in these works shows the cultural significance of cartography, and its productive potential as a metaphor.

Bartholomew maps are named in Amitav Ghosh’s *The Shadow Lines* (1988), which illustrates the firm’s importance and shows that their maps, specifically, acquired and retained cultural significance. Resonance, then, grounds maps firmly as social objects, in the sense that their reputation and afterlife is formed, in part, by societal factors. This brings the analysis back to a critical starting point of the thesis: that of the theory of the ‘field of cultural production’. The assimilation of a map into cultural or, specifically, literary use can clearly be understood in these terms. In this

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respect their meaning becomes somewhat removed from the intention and process of the original mapmaker; as chapters three to five showed, these aspects of cartography were also, to an extent, socially constituted. This further accords agency to the readers and users of maps, whose importance is shown to span generations. The theme of resonance runs throughout the chapter: the overarching theme of each of the following sections is paired with a literary (and in some cases metaphorical) encounter with or description of a map, showing that the transmission of geographical knowledge and conceptualisations of its significance can be profitably considered from a broad, long-term perspective.

**Advertising: marketing geographical knowledge**

I started making maps when I was small  
Showing place, resources, where the enemy  
And where love lay. I did not know  
Time adds to land. Events drift continually down,  
Effacing landmarks, raising the level, like snow.  
I have grown up. My maps are out of date.²²

The terms used by cartographers and publishers to advertise their maps and atlases to potential customers give an insight into the presumed utility of these products. Advertisements and prospectuses attempted to encapsulate the value of geographical knowledge in order to sell maps. The variety of Bartholomew’s output and, consequently, of their customer base, meant that a number of different products were advertised; it might be expected that touring maps, for example, would therefore be advertised in different terms to an atlas. In fact, although the form these adverts took certainly differed — in terms of where they were placed, and how they were presented — the essential points of value remained consistent. Adverts generally referred to maps’ originality, value for money, reliability, accuracy, and relevance. Additional assurances of quality came from references to Bartholomew’s reputation and the clarity of their production: the latter factor can be understood both in terms of aesthetics and ease of use. John Walker & Co.’s advertisement for the *Handy Reference Atlas of the World*, produced circa 1888, which describes it as ‘Complete! Compact! Attractive! Accurate! New Maps! Indexed!’ provides a neat encapsulation of the main

values cartographers and publishers sought to convey [Figure 7.1]. The following analysis also makes use of prospectuses and brochures, which were sent directly to booksellers to encourage them to purchase products in bulk. These were often more textual and focused on demonstrating the utility of the product. The means by which they attempted to do so are explored below.

**Figure 7.1:** Two advertisements for *The Handy Reference Atlas of the World*, one (left) with pencil annotations. Below left: details of pencil annotation. Below right: details of final version.

Source: NLS, Acc.10222/BR/1864, Bartholomew prospectuses, 1884-95.

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23 NLS, Acc.10222/BR/1864, Bartholomew prospectuses, 1884-95, advertisement for *Handy Reference Atlas of the World*, n.d. but printing records suggest advertising material was produced for this publication from 1888 onwards.
A further important point to note is that the publisher usually produced advertisements and prospectuses. Bartholomew did publish a proportion of their work in their own name, but as previous chapters have established — and especially in the case of atlas production — others more frequently filled this role, such as John Walker & Co., as is the case in the example above. Bartholomew’s role in the process of advertising is therefore somewhat ambiguous. It appears that Bartholomew were involved in producing and correcting proofs of advertising material: a draft of the example from John Walker & Co. has suggestions marked in pencil from Bartholomew, most of which were included in the final version [Figure 7.1]. The exact level of the firm’s input is, however, unclear. Nonetheless, these advertisements reveal how a variety of different publishers, not all of whom were geographical specialists, conceptualized and framed the value of geographical knowledge in order to sell maps. Advertisements consistently attempted to persuade the public that, while the events of the nineteenth and twentieth centuries ‘drift continually down’, in Alasdair Gray’s words, contemporary cartography kept pace and, furthermore, that maps were the best way of making sense of local, national and global changes.

Maps were frequently advertised on the basis of being original, the first of their kind, or, more prosaically, ‘up to date’. Chapter Five, in its case study of Charles E. Goad, showed insurers describing the speed at which fire insurance maps could become outdated and useless if they were not maintained through regular subscriptions. Goad encouraged customers to be wary of obsolete maps, such as Gray’s, above, ‘out of date’ as ‘time adds to land’: this was a clear sales tactic. Adverts took a more positive approach, however, advocating the benefits of a new map rather than the problems of an old one. An advertisement for the Reduced Ordnance Map of the British Isles (1895) lists five ‘Important Features of the Map’, of which the first states: ‘The exceptional value of this Map can be best realized when it is understood that this is the ONLY complete Map of the British Isles which is an accurate rendition of the Ordnance Survey’. The Survey Gazetteer of the British Isles was described in 1904 as ‘the only up-to-date and complete dictionary of places in the British Isles’, while Bartholomew’s own advertisement for A New Geological Map of Scotland (c.1893) began by referring to the fact that ‘This is an entirely new Map, and, besides

showing the most recent results of geological investigation, is of special value as being the first general Map based on accurate Survey.\footnote{NLS, Acc.10222/BR/1861, Bartholomew advertising, c.1870-1985, advertisement for \textit{The Survey Gazetteer of the British Isles}, 1904; Acc.10222/BR/1862, Box 1, “Select List of Messrs. Bartholomew’s Maps & Atlases 1895,” advertisement for \textit{A New Geological Map of Scotland}, c.1893.} Elsewhere, maps were described as ‘a revolution’ and, frequently, ‘unprecedented’, whether for quality or price.\footnote{See, for example, Acc.10222/BR/1863, Box 1, Bartholomew catalogues and lists, 1892-1990: “Completion of \textit{The Citizen’s Atlas},” c.1900; advertisement for \textit{The International Reference Atlas of the World}, 1914; NLS, Acc.10222/BR/1865, Bartholomew advertising, 1913-28, advertisement for \textit{The Citizen’s Atlas of the World}, c.1913.} The need for an emphasis to be placed on originality could be seen to stem from the fact that much of Bartholomew’s output was based closely on existing maps: those of the OS, for example, were explicitly referred to. The ‘newness’ came, instead, through their means of compilation and presentation of material, whether reduced (as with their work on existing OS plans) or thematically specialized and making use of expert knowledge, as with the \textit{Geological Map of Scotland}, which was produced in collaboration with Sir Archibald Geikie, a noted geologist with many institutional accolades.\footnote{David Oldroyd, “Geikie, Sir Archibald (1835 — 1924),” \textit{Oxford Dictionary of National Biography} (Oxford: Oxford University Press, 2004). [http://www.oxforddnb.com/view/article/33364, accessed 12 June 2017].} A map, evidently, did not have to be strictly original in its content to be imbued with the term’s profitable quality; rather, ‘new’ in this case appears to refer to innovation and adaptation in production.

Originality, however defined, was balanced by reference to reputation: Bartholomew’s work may have been new and innovative but the firm, advertising indicated, was established and trustworthy. Adverts state that Bartholomew maps and, by extension, the firm ‘are now well known’ for their quality.\footnote{Acc.10222/BR/1862, Box 1, Bartholomew catalogues and lists, 1892-1990, “Select List of Messrs. Bartholomew’s Maps & Atlases 1900,” advertisement for \textit{General Maps for Tourists and Cyclists of England and Wales}.} Testimonies from the press, which were included on many adverts, consolidated this: an advert for \textit{Reduced Survey Maps for Motorists, Cyclists and Tourists} quoted positive reviews from ten different sources, of which nine explicitly mention the firm’s reputation.\footnote{Acc.10222/BR/1862, Box 1, Bartholomew catalogues and lists, 1892-1990, advertisement for \textit{Bartholomew’s Reduced Survey Maps for Motorists, Cyclists and Tourists}, n.d. but c.1908.} Implicitly, too, images included on advertisements, such as globes, insignia and the firm’s premises, carried weight. The cover of a ‘Select List’ of Bartholomew’s publications, produced for the trade in 1895, illustrates this effectively [Figure 7.2]. Here, ‘The Edinburgh Geographical Institute’ is printed twice, once around
Bartholomew’s insignia, and once under a likeness of their premises at Parkside. The maps are shown to come from an institute rather than a factory. This emphasizes the scholarly nature of cartography and downplays the mass-produced nature of printed material in this period, while still providing customers with a tangible sense of where Bartholomew maps came from. The cherub measuring distances on a globe while holding an open book, meanwhile, may be read as a reference to Bartholomew's means of compilation or, in grandiose terms, of understanding the world. The emphasis in all cases is clearly on intellectualism, albeit grounded in a real, visible location. This imagery was also reproduced in later versions of this brochure. Adverts consistently sought to persuade customers that maps could be trusted. The combination of originality and reputation appears to have been a key element of these appeals. A new product may have carried inherent risk, but its provenance, firmly placed in the context of the firm’s status, was employed in advertisements to ensure that innovation remained an appealing quality.

Figure 7.2: Details from Select List of Messrs. Bartholomew’s Maps & Atlases 1895.

Source: Acc.10222/BR/1862, Box 1, Bartholomew catalogues and lists, 1892-1990.

30 See, for example, Acc.10222/BR/1862, Box 1, Bartholomew catalogues and lists, 1892-1990, “Select List of Messrs. Bartholomew’s Maps & Atlases 1900” and “Select List of Messrs. Bartholomew’s Maps & Atlases 1903”.
The variety of available maps meant that prices varied significantly, and were either a selling point or something to be justified. This was the case whether the price was especially high or low, and advertising material distinguished between price and value. Cheapness seems a more straightforward means of demonstrating the value (for money, in this case) of geographical knowledge, but advertisements were careful even to explain this. Advertising for the 1912 edition of *The Citizen’s Atlas* stated ‘Only the popularity and large sale of this atlas permit of it being produced at such a very low price,’ while that for *The International Reference Atlas of the World* (1914) explained ‘New methods of production have enabled it to be produced at the price’.\(^\text{31}\) Cheapness was always mentioned in close conjunction with quality: there is a sense that selling maps only on the basis of a low price might lead to suspicions of low quality work, for which pre-emptive reassurance was provided. The *International Reference Atlas* advertisement went on to explicitly state ‘QUITELY UNPRECEDENTED VALUE. This great reduction in price has not been effected by sacrificing the quality of the work’.\(^\text{32}\) Essentially, the value of these maps, according to the advertisements, could not be couched only in financial terms. It stemmed from the quality of knowledge they provided, albeit for ‘such a popular price’.\(^\text{33}\)

More expensive products, such as the *Survey Atlas of Scotland*, first published in 1893 and revised for a second edition in 1912 (sold bound in cloth for £2 2s. or in half-morocco with full gilt for £2 12s. 6d.), explicitly explained their cost — the equivalent of around £190 in 2016 — in the context of market value. An advertisement for the second edition of the atlas, placed in *The Scots Law Times* in March 1913, stated ‘The First Edition of this important work has been out of print for several years, and secondhand copies have been sold for more than double the original price’.\(^\text{34}\) This represents an attempt to justify the price to the customer by reference to the success and popularity of the first edition, demonstrated here through its limited availability and high resale value. It is also worth noting that the heading of the advert describes the work as ‘INVALUABLE’. The relationship between


\(^{32}\) Ibid.


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price and value was explicitly complicated in these advertisements. Price was important, but was not a selling point alone: both low and high prices had to be justified by reference to quality.

Value stemmed more clearly from accuracy, reliability and clarity, which were inherently linked to how up to date a given map was, and the conditions of its production. Bartholomew were not alone in highlighting these attributes. An advertisement from W. & A. K. Johnston (c.1913-1928) begins: ‘In accordance with their invariable policy of keeping up to date Messrs W. & A.K. Johnston, Ltd. announce publication of [their] New Era School Atlas’.35 The visual emphasis, in font size and weight, is on ‘keeping up to date’ [Figure 7.3]. Being updated and being accurate should not, however, be considered synonymous. Accuracy was also bound up in terms of reliability, which has clear implications of use. Here the distinction between sheet maps and atlases is especially important. Atlases were not intended for practical navigation, while sheet maps such as those produced for walkers, cyclists and motorists, emphatically were.

An advertisement (1903) for sheets of Bartholomew’s Half-Inch to the Mile Map of England and Wales highlights the ‘Most useful features for Cyclists and Tourists. Roadside Inns and Hotels are indicated, also all Fishing Streams, Lochs, Woods & Forests, Antiquities &c.’.36 This gives an indication of the presumed utility of these maps, and of editorial decisions made regarding generality and specificity: how useful this map was in fact depended in large part upon the individual reader’s interests and intentions, which the advertisement attempted to address. Bartholomew evidently expected these maps to be used as an aid to navigation, but not simply in the sense of way-finding: amenities and activities are also included, which hints at the mapmaker’s authority and their capacity to suggest where tourists might visit. This further complicates the relationship between cartography and land use; the following section considers the map as ‘facilitator’ in more depth. In this case, Bartholomew’s capacity to adapt existing OS maps for specific purposes in order to make them more useful to a particular group of users also illustrates the range of details bound up in notions of reliability and utility. While mapmakers could strive for utility, and

36 NLS, Acc.10222/BR/1862, Box 1, Bartholomew catalogues and lists, 1892-1990, “Select List of Messrs. Bartholomew’s Maps & Atlases 1903”.

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advertising could highlight it as an essential attribute, a map’s eventual success depended on how well it met the individual needs of a reader.

**Figure 7.3:** Clipping of advertisement for W. & A. K. Johnston’s *New Era School Atlas.*


The specific context of the early twentieth century and the changes effected by the First World War meant that continued accuracy was also contingent upon a willingness to regularly update changing national borders and other features of maps.\(^{37}\) This provided mapmakers with a clear selling point. Advertisements for *The Citizen’s Atlas of the World*, which was ‘designed to meet the wants of all classes’ — in

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\(^{37}\) On maps in times of war, see Prior, *British Mapping of Africa.*
other words, at 25s., it was considered cheap — made a simple argument that the possession of an atlas was now an ‘absolute necessity’. They also acknowledged the contemporary fluidity of national boundaries, and attempted to justify the consequent likelihood of this atlas quickly going out of date: ‘Such a work of reference is indispensable to every one who desires to follow intelligently the momentous and stirring events resulting from the titanic struggle of the nations in the present world-wide war. The boundaries of States may undergo change hereafter, but whatever alterations may be made after the war, the value of the Atlas for reference purposes will still remain.’ This value was also highlighted in relation to ‘the cessation of hostilities’ in 1918: ‘This will entail the rearrangement of old and the creation of new States ... We shall probably have a long time to wait yet before all the changes made by the Congress can be shown in any atlas, but with the help of the valuable series of maps in the “Citizen’s Atlas” it will be easy to understand each change as it is announced.’

Evidently, war and its concurrent complication of existing geographical knowledge became a critical part of Bartholomew’s rhetoric. New borders created a need for new maps, but turmoil and change also allowed advertisements to present a ‘reliable and trusty’ atlas as a necessity in order to provide a means for readers to understand ongoing discussions in relation to pre-existing geographies. In normal circumstances, maps showing outdated boundaries would have been considered obsolete. Here, however, the fast pace of change was embraced rather than feared. Mapmakers and publishers were willing to use contemporary events to sell their products, despite occasions when — as in the case above — this necessitated adaptation of a central part of their typical rhetoric. These advertisements appeal to a desire to make sense of events ‘intelligently’, without overt reference to specific nations. Before the First World War, however, the need for a high level of geographical knowledge was presented in terms of international — and, specifically, German — competition and contemporary concerns. Multiple advertisements from the early 1900s describe how Germany was, at the time, said to be outstripping

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38 NLS, Acc.10222/BR/1864, Bartholomew prospectuses, 1884-95, list of available atlases, enclosed letter from the Edinburgh Geographical Institute, 1914; advertisement for The Citizen’s Atlas of the World, 1914.
Britain ‘in the race for commercial supremacy’, and credited this to a ‘superior knowledge of Geography’. The acquisition of geographical knowledge was presented in these cases as vital, even patriotic.

Overall, mapmakers and publishers made reference to a range of cartographic attributes in attempts to persuade the reader that maps were an ideal means of understanding the contemporary world. These were broadly encapsulated in ideas of originality and trustworthiness; the latter notably became part of a discourse that attempted to compensate for an inability to keep pace with changes to national borders. The creators of advertisements could, however, control neither readers’ responses to these attempted persuasions, nor the eventual use of the maps. In this respect, advertising should clearly be seen as a communicative process. The following section focuses on reviews, which fulfilled a further mediatory role between producer and consumer.

**Reviewing maps: the reception of geographical knowledge**

*Inadequate maps are better than no maps; at least they show that the land exists.*

This justification of substandard cartography, deliberately misattributed by Alasdair Gray to the Scottish poet Hugh MacDiarmid, would have been unlikely to hold much credence with the reviewers of late nineteenth and early twentieth-century maps. This period saw substantial changes to national borders in Europe and local boundaries across Britain. Urban areas grew significantly, with attendant economic, social and political effects. Mapmakers, as the previous section showed, aimed to maintain an awareness of these changes and be current in their output: the following

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41 NLS, Acc.10222/BR/1863, Box 1, Bartholomew atlas publicity, 1865-1982, “Completion of *The Citizen’s Atlas*”; “The Most Wonderful Book in the World!”, c.1900. This provides a counterpoint to work that suggests British cartographers enjoyed a mutually beneficial relationship with their German counterparts until 1914; see Richard Scully, “’North Sea or German Ocean? The Anglo-German cartographic freemasonry, 1842-1914’,” *Imago Mundi* 62:1 (2009), 46-62.
analysis of reviews shows that they were criticized if they did not succeed in this regard. This section examines which qualities made reviewers consider maps to be ‘good’ or ‘bad’ and, in so doing, also offers insight into what reviewers perceived to be the purpose of maps. The previous section showed that a map’s presumed use influenced the terms on which mapmakers and publishers attempted to sell them. This presumption also dictated the terms on which reviewers judged them. The difference between these two perspectives is drawn out below. Furthermore, reviews of urban maps and plans are instructive on aspects of the changing city. These documents provide insight into what was needed in the way of cartography, why, and how it was received, as well as tempering the potential to assume a direct link between advertisements and consumer behaviour.

The distinction between mapmaker and publisher, where relevant, was occasionally explored in reviews, as in adverts, and the name and reputation of the publisher, if separate, was often subject to more discussion than that of the mapmaker. In an article about the publication of the *Atlas of the World’s Commerce* in 1906, *The Shipping World* declared ‘the reputation of the publishers [George Newnes] is adequate guarantee that here is something which will be produced on a scale never before attempted’.44 The maps, which were by Bartholomew, are praised, but there is no discussion of the firm themselves. Where Bartholomew published their own work, however, JGB’s reputation was regularly referred to in terms that suggested the reviewer had no doubts about the likely quality of the work in question: in 1897, the *Scottish Guardian* wrote that ‘The critic’s task is a light one when he sees the imprint of the Edinburgh Geographical Institute on any map or guide-book. The work turned out by Messrs. Bartholomew is like the good wine that needs no bush’.45 Similar praise came from the *Aberdeen Daily Free Press* and the *Perthshire Advertiser*, who wrote, respectively, ‘Mr Bartholomew’s name is a guarantee of the excellence of the maps’ and ‘They are produced with great care, and are accompanied with the name of Mr. J. G. Bartholomew, which will be a guarantee of accuracy’.46 In all three cases, the reviewer suggested that close scrutiny of the work is unnecessary given its

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45 NLS, Acc.10222/BR/1882, album of cuttings of reviews, 1893-1909, review in *Scottish Guardian*, 1897.
provenance. This clearly links to those ideas about accuracy, trust and expertise discussed in Chapter Five. It also implies that reviewers expected readers of these publications to know of JGB and the firm: otherwise, the inferences of quality attached to his name would be meaningless. Professional reputation was evidently a key factor in the reception of maps.

Methods of mapmaking were also the subject of examination, albeit rather moderate, in reviews. This too is clearly linked to the means by which cartographic products acquired authority. In the case of Reduced Ordnance maps, the mention of the OS acted as an arbiter of reliability: a review of The Shilling Map of Oxfordshire noted in 1898 that ‘It is reduced from the Ordnance Survey map, and may, therefore, be relied upon as accurate in every detail’.47 Reviews did not criticize JGB’s lack of original survey, taking a rather sympathetic approach to the difficulties and expense of conducting such an endeavour: a review in the Manchester Guardian in 1899 explained to readers that ‘no private individual or firm can afford to go to the cost of a general survey for the information required’.48 Instead, reviewers praised his research and showed an understanding and appreciation of the process of compilation: ‘After looking at the tables,’ wrote The Academy, ‘we are not surprised to hear that Mr Bartholomew and his coadjutors have been digging for years in Blue Books, Returns, and all other kinds of volumes and statistics’. The result for the reader was ‘at a glance, knowledge, that can only otherwise be obtained by long and exacting study’.49 Evidence of research clearly provided the press with a tangible means through which to praise a map, and shows that they expected readers to respond positively to this — or indeed that this was information readers would wish to know when deciding whether or not to purchase a map. Reference to existing, established bodies of knowledge such as the OS, or to new — and, ideally, demonstrably thorough — research served as shorthand for a ‘good’ map. Expertise was highlighted at each stage of proceedings, from conception to reputation-building, and was an especially important part of discourse surrounding the selling, buying and reading of maps. Mapmakers’ acquisition of authority can thus be understood as a cumulative process.

47 NLS, Acc.10222/BR/1882, album of cuttings of reviews, 1893-1909, review in Oxford Times, 6 August 1898.
48 NLS, Acc.10222/BR/1882, album of cuttings of reviews, 1893-1909, review in Manchester Guardian, 10 January 1899.
49 NLS, Acc.10222/BR/1883, album of cuttings of reviews, 1906-10 and 1915, review in The Academy, 17 March 1907.
In urban maps and plans, accuracy was not necessarily taken for granted: where it was found, it was sometimes praised in a tone of surprise. The pace of change in the urban environment meant that cartographers struggled to keep up to date — and reviewers were usually sympathetic to this struggle. An updated plan of Glasgow was described in 1878 as ‘a most laudable and successful endeavour ... to keep pace with the extension of the city’. The language of effort and endeavour was still relevant at the end of the nineteenth century, when a review of a new edition of a plan of Plymouth, Devon and Stonehouse stated ‘The Three Towns grow so rapidly year by year that it is almost impossible for any map to keep pace with the progress of building, but a successful attempt has been made to bring the details as nearly up to date as possible, and so far as we notice the map is trustworthy’. In both cases it is implied that any faults in the map are to be forgiven: the effort of the mapmaker, along with the quality of the end product, is praised. Here, again, there is a visible awareness of cartographic processes and the inherent difficulties of mapping the city. Urban developments, whether physical or administrative, clearly provided mapmakers with a means of emphasising their adaptability, knowledge, and capacity to produce maps quickly. These changes, moreover, served to validate the production of a new map, which created custom not only for cartographers but also for the many linked parts of the printing and publishing industries. In the early 1890s, when the boundaries of Perth and its parishes were changed, for example, newspapers noted that a local bookseller, Mr. Leslie, acquired ‘special permission’ to commission Bartholomew to produce a new OS reduction and revise it up to the ‘present day’. Changing towns and cities presented both a challenge and a possibility to the producers and sellers of maps. Capitalizing on being new, accurate, or the first — as many of the adverts did — appears to have been a successful tactic: the press evidently noticed and praised it.

Technical, geographical accuracies were not the only factor in how effectively maps could be used: the use of colour and material form also contributed to the map’s ‘point of use’ accuracy, by making it more readable and thus more likely to facilitate correct navigation. Reviews consistently commented upon Bartholomew’s style of

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50 NLS, Acc.10222/BR/1881, album of cuttings of reviews, 1866-94, review in Evening Citizen, 6 June 1878.
51 NLS, Acc.10222/BR/1882, album of cuttings of reviews, 1893-1909, review in Western Morning News, 8 September 1899.
52 NLS, Acc.10222/BR/1881, album of cuttings of reviews, 1866-94, review in Dundee Advertiser, 5 September 1891.
colouring, invariably describing it as ‘beautiful’ or ‘distinctive’. This was not, however, a purely aesthetic judgment. Colour, and its reception in the press, is a lens on the way in which maps acted as facilitators, making the city and its surroundings more usable. The clear denotation of green spaces in Glasgow, for example, was viewed as a surprise and a source of pride in a review of a new map (1899) of the city:

By means of the system of printing in colour, one can see at a glance the areas which are built upon and those which are still open ... One of the most interesting features of the map is provided by the public parks and open spaces which are printed in green, and form most pleasant oases in our desert of stone and mortar. Glasgow has reason to be proud of her open spaces, and most people will be surprised to find on the evidence of the map that these are so numerous.

The map is presented here in terms redolent of Michel de Certeau’s work on moving through the city. The implication is that most people spend the majority of their time amongst ‘stone and mortar’ — hence the assumption that they will be ‘surprised’ to see the amount of green spaces in the city. By abstracting space, and viewing the city from above, the map is presented in this review as a true image of the city. It is fascinating, then, to note that this image appears to be different to the one the reviewer presumes of the reader. The value of the map, and of geographical knowledge, is shown here in its capacity to change perceptions. A more straightforward case in which the map is presented as a facilitator can be found in a review (1897) of Bartholomew’s map of the Pentland Hills, which laments ‘How few people in Edinburgh take advantage of the inestimable boon which they possess in the public rights of way over the Pentland Hills. More delightful walks are hardly to be obtained... in order to fully enjoy them... a good map is indispensable’. In this case, the value of the map is that it empowers: it ‘prevent[s] one from straying from the right path’: Bartholomew’s map in particular ‘shows distinctly the various rights of way across the hills, and besides indicating the numerous places of interest, landmarks, and natural features of the several routes, gives a valuable itinerary of the

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53 See, for example, NLS, Acc.10222/BR/1882, album of cuttings of reviews, 1893-1909, review in Brighton Gazette, 26 May 1892; review in Scottish Standard Bearer, September 1892; review in Edinburgh Evening News, 17 September 1896; review in Glasgow Herald, 14 September 1896; review in Glasgow Herald, 28 October 1899; review in The Scotsman, 30 October 1899.
54 NLS, Acc.10222/BR/1882, album of cuttings of reviews, 1893-1909, review in Glasgow Evening Times, 31 October 1899.
principal walks’. Maps designed for cyclists were also praised for making the city and its surroundings more accessible through the provision of a specialised means by which people could enhance their spatial knowledge.

Bartholomew’s use of colour was, of course, due to the new technology of lithographic printing which allowed them to print precise layers of colour, as discussed in Chapter Four. An anecdotal account describes the distaste with which the firm’s first contour layer coloured maps were received at the Paris Exhibition of 1878. More tangible evidence for their reception, however, viewed through reviews, suggests that readers were generally receptive to this new view of the land, though reviewers believed it was necessary to explain how the system of colouring worked. In 1897, the travel editor of The Queen described how the exact intervals of altitude corresponded to each colour, and concluded that contour layer colouring was ‘an altogether admirable system for very undulating and mountainous country’. This suggests that even by the end of the nineteenth century, the technique was still seen as being new enough to warrant detailed explanation. Readers’ cartographic literacy — or, at least, reviewers’ perceptions thereof — did not necessarily move apace with technological developments. Reviewers were aware that readers needed to understand the systems of representation in maps in order to be able to use them effectively. In other cases, reviewers praised colouring systems but wondered whether it could be developed in order to provide further details. For the cyclist, ‘the novel feature of contour colouring’ provided ‘a general view of the hills he may have to traverse’, but the reviewer suggested that some ‘indication could be given of the quality of the roads, which unfortunately differs so much in different parts of the country’. The latter review, from 1896, describes five different sheets of Bartholomew’s new maps of England and Scotland. Two years later, a review in the Scotsman indicated that a specific cyclists’ map of Edinburgh dealt with this issue: ‘within the space are laid the cycling routes, both rough and good-going, with a note

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56 Ibid.
57 NLS, Acc.10222/BR/1882, album of cuttings of reviews, 1893-1909, review in The Scotsman, 1 August 1898.
59 NLS, Acc.10222/BR/1882, album of cuttings of reviews, 1893-1909, review in The Queen, 28 August 1897.
60 NLS, Acc.10222/BR/1882, album of cuttings of reviews, 1893-1909, review in The Bookseller, November 1896.
of dangerous gradients and places where caution is needful. These examples each represent an attempt on reviewers’ part to mediate in the transmission of geographical knowledge from mapmaker to eventual reader, and show a detailed understanding of the means of production along with the various, and often highly specific, uses of the map.

While maps were a source of local knowledge, and the provision of a new perspective on the city was portrayed as a clear benefit of much of Bartholomew’s work, reviews hint that where a reader came from would affect the utility of the review and, indeed, their interpretation of the map in question. Many reviews described maps in terms that would have little meaning to somebody unfamiliar with its content. Descriptions of the extent of a map, for example, required a familiarity with the place in question. The local readership of the Glasgow Herald would, in all likelihood, have understood the newspaper’s description, in 1899, of a new plan of the city: ‘the area embraced extends from beyond Belvidere Hospital on the east to the further extremity of Whiteinch on the west; and from Maryhill Barracks on the northern boundary to the river Cart on the southern’. The national readership of the Scotsman, however, who reviewed this map in the same terms, may not have done. When reviewers found mistakes, locality also played a role. In 1896, the Manchester Guardian spotted ‘minor errors’ in Bartholomew’s Plan of Manchester, which, they stated, ‘can be detected by anyone living in Manchester’. Three years later, Bartholomew’s work on Manchester had still not found favour: a new map of the city was described as ‘sadly wanting in many respects … so incomplete as to be little more than an outline index of streets and roads’. The reviewer noticed that ‘some recent changes are noticed, while others are not’, pointing out errors in the placement and labelling of roads, bridges, stations, gardens, mills, offices, libraries and tramlines, concluding that the map ‘is a very old one carelessly vamped up’. Although this was the same reviewer who was sympathetic to the cartographer’s plight in keeping up to

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61 NLS, Acc.10222/BR/1882, album of cuttings of reviews, 1893-1909, review in The Scotsman, 1 August 1898.
62 NLS, Acc.10222/BR/1882, album of cuttings of reviews, 1893-1909, review in Glasgow Herald, 28 October 1899.
63 NLS, Acc.10222/BR/1882, album of cuttings of reviews, 1893-1909, review in The Scotsman, 3 November 1899.
64 NLS, Acc.10222/BR/1882, album of cuttings of reviews, 1893-1909, review in Manchester Guardian, 4 August 1896.
65 NLS, Acc.10222/BR/1882, album of cuttings of reviews, 1893-1909, review in Manchester Guardian, 10 January 1899.
66 Ibid.
date, and understood the cost of carrying out original surveys, an apparent lack of accurate, current local knowledge prevented this map from being deemed useful.

Elsewhere, mapmakers were expected to keep up to date with current events and contemporary public interest and, in this respect, the press were not necessarily aware of or sympathetic to the time involved in the production of a new map, which illustrates a clear area of disconnect between producers and reviewers. The North British Advertiser sounded a note of surprise that Bartholomew’s *Pocket Plan of Edinburgh and Suburbs* (first published in 1893 and reprinted and reviewed in 1896) did not show the ‘actual limits’ of the city ‘when so much interest in the recent extensions has been excited’. The extensions of 1896 incorporated areas such as Portobello and Corstorphine into the city, which are shown in the *Pocket Plan*, but with no boundaries marked. The fact that the *North British Advertiser* expected Bartholomew to have updated the existing map to denote new boundaries in a very short period of time after the changes occurred is telling. Evidently, mapmakers were expected to keep pace with swift changes; here, in a matter of months. In other cases, Bartholomew did capitalize on public interest, which was received positively in reviews: the *Leader*, in 1890, described the firm ‘taking advantage of the interest at present being evinced by the public of Edinburgh in the railway schemes’ in issuing a new map of the city which showed these ‘in a very clear manner’. In both cases, it can be inferred that Bartholomew’s superior knowledge of their own locality played a role in how their maps were received. In the former example, a lack of information, based on the amount of local interest ‘excited’, forms a point of criticism. This implies that the firm were expected to be aware of the public mood and how this might dictate the type of information their maps portrayed. A useful map, in this context, was one that reflected specific contemporary concerns.

How a map was received was evidently dependent on expectations relating to how and where it would be used, by whom, and their existing knowledge of the place in question. Reviewers made clear distinctions between different types of readers. Maps designed for tourists were praised for their brevity, where elsewhere a lack of detail could be presented as a fault. The *Border Advertiser* was impressed that a Bartholomew map of Melrose gave the tourist ‘all the facts necessary without

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68 NLS, Acc.10222/BR/1881, album of cuttings of reviews, 1866-94, review in *Leader*, 2 December 1890.
burdening them with needless or dry details’. The use of these concise maps was presented as something of a novelty: *The Times* claimed in 1897 that ‘We are glad to see that maps are being much more largely used by tourists than was formerly the case ... the travelling public are beginning to realise the utility of a really good map’.\(^6\) The article goes on to offer credit to Bartholomew for ‘educating the tourist in the use of good maps’.\(^7\) Reviewers also discussed how, in physical terms, a map would stand up to different types of use. These were maps designed for active use, rather than display, and reviewers assessed them on these grounds. The *Publisher’s Circular* described how a plan of Hull ‘firmly mounted on linen,’ would ‘last a long time even if roughly handled’.\(^8\) A tourists’ map of Edinburgh, Haddington and Berwick was, in content, declared to be ideal for ‘all purposes of touring and cycling,’ but reviewers found fault with its production: ‘The copy which has been sent to us is on paper and therefore may not wear well; but perhaps the cloth mounted issue is more substantial’.\(^9\) Other reviewers commented on whether maps ‘fit the pocket’, implying that portability along with durability was an especially important feature of maps designed for active use.\(^10\) Comments on rough handling hint at the active use of maps, the focus of the following section. This section shows that reviews engaged with maps broadly on the same terms as cartographers and publishers sold them. The next stage of the transmission of geographical knowledge was a less straightforward process.

\(^6\) NLS, Acc.10222/BR/1882, album of cuttings of reviews, 1893-1909, review in *Border Advertiser*, 3 August 1892.
\(^7\) NLS, Acc.10222/BR/1882, album of cuttings of reviews, 1893-1909, review in *The Times*, 26 July 1897.
\(^8\) Ibid.
\(^9\) NLS, Acc.10222/BR/1882, album of cuttings of reviews, 1893-1909, review in *Publisher’s Circular*, 17 April 1897.
Use and utility: the map as facilitator

So in doing what I’ve done, making the selection I have, have I laid a false trail? Or am I simply able, from where I am now, from where we are now, to see the route we came, to look back and see the trail simply marked? If my father were alive we would have an argument about that too. I’d say I can see the lines on the map, and he’d say the map is covered with many lines, you only see the ones you want to see. And we’d both be right.\textsuperscript{75}

The subjectivities inherent in mapmaking are well documented and understood by critical histories of cartography.\textsuperscript{76} Evidence for the reading of maps, by contrast, is much harder to acquire. While maps may be — at least by design — more objective than many texts, the reading of them is not. Readers can interpret the significance of places and routes based on what, as in James Robertson’s words, they ‘want to see’.\textsuperscript{77} Just as reviewers examined different elements of cartography depending on who and what a product was designed for and, on occasion, illustrated a disconnect between producer and user so, too, readers brought individual, differing interpretations and uses to maps, which were not necessarily those intended by the mapmaker. The following section focuses primarily on examples of physically marked maps as tangible evidence of use, but it is important to note that this is just one type of use, though in a variety of forms, such as general wear, deliberate annotation, or — like many of Patrick Geddes’ maps, discussed below — apparently accidental ink blots and smudges. Many readers, however, would have seen annotation or other forms of mark-making as defacement.\textsuperscript{78} Maps were expensive, and those that were kept pristine can reveal as much about their use, and the importance of maps and their reception as cultural artefacts, as those that display signs of activity. If critical interpretation of mapmakers’ activities necessitates a consideration of ‘silences’ on

\textsuperscript{75} James Robertson, \textit{And The Land Lay Still} (London: Penguin, 2010), 643.
\textsuperscript{77} Robertson, \textit{And The Land Lay Still}, 643.
\textsuperscript{78} Jackson, \textit{Marginalia}, 2-3, 234-240.
the map, the spaces and silences left by readers should also assume an inherent importance.\textsuperscript{79}

In 1928, the Scottish artist John Duncan Fergusson and author John Ressich undertook a trip from Glasgow around the north of Scotland, travelling initially by car and, after mechanical difficulties towards the end of the journey, by bus. Ressich produced a written account of the trip, and Fergusson, retrospectively, drew their route onto a Bartholomew map: \textit{The Dunlop Touring Service Road Map of Scotland} [Figure 7.4]. The map itself is of sufficient size and scale to be used to navigate on such a trip — this was the purpose intended by its producers. There is no evidence, however, to indicate whether or not the two men took the map with them. By annotating the map, Fergusson showed an appreciation of cartography that mapmakers were not necessarily aware of: that is, its capacity to illustrate and commemorate. The map’s later inclusion in an exhibition as an artwork in its own right shows Fergusson’s role in repurposing or, in de Certeau’s terms, ‘remaking’ the map through the process of annotation.\textsuperscript{80}

Although there is no indication of whether Fergusson and Ressich used the Dunlop map for navigational purposes, it is clear that Fergusson's annotated route was drawn onto the map after the trip. Ressich’s written account provides additional information in this respect. He described how, towards the end of their trip, having spent an evening in a hotel close to Loch Rannoch, ‘we left on Tuesday morning just to return a few hours later in tow of Mr. Mackintosh’.\textsuperscript{81} This indicated ‘the end of the song as far as motoring is concerned,’ and the two men decided to travel around the loch before catching a bus to Glasgow via Pitlochry and Perth.\textsuperscript{82}

\begin{footnotesize}
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\item \textsuperscript{79} J. B. Harley, “Silences and secrecy: the hidden agenda of cartography in early modern Europe,” \textit{Imago Mundi} 40 (1988), 57-76.
\item \textsuperscript{80} The map was shown in the exhibition \textit{J. D. Fergusson: Picture of A Celt} (The Fergusson Gallery, Perth and Kinross Council, 2014). See also de Certeau, “Reading as poaching,” 132.
\item \textsuperscript{81} The Fergusson Archive (hereafter FA), Acc.1994.1540.1-6, John Ressich, “Itinerary of Highland Trip, 29 May ‘til 10 June”, 1928.
\item \textsuperscript{82} \textit{Ibid.}
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Figure 7.4: John Duncan Fergusson’s copy of *The Dunlop Touring Service Road Map of Scotland* (Edinburgh: Edinburgh Geographical Institute, 1924).

Crucially, this latter part of the journey was not planned, and instead represented an improvised response to unforeseen circumstances. The route marked on Fergusson’s map, however, is exactly that which Ressich described. It is therefore evidently a retrospective annotation. This example highlights the difficulty of interpreting the use of maps; without Ressich’s written document, the nature of Fergusson’s map would be more ambiguous. Crucially, though, it illustrates an important function of maps, and one which mapmakers along with the producers of advertisements and reviews did not necessarily envisage: that is, to remember. Although the annotations on the Dunlop map do not represent navigation ‘in action’, it serves as an important reminder that the use of maps goes far beyond way-finding. As a tool of documentation and remembrance, annotated maps are unique: they are more visual than a written record, and more grounded in actuality than a work of art. James Robertson uses ‘the lines on the map’ as a metaphor for the selectiveness involved in narrative formation (‘have I laid a false trail?’). In Fergusson’s case, the lines are, too, entirely subjective: they show the idiosyncrasies of his journey. Nonetheless, they are important in that they provide a clear and seemingly accurate representation of both a trip — a use of the land itself — and his subsequent wish to remember it.

Fergusson’s habit of annotation was not limited to the Dunlop map. Elsewhere in his collection, he owned a copy of Bartholomew’s General Map of Scotland (first printed in 1924). This map shows multiple signs of use. Each corner is punctured and worn, suggesting it was pinned to a wall [Figure 7.5]. Fergusson also placed five crosses in ink around the west of Stirling: near Flanders Moss, Balfron, Killearn, Blanefield and Strathblane, with the latter three places having the largest crosses [Figure 7.6]. A further cross is placed to the north of Bridge of Allan, around 20 miles from the cluster of crosses. The personal meaning of these locations is unclear. In terms of the use of maps, however, the act of mark-making is significant: it operates as a visual code. Crosses on maps serve as an almost universal symbol for an important location. Guidebooks owned by Thomas Hardy, for example, include maps marked with small crosses. Other users developed their own systems of coded

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83 FA, Acc.1996.72l, John Duncan Fergusson’s copy of Bartholomew’s General Map of Scotland. See also Bartholomew printing record, Acc. 10222/PR/66b folio 149, Bartholomew’s General Map of Scotland, printed 3 October 1924.
84 British Library (hereafter BL), C.134.bb.1/25, Thomas Hardy’s copy of K. Bædeker, The Rhine from Rotterdam to Constance: Handbook for Travellers (Coblenz & Leipsic: Karl Bædeker, 1873); BL, C.134.bb.1/12, Thomas Hardy’s copy of John Murray, A Handbook for Visitors to Paris; containing a
annotation. Maps owned by Patrick Geddes are marked with numbers and letters [Figures 7.7-7.9] as well as notes, lines, and accidental marks such as ink blots and rips: the latter two were both common features of Geddes’ maps, suggesting they were, for him, a far from exalted object. Indeed, as a planner, he was likely to use maps frequently and systematically. His system of annotation, which was more varied and detailed than Fergusson’s, was a necessity of his work, rather than a means of commemoration. Both examples, however, show maps in active use; as objects, they are made more meaningful by interaction — and one reader (Fergusson, for example) can be shown to play a formative role in the ‘communications circuit’ by shaping the way a future reader views and understands a pre-owned map. Annotations also show that, although these maps were mass-produced, each copy had the potential, through readers’ interventions, to be unique: a map’s meaning was not fixed when it left the factory or even the bookshop.

Crosses mark certain places and, in so doing, they are unambiguous in their purpose if not the motivation behind their placement. They form a permanent record of what may have been a place of only transient significance. Marked routes, likewise, give visual permanence to something subjective, but routes only ever represent one of a number of possibilities. They also form a more invasive visual intervention than single marks: the heavily inked lines on Geddes’ copy of Bartholomew’s Orographical Map of Scotland make certain areas of the map difficult to use for any purpose other than that which was intended by his annotations [Figure 7.7]. In this way, too, ownership altered the potential use of maps, in ways that may have differed from those intended by the mapmaker.

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description of the most remarkable objects, with general advice and information to English travellers in that metropolis, and on the way to it (London: John Murray, 1874); BL, C.134.bb.1/15, Thomas Hardy’s copy of A Handbook for travellers in Switzerland, the Alps of Savoy and Piedmont, the Italian Lakes, and part of Dauphine (London: John Murray, 1879).

See, for example, University of Strathclyde, Patrick Geddes Archive (hereafter PG), GB 249 T-GED/22/1/British Isles/Scotland/400, Patrick Geddes’ copy of Bartholomew’s Orographical Map of Scotland; PG, GB 249 T-GED/22/1/British Isles/Scotland/438, Patrick Geddes’ copy of Bartholomew’s Large Plan of Edinburgh and Leith; PG, GB 249 T-GED/22/1/British Isles/Scotland/399, Patrick Geddes’ copy of Bartholomew’s Tourist Map of Scotland.

PG, GB 249 T-GED/22/1/British Isles/Scotland/400, Patrick Geddes’ copy of Bartholomew’s Orographical Map of Scotland.
Figure 7.5: Marks in the corners of John Duncan Fergusson’s copy of Bartholomew’s General Map of Scotland (Edinburgh: Edinburgh Geographical Institute, 1924).

Figure 7.6: Crosses on John Duncan Fergusson’s copy of Bartholomew’s General Map of Scotland (Edinburgh: Edinburgh Geographical Institute, 1924). There is also a hole next to Glasgow.


Figure 7.7: Details of marks on Patrick Geddes’ copy of Orographical Map of Scotland (Edinburgh: Bartholomew, 1895).

Source: PG, GB 249 T-GED/22/1/British Isles/Scotland/400.
**Figure 7.8:** Annotations on Patrick Geddes’ copy of *Tourist Map of Scotland* (Edinburgh: Edinburgh Geographical Institute, n.d).


**Figure 7.9:** Annotations on Patrick Geddes’ copy of J.G. Bartholomew, *Bartholomew’s Plan of the City of Edinburgh and Leith with Suburbs* (Edinburgh: Bartholomew, 1891).

It appears, however, that mapmakers were aware, to an extent, of the possibility that owners may make their mark on the product: in 1925, discussing a map of Asia Minor in production for the publishers T. & T. Clark, W. & A.K. Johnston wrote: ‘With regard to the second Map, we would prefer to have the land tinted over in brown and all the routes in black shown by conventional signs. Those who wished for further distinction could easily ink the routes over in different colours by hand.’

Here, again, the scale of the map aids an interpretation of this proposed act of annotation. This map, which showed a large swathe of land on a single page, would not have been suitable for navigation or even for planning a route in any detail. Instead, the owner was envisaged re-adjusting the map’s emphasis to suit their own interests or aesthetic preferences. It is unclear whether any eventual owners of this map interacted with it in this way, but the fact that Johnston speculated about readers applying ink to maps themselves, describing it in terms not of defacement but of ease, suggests this was a reasonably unremarkable occurrence. It also provides an insight into Johnston’s imagined reader, who was, it appears, highly engaged with the map.

Extant visible signs of use are likely to represent, as in all the cases discussed so far, either planning or documentation. The most commonly discussed function of maps — that is, active navigation — did not necessitate annotation or other forms of physical modification. Outdoor use may have left some ambiguous material signs; significant wear around fold lines could indicate that the map had been repeatedly folded and unfolded, for example, as many maps used to navigate would have been. This is, however, necessarily speculative. Essentially, activities such as hill walking, or driving through Scotland, were unlikely to leave definite signs on a map. This means that maps’ important function of facilitation was often materially invisible. Nonetheless, the existence of a market for certain maps makes it clear that the type of knowledge they offered was seen to be valuable: maps designed for specific purposes, whether walking, cycling, or driving, filled a need. The production of maps operated in a dialectic relationship with synchronous developments. These developments took both technical and social forms: the former can be seen in the improvement of roads and the increasing availability of personal means of transport, while the latter can be seen in the growing view of the country as a site of leisure ‘for all’, the commercial

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promotion of travel and, by the 1920s, the Scottish Office’s conscious efforts to invigorate rural areas through tourism. By offering geographical knowledge, maps clearly played a role in facilitating the increased use and awareness of the Scottish landscape. In this respect they were part of a broader range of printed material encouraging tourism in Scotland; maps, however, were designed to actively facilitate use as well as promoting it.

A further materially invisible use belies a very important function of the map: to stimulate imagination. Maps could facilitate emotional as well as practical navigation. They did so by providing the reader with knowledge of places they could not otherwise have accessed. Examples of this can be found in textual accounts, whether personal memoir or fiction. The writer Judith Schalansky, growing up in East Berlin, used atlases to travel the world without leaving her home; as an adult, she produced the *Atlas of Remote Islands*, subtitled ‘Fifty Islands I have not visited and never will’. In it, she writes ‘Consulting maps can diminish the wanderlust that they awaken as the act of looking at them can replace the act of travel ... Give me an atlas over a guidebook any day. There is no more poetic book in the world’. Amitav Ghosh’s novel *The Shadow Lines*, discussed in greater depth below, in which a Bartholomew map becomes a motif, eloquently explains this power. A cousin, Tridib, of the central character, the anonymous narrator, shows the younger boy ‘a tattered old Bartholomew’s atlas’, and points out places such as Cuzco and Madrid: these names become ‘a set of magical talismans’. This process gave the narrator ‘worlds to travel in’ and ‘eyes to see them with’. Better-travelled characters, he says, ‘could never understand what those hours in Tridib’s room had meant to me, a boy who had never been more than a few hundred miles from Calcutta’.

The map is, of course, a means of translating physical space into printed form, through which geographical knowledge is transmitted. This often then mediates a further translation, when the reader uses the map to navigate, but this navigation can, evidently, be emotional as

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well as physical and, as this section has shown, highly subjective. The following section explores this idea in greater depth, by considering the cultural resonance of the map, and Bartholomew maps in particular.

**Resonance: Scottish maps in cultural memory**

*But, of course, in the event he got a birthday dinner and other presents as well ... He got a jacket and shirt from his mother and father and a nice old pair of brass opera glasses from Mrs Price, to watch the planes with, and best of all a brand new Bartholomew's Atlas...* 93

A further function of the map relates to its ‘afterlife’ or, as discussed in the following analysis, the mechanics of what Thomas Adams and Nicholas Barker term ‘survival’, the final stage of their own ‘communications circuit’. 94 The following understanding of survival is more abstract, however, than Adams and Barker’s framework implies. They see the book primarily as a material object, which means they consider survival in physical terms: placement in a library or archive, for example, would equate to survival in their model. The focus here, instead, is on imaginative or cultural survival. Each of the examples discussed shows an author using a map to serve a particular purpose in adding meaning. In this respect these maps can be seen to represent the afterlives of the Bartholomew maps examined in previous chapters. The literary works considered in this section and, indeed, those mentioned throughout this chapter, are a necessarily small selection: each, however, illustrates a point relevant to a greater understanding of mapmaking. The aim is not to provide an extensive account of the map as literary motif, but rather to add depth to an understanding of the extent of the communications circuit. The meaning of maps was not fixed in the factory, or even in readers’ hands — this section shows that their importance extends beyond their conventional lifecycle.

In *The Shadow Lines*, a Bartholomew atlas enters the narrative repeatedly. Tridib shows the anonymous narrator his ‘tattered old Bartholomew’s Atlas’ early in the story, and one of the book’s most powerful passages comes when the narrator rediscovers it, fifteen years after Tridib’s death. This scene is discussed below. Tridib receives the Bartholomew atlas as a birthday present while living in London during

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93 Ibid., 227.
the Second World War: having expected not to celebrate, his landlady manages to piece together a dinner, and ‘best of all’, he is given the atlas. The firm is never discussed in detail in the novel, but the fact it is explicitly specified is telling. JGB, known for intellectualizing and keen throughout his life to document the firm’s activities in preparation for future commemoration, would surely have been delighted that Ghosh chose to have his character pore over a Bartholomew atlas, not one by Johnston, Philip, or any of the other cartographic publishers who competed with Bartholomew in the early twentieth century. The map becomes a tool by which the narrator, symbolically, tries to make sense of post-partition India. Bartholomew, therefore, and their reputation, take on some of this symbolism. They, specifically, become part of a discourse on place, memory and understanding, and this authorial choice shows the cultural resonance held by the firm. Ghosh wrote The Shadow Lines in the 1980s and his decision to make Bartholomew part of the story, which takes place across the mid to late twentieth century, shows the important symbolic place the firm occupied in the post-colonial imagination: they produced atlases for the Indian market throughout the late nineteenth and early twentieth centuries, and their prolonged impact in doing so could, in part, be measured by the fact that these objects clearly acquired and held cultural significance decades later.

Specific elements of maps have acquired more resonance than others. One such element is colour. James Robertson’s novel And The Land Lay Still uses colour as a motif. Jack, a former prisoner of war in Japan, describes using an imaginary map as a strategy for emotional survival:

‘I imagined a map of the country,’ Jack said, ‘and I filled it in with all the counties, just like on the real map, in the right colours. Yellow for Perthshire, green for Inverness-shire, pink for Argyll. I’d list every major town, every football club, every football ground. Dates of kings and queens, battles … It was like being in a kind of dream. You could almost dream yourself out of the pain and the heat and the hunger’.  

Although this is supposedly a ‘real map’ filled with the ‘right colours’, two of Jack’s choices do not correspond with previous or contemporary maps of Scotland, which more typically coloured Inverness yellow, Perth green and — as Jack imagined — Argyll pink. Nonetheless, as far as Jack (or Robertson: this may be a genuine authorial mistake) is concerned, these colours are definitively correct. He takes

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95 Robertson, And The Land Lay Still, 152.
96 See for example J. G. Bartholomew, Survey Atlas of Scotland, Plate 15, “Railway and Route Map with Counties” (Edinburgh: The Edinburgh Geographical Institute, 1912).
comfort in supposed accuracy and objectivity. His additions, though, are idiosyncratic; only a very odd thematic map would include football pitches and historical dates side by side. By filling a map with details he can remember, and that are important to him, he attempts to reconstruct an exhaustive account of his home, in order to construct imaginary barriers separating him from his physical life in the camp. The fact that the ‘right colours’ enter a discourse of imaginative cartography suggests, whether or not Jack was correct about the colours themselves, that the aesthetics of cartography — for which Bartholomew received considerable praise, as seen in previous sections — could be part of a cultural memory of place. Robertson’s detailed use of the map as a narrative device and as a symbol of home shows the importance that he, too, writing between 2006 and 2010, placed on the map.

In the example above, the map serves two purposes. For the character it is, essentially, a means of abstracting difficult circumstances. For the author, it is a useful means by which to show the imaginative pull of an idealized Scotland. In *The Shadow Lines*, too, the map serves to teach the narrator ‘the meaning of distance’. This is, in some respects, not an uncommon use of the map; the phrase taken alone is redolent of mid-twentieth century school-level geography, in which standardized textbooks provided facts, figures and illustrations, but ‘little joy, wonder, imagination or stimulation’.97 Here, however, the meaning has figurative significance; the acquisition of geographical knowledge is a way, in parts, of understanding Tridib’s death in the Dhaka Riots of 1963-4. The narrator, upon finding Tridib’s ‘tattered old Bartholomew’s Atlas’, places a compass point on Khulna, and the pencil on Srinagar. He discovers that the distance between these two places is 1,200 miles and begins to draw circles, measuring between significant places:

And so, fifteen years after his death, Tridib watched over me as I tried to learn the meaning of distance. His atlas showed me, for example, that within the tidy ordering of Euclidean space, Chiang Mai in Thailand was much nearer Calcutta than Delhi is; that Chengdu in China is nearer than Srinagar is. Yet I had never heard of those places until I drew my circle, and I cannot remember a time when I was so young that I had not heard of Delhi or Srinagar.98

His own lines on the map provide a neat metaphorical device for discussing the emotional effects of the partition of India and Pakistan in 1947 and Bangladesh’s subsequent independence in 1971: ‘they had drawn their borders, believing ... in the

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enchantment of lines, hoping perhaps that once they had etched their borders upon
the map, the two bits of land would sail away from each other'.\textsuperscript{99} Maps, of course,
provided a means of acquiring factual knowledge about the world and, along with
globes and geographical models, were frequently used in school geography classes
throughout the twentieth century.\textsuperscript{100} The distance the narrator learns about here is a
geographical fact, too, but in this case the ‘meaning’ of distance has more abstract
significance. Characters, along with their real-world counterparts, as shown in the
section on advertising, used (or were exhort to use) maps as a means of
understanding global change. In this respect, whether or not a particular map was
strictly up to date matters less: without an understanding of what went before — or,
in other words, apparently obsolete knowledge — it would be difficult to understand
contemporary conditions. This was something Bartholomew showed awareness of in
their own advertisements and notices, such as those relating to changes to national
borders following the First World War. Themes highlighted by advertisers and
reviewers, then, can be seen to resonate even into a map’s afterlife. The use
considered here, though — that of ‘map as metaphor’ — clearly owes its existence to
readers and later writers, who give the map an abstract, emotional significance and, in
so doing, accord it a place in cultural memory which is separate to that envisaged by
the original cartographers and publishers.

Conclusion

Themes of communication and transmission run throughout this chapter.
Understanding the representation and reception of maps in these terms necessitates
an acknowledgement, as seen in previous chapters, that societal factors play a role in
every part of a map’s lifecycle. Because of this their meaning remains, to an extent,
unfixed. If the primary function of maps is the transmission of geographical
knowledge, this process depends upon the manner in which it is both produced and

\textsuperscript{99} Ibid., 286. On partition, see Judith M. Brown, “India,” in The Oxford History of the British Empire: The
Twentieth Century, ed. Judith M. Brown and W.M. Roger Louis (Oxford: Oxford University Press,
2009), 421-446.

\textsuperscript{100} Julie McDougall-Waters, “British school atlases, 1880 — 1930: questions of relevance, credibility and
authorship in the production of geographical knowledge,” Imago Mundi, 66:1 (2014), 82 — 94; Teresa
Ploszajsk, “Constructing the subject: geographical models in English schools, 1870-1944,” Journal of
consumed. The first two sections of this chapter examined the relationship between the two: advertising and reviews can be seen as mediators between production and consumption. The second half of the chapter focused particularly upon the use of maps; in this respect it adds to existing scholarship, which more commonly focuses on production. Understanding cartographic ‘meaning’ in these terms renders it unstable: the reader’s role as the recipient of this knowledge becomes key. The reader’s interpretive capacity, which was fundamentally individual, shaped the meaning of the map, and its likely utility was dependent upon their own specific needs. Annotations, in particular, show a subset of highly engaged readers, who made active use of maps and even ‘remade’ them in order to illustrate particular purposes.

The value of geographical knowledge, then, was fundamentally linked to the use that individual readers were able to make of it. Nonetheless, publishers and reviewers conceptualized the vital functions of maps in broadly consistent terms, which related most frequently to accuracy and reliability. These attributes were predicated upon cartographers remaining up to date. On occasion, however, an inability to keep pace with external circumstances necessitated a shift in rhetoric. In this respect, the role of advertisers and reviewers in communicating an essential disconnect between production capacity and consumers’ perceived needs (that is, the possession of a current map) is key. This was the case both in Bartholomew’s justification of the use of outdated maps in understanding changes following the First World War, and in the fictional case of The Shadow Lines’ narrator’s use of an ‘old’ atlas to understand post-partition India. In both cases the ‘facts’ of the map become less important than their capacity to aid analytical thought. This illustrates an essential function of the map — to offer a broader and more abstract understanding of place and space — that was, it appears, difficult to communicate except with reference to tangible, disruptive global events. Uses of maps, whether strictly factual or more abstract, were nonetheless dependent upon a level of cartographic literacy. Reviewers’ explanations of features such as contour layer colouring provide some insight into perceptions of map reading ability, but this is an area in which this study suggests there is potential for further research.

While practicalities, such as navigation, were emphasized in advertisements and reviews, evidence for the use of maps shows owners’ individual approaches to be far richer and more multifaceted than this, albeit still broadly conceptualized as
understanding place. John Duncan Ferguson, for example, used Bartholomew maps to document a journey retrospectively, and to mark the locations of important places. The latter case is an example of annotation as a visual language, in which crosses serve as a tacit, expressive code. Patrick Geddes, likewise, marked locations, and his numerical and textual annotations show that his maps were used for planning purposes. He also adjusted the visual emphasis of maps: his hand drawn lines obscured the mapmaker’s original intentions and, like W. & A. K. Johnston’s imaginary customer, he ‘wished for further distinction’ and chose to ‘ink the routes over’. These uses of maps were idiosyncratic and can be seen to make mass-produced objects into individual documents. James Robertson and Amitav Ghosh, meanwhile, make metaphorical use of the map: it serves, in both examples, as a literary motif to explain the complexities of attachment to place. This use was not foreseen by cartographers, but clearly illustrates the map’s ongoing cultural importance. The use of maps as a tool for navigation or, more broadly, understanding place, should therefore evidently be understood in a figurative as well as practical sense.

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Conclusion

Imprinting local knowledge

Maps necessitated and facilitated the imprinting of local knowledge. In so doing, cartography played a critical role in making the city legible: this legibility and its attendant ramifications can be understood in multiple senses. Moreover, the means by which it did so are themselves significant and have profound implications. Knowledge of place was a powerful means of establishing identity and thus community: the development of communities relies, in part, upon shared knowledge and experience of local features. Imprinting should be seen here both as a physical act — putting something into print — and in a more figurative sense. It refers, that is, to the process of establishing something in the mind.

In making a map, cartographers acquired, adapted and represented local knowledge. The process of compilation is particularly instructive in this regard. A range of perspectives — often highly specialized — were combined and condensed in a Bartholomew map. This was done in part through correspondence with figures deemed to have sufficient expertise: engineers, for example, provided information about infrastructure, and annotated proof maps to show recent and forthcoming changes. Interest groups such as the Cyclist’s Touring Club fulfilled a valuable role by testing Bartholomew’s maps and noting occasions of inaccuracy or ambiguity. These groups facilitated the development of maps and thus the transmission of spatial knowledge. This, in turn, encouraged further use of the landscape, whether urban or rural, as cartographic practices increased its legibility and thus accessibility. Specialist maps aided the development of flourishing interest groups such as cyclists, motorists and mountaineers.

Extant sources were also brought together to construct authoritative representations of place. These included census data, the reports of city officials, previous maps and plans, and more. This was true not only for Bartholomew’s production processes, but also for highly specialized cartographic outputs such as the fire insurance plans of Charles E. Goad. The acquisition of local knowledge, far from rendering these maps inauthentic (by tangibly linking them to a given space and thus
revealing their provenance as being far-removed from a universally replicable ‘truth spot’) was, in fact, critical to their production and reception. Furthermore, it created a dynamic relationship between the manufacture and use of local knowledge. Subscribers to Goad’s maps, for example, who through their occupation acquired — and required — in-depth knowledge of the local environment, were the same individuals who provided the firm with the information needed in order to produce the maps accurately. They offered their knowledge, and then purchased it in its printed form. The knowledge presented in maps was, therefore, pre-existing. Cartographic processes can be seen as mediatory. Maps gave material form to existing local knowledge: it was adapted into an abstracted and readable medium, and its utility was thus enhanced.

Local knowledge was thus imprinted in the map throughout its production. Its life post-production, too, facilitated further imprinting. In simple terms, maps enabled the acquisition of spatial knowledge. At this stage too, however, the relationship between the production and consumption of knowledge was complex. Where maps were actively used, the difference between cartographic and experiential spatial knowledge could be stark. In Glasgow, for example, a Bartholomew map was described in such terms: the amount of green space it showed would, it was suggested, be a surprise to most of the city’s inhabitants, more accustomed to a ‘desert of stone and mortar’. As Michel de Certeau and Henri Lefebvre show, moving in the city is very different to viewing it from above — that is, a typical cartographic view. Maps offered their users an enhanced means of directly experiencing a given space by aiding navigation. This relationship could also be reversed: those who had previously walked in a particular area may then view a map and notice dissonance between the city under foot and the city on paper. Individuals’ imprinted local knowledge is, in fact, highly subjective. Of course, deductions based on experiences of space are necessarily speculative. In the case of printing employees’ daily

2 NLS, Acc.10222/BR/1882, album of cuttings of reviews, 1893-1900, review in Glasgow Evening Times, 31 October 1899.
movement through the city, mapped locations show the prevalence of the printing and publishing industries along their routes from home to work. An analysis of the impact of this upon the two men studied, however, risks anachronism. This thesis does not aim to offer a history of urban navigation but instead explores how a particular form of spatial knowledge was produced in the urban context.

The map, moreover, was not simply used for navigation. Maps in their material form provide further insight into processes of knowledge acquisition and documentation. Where readers interacted with the map through physical interventions such as annotation, they literally imprinted their own local knowledge onto the map. John Duncan Fergusson, for example, after touring Scotland in the 1920s, drew his route onto a Bartholomew map. Knowing this was done retrospectively is revealing. The map's primary use in this case is commemoration, not navigation, and the idiosyncrasies and seeming illogicalities of Fergusson's journey were unlikely to aid anybody else's navigational knowledge of the area. In Amitav Ghosh's novel *The Shadow Lines*, annotation on a map represents a process of learning and a different sort of knowledge acquisition or imprinting. Countries in their abstracted visual form are shown to be more easily understood than their complex realities: the narrator states he did not know 'the meaning of distance' until he began to draw lines on a Bartholomew atlas and measure between places.\(^5\) Maps offer local knowledge, and it is imprinted within them in their making, but they also offer the capacity to imprint one's own local knowledge and build understanding and memories of place.

Cartography, made up of disparate but connected forms of local knowledge at every stage (which, as in the Indian example above, were located within a range of geographical scales), evidently plays a central role in the construction of knowledge and memory of place. It can also do so without taking material form. The map can be such a potent symbol of identity — inextricably linked with notions of 'home' — that it serves as a literary motif for just that in James Robertson's novel *And The Land Lay Still*. In this example, the act of imagining a map of Scotland allows Jack, a prisoner of war, to escape his everyday life and ground his mind instead upon a determinedly accurate (though actually idealized and highly subjective) image of home. The fact the map is chosen as the symbol here is a compelling illustration of its capacity to

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imprint local knowledge, and the wide range of ways in which it does so. Far from being a basic tool of navigation, the map both contains and constitutes such a range of local knowledge that understanding it through a study of its whole lifecycle, not only during its ‘material phase’ but also from the conditions of its conception to its afterlife, is deeply revealing.

**Temporality and changing use**

The map must be understood within the context of its time. Maps made in Edinburgh by the early twentieth century were very different to those produced 100 or 50 years earlier. Compare, for example, two maps designed for the same purpose 86 years apart: that is, to show parliamentary boundary changes and the extension of the franchise in 1832 [Figure 8.1] and 1918 [Figure 8.2]. Although the 1832 map was allegedly a ‘rush job’, the comparison makes it clear that, in simple terms, by 1918, the city was larger and more complex, and urban cartography was more detailed and accurate. In part this was because mapmakers had more information available to them, through local initiatives in aggregation and quantification, as well as broader national projects facilitating the acquisition of spatial information. In Edinburgh, the work of the Ordnance Survey in 1849-53 (large-scale mapping of the city) and 1876-77 (revisions and expansions) was formative in this regard. The OS plotted the locations not only of streets and buildings but also of lampposts, trees, fire hydrants, urinals and more. Like Goad’s surveyors in the 1890s, they went inside premises and provided internal details for many public buildings [Figure 8.3]. For mapmakers such as Bartholomew, who compiled information rather than surveying, the development of OS maps provided clear spatial information on a scale that previously would have required them to do large amounts of research and make use of myriad different sources.

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8. The OS were the first to provide this level of accurately surveyed detail in Britain. In terms of aesthetics, however, earlier maps also showed details such as architectural features and trees. See, for example, the double perspective of Robert Kirkwood, *Plan and Elevation of the New Town of Edinburgh* (Edinburgh: Kirkwood and Son, 1819) and the greenery shown in Charles Thomson, *Plan of the Town of Leith and its Environs with its Intended Improvements* (Edinburgh, 1822).
The effects of this were significant. Bartholomew used OS maps to produce their own ‘Reduced’ versions, which — as discussed in Chapter Six — became a central part of their business. They also used the maps to develop standard, detailed engravings of the city, which could be revised and updated as necessary, such as those for the Post Office plans discussed in Chapter Three. In so doing, their output was shaped for specific audiences and purposes. They explicitly acknowledged their role in allowing the ‘valuable work’ of the OS to be ‘summarized and incorporated’.9 From the base maps they produced from the OS sheets, they could add details — of street lighting for the Town Council, for example, or particular routes for ramblers. That is not to say that the existence of OS maps relegated the importance of compilation: as Bartholomew’s ongoing acquisition of spatial information and extra details shows, this continued to be a vital part of their practice. From the late nineteenth century, however, the OS maps played a role in making Bartholomew’s own cartography not only more standardized and replicable, but also more flexible. As commercial cartographers, Bartholomew could keep or remove details as they saw fit. This made the content of their maps eminently more varied, adaptable for specific purposes and marketable than the OS sheets they were based upon.

**Figure 8.1:** Great Reform Act Plans and Reports, *Edinburgh and Leith, 1832.*

Source: London: House of Commons, 1832. Reproduced with the permission of the National Library of Scotland.

**Figure 8.2:** John George Bartholomew, *Post Office Plan of Edinburgh, Leith and Portobello. Constructed from Ordnance and actual surveys by John Barthlomew. New Parliamentary Divisions — 1918.*

Source: NLS, Acc.10222/PR/58b folio 160.
Local councils had a vested interest in developing this information, and the changing nature of the urban map was, in many ways, integrated with public administration. The work of the OS was, of course, publicly funded, and Edinburgh Town Council also provided financial support for the development of much urban cartography, in part or in full. In commissioning firms, whether W. & A.K. Johnston, Bartholomew, or others, they provided a valuable source of income and a market for highly specialized maps, the provision of which further demonstrated the utility of cartography for local administrative purposes and thus enhanced the existing relationship between mapmakers and city officials. As well as plans showing developments such as street lighting, the plotting of businesses, institutions, green spaces and more was an important part of the city’s development. This can be seen clearly in terms of public health: an 1892 map showing locations of tuberculosis infections encouraged the development of the city’s Fever Hospital at Craiglockhart in 1897.  

While a map published the previous year tracking cases of typhoid allowed authorities to locate the source of the outbreak, the 1892 map was rather different. Far from showing the ‘zoning’ of the disease and thus encouraging focused activity on a particular area, as previous public health initiatives had often done, the tuberculosis map showed how widespread infections were and thus the necessity of providing a separate, reasonably isolated centre for treatment and recovery.

In terms of content, increasing accuracy and detail facilitate a clear picture of the changing city. They are also revealing, however, when interrogated as values — and an analysis along these lines has much to reveal about urbanism and the map in this period. This thesis has shown that precision is not a simple ‘fact’ but also a culturally construed value. In this respect, too, temporality is important. Quantification became a vital and self-sustaining part of Victorian administrative practices. The conditions that predicated the development of maps were temporally specific; so too, therefore, were the maps themselves. The increasing availability of demographic or urban information, for example, allowed for the development of such highly detailed maps. These maps, in turn, provided the means for further investigations into the details of cities. The relationship between the production and consumption of spatial knowledge was dynamic. An example of this can be found in the actions of the Town Council. As well as purchasing maps, the Town Council

facilitated the development of cartography by providing Bartholomew with information: they filled in revisions and offered descriptions of planned developments during the annual process of revising the Post Office plans, for instance.

The social acquisition of this data does not limit its validity: as historians and geographers of science show, scientific knowledge does not have to be produced in a vacuum to be authentic. The notion of any form of knowledge production operating in an ‘autonomous sphere’ has been shown throughout this thesis to be impossible.\(^1\) Moreover, Bartholomew do not appear to have attempted to construe their business as a ‘truth spot’ or ‘centre of calculation’ in the way theorists typically describe.\(^2\) Rather than building an image of placelessness, they actively embraced the locality and used their local knowledge to develop a business firmly embedded in the city’s particularities. In this respect cartography is distinctive: because the validity of its output was dependent upon a high level of location-specific knowledge, this value imbued other parts of the business, too. The relationship between the city and the map was multifaceted, with each facilitating and influencing the other’s development.

The broader ramifications of this discussion are in what it reveals about the nature of urbanism. By 1920, cities were a clear priority for local and central government. Maps, as a form of quantification and demonstration, played a role in showing official bodies the scale of problems such as — especially in urban Scotland — poor housing conditions and high mortality rates. Investigations in the early twentieth century made these concerns official. In 1917, the Royal Commission on Housing acknowledged the scale of the problem and made it clear that private enterprise in housing provision had failed: overcrowded tenement blocks were seen to be at the heart of the issue. It called for further state involvement and greater powers in urban legislation. Two years later, the Housing and Town Planning Act (Scotland) offered state subsidies for housing, gave more authority to local councils and attempted to challenge the dominance of the free market and private landlords.\(^3\) At the end of the period covered by this thesis, then, cities appeared to be a focus for the


twentieth century. For key urban thinkers such as Patrick Geddes, this had deep implications. As an urban sociologist, Geddes saw cities not just in terms of quantification but also as places to live. He was concerned with the provision of green spaces as well as slum clearance, and his Outlook Tower on Edinburgh’s Royal Mile manifested his belief that urbanism was effectively understood through the observation of city dwellers. The increasing complexity of managing the city, then, could not always be mapped — Geddes’ means of understanding was more fluid and ambiguous — but mapping the city provided the necessary information for thinking that went on to shape the nature of twentieth-century urbanism.

**Figure 8.3**: Ordnance Survey, *Five Foot to the Mile — Edinburgh, Sheet 25* (1877). Details below show trees, entranceways and stairs, internal details of public buildings (the United Presbyterian Church, East Broughton Place), pumps and cisterns.

*Source*: Reproduced with the permission of the National Library of Scotland.
The formation of cartographic meaning

This thesis adds to literature that questions the nature of ‘fixity’ in printed material. The fact of being printed, quite simply, does not result in its meaning being constant, replicable though the particular lines or letters may be. Although the role of technology in facilitating mapmaking is undoubtedly important, it did not determine the meaning of maps. Here the tension between Elizabeth Eisenstein and Adrian Johns’ interpretation of the nature of printed material is proven instructive. Eisenstein, in particular, reduces their debate to the level of ‘people versus machines’.14 The situation is, of course, much more complex than this. Instead of taking a particular ‘side’, this thesis suggests that the interaction between social and technological factors is far more revealing: it seems, indeed, that to choose between the two as explanations is unnecessarily reductive. The production of maps required both social and technological influences. New forms of printing such as stone lithography undoubtedly made map production cheaper, and mass-production more feasible, as the stones lasted far longer than the previously-used copper plates. This was a means of producing thousands of copies of the same map. These maps were then sold all over the country — and internationally. But this was far from the only factor that shaped Bartholomew’s business. Intellectual influences and networks, the motives of commissioning firms and individuals, and editorial negotiations each added layers of meaning to any given map.

Moreover, it is vital to consider the whole lifecycle of a map. Meaning was formed at every stage. A production history typically considers an object’s material existence — that is, from the point of its physical making, to it being bought and owned. Stages before and after it held material form are shown here to be important, too. Maps were both ‘conceived’ and had ‘afterlives’. The nature of the city shaped many of the maps that were produced in it; this is clear from the discussion throughout. Its distinctive mix of industry and intellect allowed mapmaking to flourish, with a skilled labour force within walking distance from Bartholomew’s premises, as well as long-standing networks that provided commissions and intellectual stimulation. Neither of these should be privileged over the other in a

study of cartographic production. To do so misrepresents Edinburgh, which has too often been presented as a cultural, intellectual place at the expense of its significant industrial workforce. This thesis, therefore, adds to a growing body of work writing industry and workers’ experiences back into Edinburgh’s history. Bartholomew employees’ experiences provide a useful lens on broader issues, from skilled workers’ emigration to workplace gender discrimination. A close focus on locality or the ‘particularity of place’ shows that Edinburgh’s specific conditions aided and sustained mapmaking — Bartholomew’s business went from strength to strength during the period, even recovering quickly from the First World War, which did irreparable long-term damage to many other printing firms in the city. Influences were therefore in place before a map was conceived. A geographical view further casts doubt on the capacity of print to endow fixity: place matters, and this thesis shows that the ways in which a map was produced, circulated and used were geographically differentiated.

A focus on technology also neglects the importance of the reader, beyond assuming that because what they read was replicable, the meaning it offered was also consistent. In fact, this thesis — along with other works on post-production — shows this to be emphatically untrue. Readers played a vital role in shaping the meaning of maps. They can be considered as an ‘interpretive community’ and, within this, as individuals. Individual responses are of paramount importance. Although these were, by their very nature, singular cases, that in itself is telling. It provides a reminder that, in the late nineteenth century, reading was usually done alone or, certainly, that the individual perspective was prioritized. In so doing they ‘remade’ the map by interacting with it and interpreting it in different ways, many of which were removed from its intended purpose. A study of map reading shows that it was a creative and idiosyncratic activity, which proved that mass-production did not equate to consistency of use and interpretation.

Whether or not a map had a chance to be given its own, individual meaning rested, however, on whether or not it was bought. This, in turn, depended upon Bartholomew’s reputation, which was formed in part by customers’ belief in their

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maps’ accuracy and utility. Much of the firm’s outward activity, whether directly or not, aimed to create a reputation of expertise and credibility. Their products can thus be seen to acquire cumulative authority. By producing series sheets, for example, a reputation of utility built up over time. As one series was deemed accurate through use and review (whether printed or word of mouth) so, too, the next was more likely to be. Eventually this meant the firm’s name ‘spoke for itself’: reviewers explicitly stated they did not need to comment on the quality of a given map if Bartholomew produced it, because the provenance was guarantee enough. Bartholomew could also use their own reputation as a marketing tool. Reputation and authority were developed over time. While trust was predicated on accuracy, this value was assumed as well as established through experience.

The capacity to read a map — that is, whether or not it held meaning in the manner intended — is also crucial here. Levels of ‘cartographic literacy’ naturally differed between individuals and groups and undoubtedly played a role in their responses to maps, though this is understandably difficult to track. The following section turns to some areas in which this thesis hints there is potential for further research, of which the development of cartographic literacy is certainly key. Advertisers did try to tackle this directly at times: one atlas prospectus was presented in the form of a guide to ‘A New Method of Atlas Reading’, which presented users with a series of geographical problems and explained to them how to solve them using the map.17 This shows an astute awareness that increased cartographic literacy would expand the potential market for maps. The pedagogical role of maps and atlases as tools in geographical education has begun to be explored; less well understood is how people actually learned to read maps, whether taught or through practical use.18 Class, gender and geography, of course, further affected educational levels in this period and thus the meaning people were able to obtain from maps was fundamentally differentiated.

17 NLS, Acc.10222/BR/1865, Bartholomew advertising, 1913-1928, "A Test of the New Method of Atlas Reading". This technique of map promotion was not particular to Bartholomew but also has precedents in the Scottish Enlightenment: see Charles W.J. Withers, "The social nature of mapmaking in the Scottish Enlightenment, c.1682-c.1832," Imago Mundi 54:1 (2002), 46-66.
Implications

This thesis makes contributions to urban history as well as to histories and geographies of cartography, science and books. It emphasizes, throughout, the importance of considering ‘situatedness’ in terms of both space and time. In so doing it demonstrates the ongoing productivity of a specific focus on the urban. Urbanism warrants historical analysis in its own right, as do differences in individual cities. By examining Edinburgh specifically, the thesis offers insight into a particular, distinctive urban space, showing cities to be differentiated: but broader patterns relating to the nature of nineteenth-century urbanism emerge, too, as discussed in the previous section. Furthermore, while cities must be considered in terms of geography and temporality, this thesis is concerned with movement and transmission. This also applies to situations in which particular themes transcend clear chronologies or spatial boundaries. Many of the areas of urbanism examined throughout the previous chapters are relevant to cities today. The necessity of a deep or ‘thick’ understanding of particular cities — their layers and histories — should inform city planning and decisions regarding the use of urban space.

This thesis has made a clear case for the importance of considering the social production of space and place. Cities are constituted in part by their use and representation. In a current context — that is, one in which cities have been declared a priority by all major UK research councils — this should be taken to mean that communities have a vital role to play in shaping the modern city. Recent research shows that community empowerment in the processes of urban design leads to happier, healthier cities. Cities benefit from being populated by engaged inhabitants with a sense of agency (and, of course, the official support and structures necessary to

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19 The ongoing RCUK/Innovate UK Urban Living Project, established in 2015, is the first to bring together all seven UK research councils [http://urbanliving.epsrc.ac.uk, accessed 6 August 2017].

maintain such initiatives). Increasing recognition, globally, of the value of this approach is heartening.21

In disciplinary terms, the thesis demonstrates the utility of a recently called-for shift in the history of cartography towards a ‘processual’ approach.22 In its remodeled communications circuit, it offers a framework for tracing the lifecycle of a map that references cartography’s broader position within the category of ‘printed material’ but simultaneously offers a means by which to acknowledge its distinctiveness. The particular model presented in this thesis is specific to the period in question in the stages and roles it identifies, but historians of cartography could profitably adapt it as necessary. Its utility could be tested for other periods and places, with corresponding changes providing a point of departure for explanations of spatial and temporal differentiation. Furthermore, by linking the reader with the mapmaker or publisher, the model follows Darnton and other historians of the book in emphasizing the importance of the latter stages of the cycle. The thesis therefore consolidates links between histories and geographies of cartography, science and books by offering insight into reading. Its consideration of map use as potentially emotional, imaginative and figurative complicates the idea of the map as a tool for navigation and thus contributes to a broader move away from considering the map in terms of its geographical ‘truth’ — or lack thereof. This could, as discussed above, be explored further in a study of the development of cartographic literacy.

Overall, this thesis offers a productive model for understanding the relationships between cities, cartography and knowledge. While it does not fit neatly into a disciplinary category, it shows the benefit of allowing such boundaries to remain permeable. To return to one of its central themes, it aims to investigate how knowledge is developed in and moves between spaces — in the case of the thesis itself, such spaces should be seen as disciplinary as well as geographical.

21 In 2017, for example, Los Angeles Department of Cultural Affairs commissioned artists and architects to engage with prevalent urban problems. See Condemned to be Modern, Los Angeles Municipal Art Gallery [http://culturela.org/event/condemned-to-be-modern, accessed 19 July 2017]. In Edinburgh, HERE+NOW, a not-for-profit organization, offer a platform (Hold Me Dear) for communities to share memories of place, as well as running an ongoing programme of community engagement events and urban ‘interventions’ [http://www.thereandnow.org.uk, accessed 6 August 2017].

Bibliography

Primary sources

National Library of Scotland, Edinburgh

Acc.10222/BR: Bartholomew Archive, Business Record

/200. Documents relating to Nelson co-partnership.
/202: Director’s Minute Book No.1, 1919-1964.
/238: Inventories, 1888-1934.
/239. Annual statements and accounts.
/251b. Documents relating to Chambers Street premises.
/252. Papers relating to Park Road (Parkside) premises.
/255. Ground plans, sketches and drawings relating to Park Road (Parkside) premises.
/260. Correspondence relating to Duncan Street premises.
/261. Documents relating to Duncan Street premises.
/265. Architects’ plans and sketches of Duncan Street premises.
/266. Engravings of architect’s impressions and engravings of Duncan Street premises.
/269. Drawings and photographs of premises.
/277: Work in Progress Notebook, 1888-1892.
/282: Jobs Register, 1900-1905.
/300: Day Book, 1888-1892.
/301: Day Book, 1893-1897.
/302: Day Book, 1897-1902.
/316: Order and Cost Book, 1897-1903.
/351: Notebook of James Bain, 1880-1890s.
/391: Dispatch Book, 1890-1892.
/399: Dispatch Book, 1900-1902.
/460: Plate Ledger No.1, 1887-1925.
/474: Record of Maps ‘Taken off the Stone’, c.1899-1907.
/475: Record of Printing from Stones, 1906-1930.
/476: List of Lithographic Stones, undated.
/605: Private Ledger No.1, 1888-1912.
/921: Letters received by John George Bartholomew, 1884-1894.
/940: Incoming correspondence from Cyclist’s Touring Club, 1913-1920.
/1000: Letters Received, 1910.
/1861, folder 1. Letterheads and promotional material.
/1861, folder 2. Promotional material.
/1862, Box 1, Bartholomew catalogues and lists, 1892-1990.
/1863, Box 1, Bartholomew catalogues and lists, 1892-1990.
/1864, Bartholomew prospectuses, 1884-95.
/1865, Bartholomew advertising, 1913-28.
/1881, Album of cuttings of reviews, 1866-94.
/1882, Album of cuttings of reviews, 1893-1909.
/1883, Album of cuttings of reviews, 1906-10 and 1915.
/1901, Box 3: Photographs of Bartholomew personnel.

Acc.10222/PR: Bartholomew Archive, Printing Record

/30c folio 203a: John Bartholomew & Co., Bathymetrical chart of the oceans showing the “deep”s according to Sir John Murray. Edinburgh, 1899.
/66b folio 149: Bartholomew’s General Map of Scotland, printed 3 October 1924.

Acc.5000: Oliver & Boyd Archive


Acc.8291: The Master Printers Papers

/Box 10, Folder 4: correspondence, 1917-1932.

Dep.229: R&R. Clark Archive

/101. Insurance papers.

Dep. 247: T. & T. Clark Archive

Box I: Correspondence with John Bartholomew & Co.
Box II: Correspondence with W. & A.K. Johnston.

Dep.307: T. & A. Constable Archive

/174-189: Case Wages, 1877-1924.
/193-198: Staff Wages, 1901-1924.
/237-239: Binders Wages, 1883-1912.

British Library, London

Maps GOAD.MSS

Edinburgh Proof Maps: 1892 and 1906.
Leith Proof Maps: 1892 and 1906.
Letter Book S: December 1898 — June 1899.
Letter Book T: June 1899 — March 1900.
Letter Book U: March 1900 — December 1900.
Letter Book V: December 1900 — October 1901.
Letter Book X: May 1902 — March 1903.
Letter Book Y: March 1903 — October 1903.
Letter Book AB: July 1904 — December 1904.
Letter Book AF: June 1906 — December 1906.
Letter Book AI: January 1908 — August 1908.
Letter Book AP: March 1911 — September 1911.

Cash Book and Work Ledger.
Plan Register.

Maps Reading Room

Cartographic Items Maps 145.b.6.(1.): Fire Insurance Plan of Edinburgh.
Cartographic Items Maps 145.b.6.(2.): Fire Insurance Plan of Leith.
Cartographic Items Maps 145.b.6.(4.): Fire Insurance Plan of Granton.

MSS. Add. 60511: Papers of Thomas Grindlay

/Correspondence with John George Bartholomew.
/Correspondence with George Philip.
/Correspondence with Mr. Lynch, Department of the Interior, Canada.

C.134.bb.1: Maps and guidebooks belonging to Thomas Hardy

/12: John Murray, *A Handbook for Visitors to Paris; containing a description of the most remarkable objects, with general advice and information to English travellers in that metropolis, and on the way to it* (London: John Murray, 1874).
City Archives, Edinburgh

SL 145, City Architects and Technical Services Maps and Plans

/2/33/1-4: *Four Plans of Dean Park and Blinkbonny*. Edinburgh: Carfrae and Belfrage, 1887.

National Records of Scotland, Edinburgh

GD 311: Records of Alex. Cowan & Sons

/7/66: Cowan & Sons, Notes on the History of Alex. Cowan & Sons, 1827-1944.

University of Strathclyde, Glasgow

GB 249 T-GED/22/1/British Isles/Scotland: Maps and plans in the Patrick Geddes Archive

/399: Bartholomew’s *Tourist Map of Scotland*.
/400: Bartholomew’s *Orographical Map of Scotland*.
/438: Bartholomew’s *Large Plan of Edinburgh and Leith*.

The Fergusson Gallery, Perth

John Duncan Fergusson Archive

/Acc.1996.721: John Duncan Fergusson’s copy of Bartholomew’s *General Map of Scotland*.

Newspaper reports

“Funeral of Sir Thomas Clark,” The Scotsman, 29 December 1900, 6.

“Destructive Fire in Edinburgh: Damage £30,000 to £40,000,” The Scotsman, 21 August 1902, 4.


“Printing Trade and the War,” The Scotsman, 9 May 1918, 6.


Other printed material

Census of Scotland


Post Office Directories


Texts printed pre-c.1920


Novels


Secondary sources


Guldi, J. “What is the Spatial Turn?” *Scholars’ Lab*, University of Virginia Library, 2011. [http://spatial.scholarslab.org/spatial-turn]


