LIST OF ANNEXES

THE DIGITAL REVOLUTION AND HISTORICAL RESEARCH ON TOWNS

The digital revolution has had far-reaching implications for historical research in urban history over the past 40 years, and especially since the advent of the web. Broadly speaking these impacts can be categorised in the following ways.

Digital tools for analysing historical information have become essential parts of research methodologies. Many projects in the 1980s and 1990s used relational databases in order to organise and interrogate data extracted from original sources, for example those developed at the Centre for Metropolitan History under the directorship of Derek Keene (Feeding the City, London in the 1690s and so on). Huge databases of urban populations have been created across Europe and beyond as part of longitudinal studies that shed light on family and occupational structures in early modern and modern towns in ways that were not possible before (or at least not without many person-years of analysis). Data gathering and analysis using relational database software have become a crucial element of funded research projects on towns and cities. Many of these databases are now built with online usage (and hence user-friendly interfaces) in mind, a recent and useful example being Medieval Londoners, based at Fordham University.

Other digital tools and approaches have also come along which extend and enhance the use of digital data relating to towns. **Digital mapping and cartography** (discussed more fully in Annex 4) has become more accessible as a tool for urban research, through free online GIS packages such as QGIS as well as longstanding commercial products from ESRI, cloud-based systems such as Google Maps and newer ones such as CARTO that allow easier creation and sharing of maps/data. Digital mapping of data has therefore become much more accessible in terms of ease of use as well as expense, and is now commonly used by students at Masters and PhD level, as well as by established academics, and also beyond academia by local historians and projects. Digital maps are much more common as outputs of research projects on specific topics, as well as in more wide-ranging projects such as Know Your Place or Layers of London.

Text analysis of marked-up/tagged texts has been a feature of historical research on urban sources for several decades, assisted by, for example, standardised approaches of the Text Encoding Initiative. Qualitative analysis of a different kind is possible by using software such as NVivo. This partly intersects with digital mapping in that geographical information in texts can be tagged and linked to digital mapping. An example of how the two approaches can work together is Locating London's Past, where digitised data and texts with tagged geographical information can be mapped onto a georeferenced map of 18th century London. Another area that has benefited from more accessible digital tools is **Social Network Analysis**, not commonly used by urban historians until relatively recently, but where visualisation/analytical software such as GEPHI makes this methodological approach more accessible.

Digitisation of archival sources (manuscripts, images etc) has also been a major feature of the digital revolution. This has been especially important for urban historians, and some of the pioneering projects have included British History Online (with a huge range of urban content) as well as the Old Bailey Online and London Lives, and major digital resources such as EEBO, ECCO, and the ODNB. Many of these employ various levels of tagging which help to answer

research questions on a wide range of topics. Funding streams such as the AHRC's Resource Enhancement Scheme were instrumental in the creation of many of these in the 1990s and 2000s. Digitisation remains a key strategy for museums, archives and libraries,and in recent years there has been more emphasis on making resources more freely available. This has been particularly relevant for images, including maps, where the British Library, for example, has now made many thousands of its maps available for downloading and use. Projects such as Layers of London have therefore benefited from the digitisation agenda, and also from this increased willingness to share data under for example Creative Commons or Open Government licences.

Finally, it is worth noting the importance of digital repositories, both for academic publications (with the Open Access agenda ever more important) and for data. It is now mandatory for publicly-funded projects to deposit data, and the websites, for example, UK Data Archive or the Archaeology Data Service, allow visitors to download and use these data, depending on any relevant conditions in place.

The digital revolution has, in summary, transformed research on urban history through software and digital tools (increasingly online) applied particularly to large datasets, and through the creation of online resources of different kinds, including digital maps. The rapid pace of change has not been without challenges, of course. These include the reliability of online resources, for example those digitised via OCR; the sustainability of particular media (notoriously, the laser disc output of the 1986 Domesday Book project); the sustainability of project websites; software changes and compatibility (even between versions of the same software from the same manufacturer); the often obscure and undocumented relationship between digital surrogates and original sources. These all feed into an awareness of the limitations of the digital, and of the challenges of sustainability.

This is a table of the types of file used by the HTT and their typical applications. An estimate of the importance of these file types in relation to the work of the HTT given as follows:

1 = critical to the HTT
2 = important
3 = desirable
4 = unimportant

Native file type	Use	Ranking: Importance for archive and back-up	Notes
Adobe Illustrator	Map creation	1	The main software used to create map files. May be large files (up to 100MB), but usually less
	HTT and T&C logos	2	
PDF (editable)	Map back-up	1	Smaller than Illustrator files; useful for back-up
PDF (not editable)	For sending maps and layouts for checking, comment; Back-up of administrative matters (e.g. correspondence)	2	Smaller than editable PDFs
Adobe In-Design files	Creation of map layouts (reverse of the T&C maps)	1	The main software used for layout creation
	Publicity leaflets and brochures and other non-map printing	2	
PDF files of layouts	For sending for checking, comment	2	
PDF print-ready files	Sent to printers (T&C files) and to Oxbow for 'camera-ready' files for atlas printing	1	
Adobe Photoshop files	For certain illustrations	2	Very large files
JPEGS, TIFFs and other image formats	Illustrations	2	Variable in size; huge in number as we now have a large stock of them.
EPS files (Encapsulated PostScript)	Barcodes for T&C maps	2	
Microsoft Excel spreadsheets	Sales figures; income and expenditure figures; book-keeping; ISBN table; publication tally (e.g.,	1 or 2	Small files

	print runs); estimates of project costs		
Microsoft Word documents	Atlas and map texts; gazetteers; administration documents e.g., BT, ESC, other groups' papers; annual reports; returns to accountants; annual returns to Charity Commission; contracts; MoUs; agreements.	Variable 1 to 4	Usually small files; enormous in number
Microsoft Word templates	For stationery etc.	3	
Microsoft PowerPoint files	For lectures	2	Often shared with other HTT people
E-mail files (e.g. .pst files)	Correspondence; as a record of decisions.	Variable	Held by senders and recipients for variable lengths of time
Web files	Files used in the creation and maintenance of the HTT website	1	Held on the website host's database, and by the HTT cartographic editor
Drupal files	Used in the creation of the website		The software behind the website (not held by the CE)
Video files	On-line lectures	Variable	Mostly very large files
Basecamp	File-sharing within the HTT and archive	Variable, but many are 1 or 2	

E

Annex 3:

York – a pioneer in heritage digital mapping and interpretation

The University of York's Centre for the Study of Christianity & Culture and its new brand, Heritage360, has particular expertise in creating visually compelling, richly-layered forms of digital engagement accessible via websites, mobile phones and on-site touchscreens for cultural heritage, commercial and academic partners, including the recent reconstruction of medieval Canterbury supporting education and tourism in partnership with Canterbury Cathedral, Visit Canterbury, Canterbury City Council and the British Museum. It now aspires to use the York Historic Towns Atlas as both context and content for new York-based projects, as explained below.

In 2020, funding was secured for **Recovering Eboracum**, a proof-of-concept project identifying and trialling digital approaches to content creation and delivery using game engine and mobile delivery technologies in partnership with York Archaeological Trust (YAT). The project responds to the challenge of presenting the results of small scale development-led excavations and their findings to visitors unable to access sites physically or to make sense of complex archaeological remains interpretively by setting sites in the wider context of what is known about Roman York. A typical case study – the discovery in Micklegate of a Roman bread oven – was identified by YAT as a useful exemplar of this kind of challenge – and opportunity – to engage – and possibly monetise - larger scale excavations and discoveries planned as part of the larger Eboracum excavation and future museum.

CSCC/H360 have also been involved in a bid to the UK Community Renewal Fund for **Street Life: using York's historic High Streets as heritage catalysts for community renewal**. The project seeks to use archival and community-based research historic and archaeological data to geomap, 3D model and visualise lost spaces of craft and entertainment in Coney Street – one of the city's most important but also most challenged historic streets - including an orientation hub in the city's Guildhall. In-person experiences of musical performances, exhibitions, pop-up activities focused on the history of music and print heritage in the city, including a pop-up printing press, in partnership with Guild of Media Arts, York Music Venues Network, Thin Ice Press and the Printers' Apprentice Restaurant. Workshops exploring themes of Connectivity, Sustainability, Public Realm and Vacant Space will be delivered in partnership with York Civic Trust, Vacant Spaces Initiative, My CityCentre and The Helmsley Group and on adaptive reuse and conservation solutions with York Conservation Trust. Funding decisions are expected soon.

For further details please contact Dr Kate Giles (kate.giles@york.ac.uk) and see examples of projects at:
Centre for the Study of Christianity & Culture https://www.christianityandculture.org.uk/
and Heritage360 https://heritage360.org.uk/

Key developments in digital cartography and implications for the HTT

On-line platforms: CARTO is a widely-used platform (https://carto.com/) with free and paid-for versions, allowing users to upload maps and data. Like other similar products it takes advantage of the move to Cloud-based solutions, which do away with the need to pay for and maintain local servers. Google Maps was really the first to do this, but there are many options now which market themselves as providing 'geo-spatial solutions' for many sectors, including academia. With HTT in mind it is worth mentioning HUMAP, which is a platform that hosts the Coventry City of Culture 2021 historical map and will be hosting Layers of London from this summer onwards. The advantage of these shared platforms comes via economies of scale, absorbing/sharing hosting costs, rolling out fixes and improvements across the board rather than having to maintain lots of individual sites.

Georeferencing: The use of digitised historical maps, georeferenced to fit on modern maps, is an important and relevant development for HTT in particular. At its most sophisticated this is a highly complex process, involving hundreds or even thousands of control points to 'warp' a map from a particular period so that it can be overlaid onto a modern base map. For London, for example, this was first done in projects carried out with and by the Centre for Metropolitan History: Locating London's Past used Rocque's 1746 map, and a parallel project georeferenced Morgan's 1682 map of London. Both maps were georeferenced by Museum of London Archaeology which also extracted all the 'vector' data relating to streets, places, buildings and boundaries. But a less exhaustive approach is possible too, and products such as Klokan Technology's Georeferencer tool was used by the British Library to crowd-source the georeferencing of 3,000 historical maps, with users adding c.4-10 control points to each map to locate it on to a base map. The same tool was later used by Layers of London to crowd-source the georeferencing of 20,000 aerial photos of London from the 1940s. The greater ease of georeferencing generally has enabled Layers of London to host more than 200 different maps and map layers on its website, including two of the HTT's maps (Medieval London and Tudor London). These were straightforward to georeference because they were developed on an OS base.

Layering: As well as Layers of London, other projects/websites also deliver layers of historical maps. These include the National Library of Scotland, whose website is among the best of its kind for simple and easy navigating of historical maps in its collections, using the popular web version of ArcGIS. The Know Your Place project is closest to Layers of London in some ways in that it combines digital map layers with information supplied by the public and by partners in the form of 'records' or 'pins' attached to particular places. These websites, and the very popular HistoryPin, replicate the ways in which commercial websites, such as AirB&B and Rightmove, deliver geographical information, and all are underpinned by the same technologies and principles.

App-based products: these are also common, mostly versions of websites (such as those mentioned above), customised for ease of use on smartphones or tablets. There are relatively few for historical mapping sites, but one example is the VCH's History of English Places app which uses a map interface to link to VCH text. Only a relatively small number, such as HistoryPin, allow users to add content such as photos taken in a particular location via its app.

Digital publishing and its implications for the HTT

Atlases and maps: publication of printed *vs.* digital formats

We have a variety of atlases and maps published and in production. More recent productions create and use vectorised data, and all recent publications have been digitally produced. Digital map and atlas files can be adapted for digital publication – that is, the creation of publications designed to be displayed digitally and read from a screen.

The are many advantages to digital publishing. It is accessible and perceived as easy to use for an increasingly digitally-confident public. It has the potential to reach a much wider and younger audience, which would complement that reached through our printed output. Libraries subscribe to e-books in addition to (or instead of) printed books. Digital publishing can also reach an international audience much more easily. So it might seem the logical choice, either in parallel with printed publication or replacing it.

But there are disadvantages too. There is no single-book file format and sheet maps do not lend themselves to straightforward digital publishing because of their size and other characteristics. There are security issues with the potential ease of illegal dissemination, and it is difficult and expensive to police theft or pursue copyright infringements (especially outside the UK). And there is a potential loss of income from sales of the printed version since e-books are typically sold for less.

Pricing and availability

We have the option of publishing atlas volumes as printed and e-book versions. They could be published simultaneously, offering both the print version and the e-book version[2]. If these two versions were to be sold separately, the price could be the same or different.

Another option is that printed publications could be made available free of charge as digital versions, not simultaneously but at a predetermined point after the publication of the printed version - say five years after publication or after a set number of copies have been sold, print costs recovered, and no large-scale additional sales income is anticipated. Such an intention would however have to be agreed with the publisher as part our contract with them. Digital versions could then be made available from the HTT's website, as is now done with volumes I to III.

Digital security

Once digital data – at least in commonly used formats such as PDFs – are made generally available, they are in the public domain and can potentially undermine sales of printed copies or e-books.[1] However, we have no evidence that the PDFs of maps on the CDs included in Vols IV to VI have led to extensive piracy or loss of sales. (NB, all CD PDFs in these volumes are watermarked). Publishing in e-book format would mean that we would risk the piracy of our volumes, but in practice there may not be a huge market for illegal copies of our publications, such is the limited size of our readership. However, it is a risk that we should be aware of, and the chance of catching thieves is essentially nil.

---

[1] It could be argued that we have already done something like this by publishing BHTA volumes V-VI with a CD inserted in the cover of the printed versions. But we do not see much of a future for the CD format, not least because few PCs can now run them. On line e-books are more convenient to use and can be read on dedicated e-reader devices (e.g., Kindles), and on any computer device that features a controllable viewing screen, including desktop computers, laptops, tablets and smartphones

Copyright and digital rights in images

For illustrations owned by third parties and covered by copyright, to date we have paid for reproduction rights for printed version only (English language, world-wide rights, with a stated number of copies being produced). If an e-book version were produced, we would have to pay additional rights for electronic publishing. However, we propose to have fewer illustrations in future volumes, and the emphasis will still be on acquiring copyright-free material, or acquiring copyrighted material from sources which charge only minimal reproduction fees.

Town & City Historical Maps

The publication of T&C maps is likely to continue only in printed format for the foreseeable future. The format does not lend itself to digital publishing. However, there is no doubt potential to use the maps in derived products, such as apps relating historical information to current mapping, and for educational material (see below). Note that we publish these maps ourselves.

Reading digital publications

The four digital devices most commonly used for reading digital publications are:
• 　　　 Computer monitor screens
• 　　　 Mobile phone screens
• 　　　 Hand-held devices dedicated to the display of publications (e.g. Kindle)
• 　　　 Other handheld devices, such as tablets, used for a variety of purposes
These devices have screens of different sizes and (critically) of different aspect ratios. Thus, digital publications need to be in a file format that can be read by a variety of devices. In practice, there are problems with doing so. While plain text can be readily adapted to differently sized and aspect-ratioed screens (by 'reflowing'), graphics present more problems.

Digital publishing file formats

There are many different file formats used within the publishing industry. The EPUB format is the most widely-supported e-book format and is supported by most e-book readers, except Amazon Kindle devices. Most e-book readers will support PDF and plain text formats. However, these are three file formats among many (at least 30 different file formats are listed on Wikipedia). Most proprietary software includes Digital Rights Management (DRM) software, which restricts access, ties the file format to particular hardware, and prevents the alteration or sharing of files.

Publishers produce e-books in a limited range of file formats, for obvious reasons, and will have restrictions on the size of e-publication that they produce. For example, Oxbow will produce e-book versions of their publications at the same time as the printed version, but up to a maximum size of A4 (210 x 297 mm portrait). Their rationale is that most hand-held reading devices use a screen of 'A' proportions. This size does not fit either with the actual size of our proposed new atlas volumes (243 x 333 mm portrait), nor with their aspect ratio (A4: 1:1.414; our proposed publication: 1:1.370).

To publish in e-book format will therefore require the compilation of a different edition for each volume. The following section explains the implications of this.

Digital text versus digital maps

BHTA volumes contain two main elements: the introduction and gazetteer, bibliography, etc. (essentially text); and maps. In a digital version, the text could be recast to fit into a smaller format (e.g., A4) with relative ease (noting that in-text illustrations would need to be accommodated). However, we would have to pay for the parallel text-setting of a digital version at the same time as the text-setting of the print version. A major point of the maps in our publications is that they should be printed at as large a map scale as possible, affording the overview of a town that only a large sheet gives. Recasting the maps to fit an e-book format would therefore require a change of scale. Map sheets appearing in our new volumes could be reduced to fit an A4 sheet. The resulting maps would measure a maximum of 297 x 187 mm, a reduction to 89% of the original size, which is not huge. In cartography a reduction to 89% would be deemed acceptable — the degree of generalisation would not need to change. They would require only the removal of the scale statement and the scale bar would remain valid. For some maps (e.g., Map 1, the principal map) which have to be paginated anyway ('cut up' into separate map sheets), they could be repaginated specifically for the e-book version, although the time required would need to be paid for.