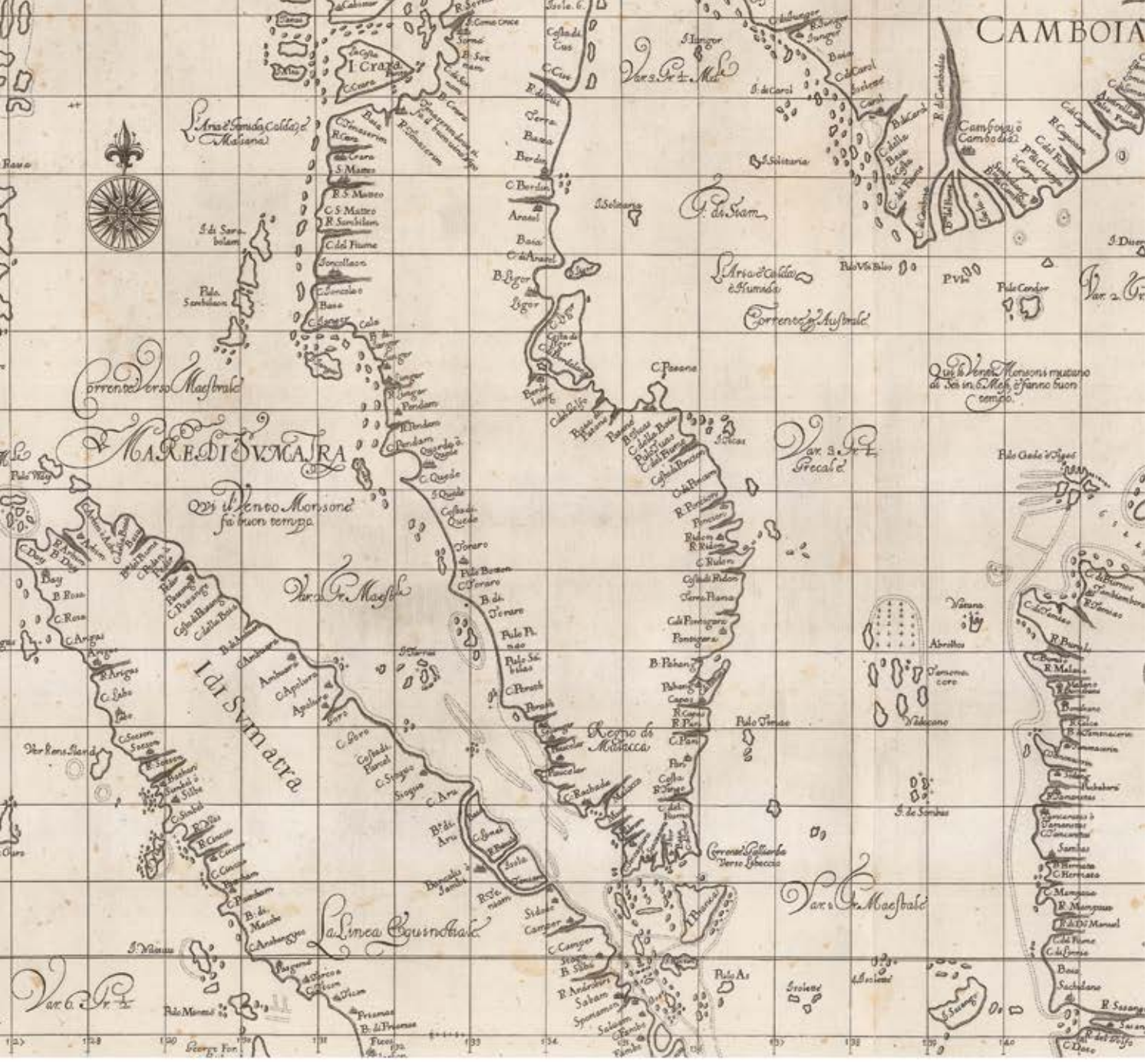
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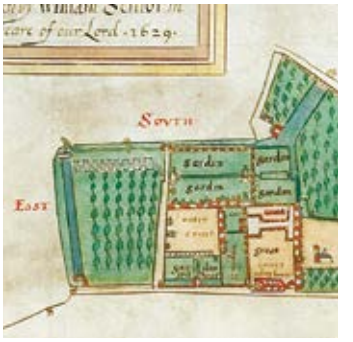
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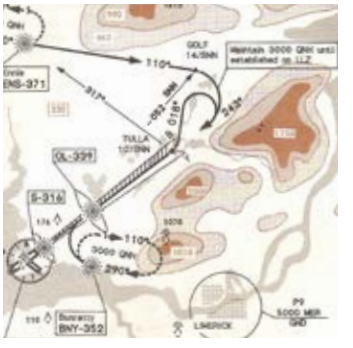
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Front cover William Senior, detail of manuscript map of the Welbeck Abbey estate, Nottinghamshire, the first earl of Newcastle's primary estate. ©The Welbeck Estate Co. Ltd and the Thoroton Society.

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A LETTER FROM THE CHAIRMAN

Hans Kok

Attending the International Conference in the History of Cartography (ICHC) in Amsterdam in July gave me an opportunity to learn, meet new fellow-cartophiles and renew old friendships, while waving the IMCoS banner whenever possible. A thing I noted – and not for the first time – is that cartography is often explained as 'organising space', but it seems to me that it is at least as much a way of organising 'humanity'. It is very apparent that mankind was initially short of ways to travel, communicate and trade from locations where survival was easier. Living along rivers and lakes was advantageous for its ease of transport and for defence. With fewer walls and moats to build made for a cheap form of safety against potential enemies. No wonder early maps often show no roads at all and display a river as wider than the scale the rest of the map would imply. Later on, roads did appear – think of John Ogilby's strip maps – but still, when new canals were dug, they commanded more attention on maps than the roads. Later still, as the road network became important and stagecoach maps came into being, rivers were shown at their proper width. A logical development was that freight would remain on river barges and private transport of individuals became road oriented for reasons of speed and convenience. This also happened in the development of military maps, starting with the Peutinger Tables from the Roman period up and continuing until the Autobahns which Hitler built before World War II. Motorways on today's road maps are not depicted to scale with the rest of the map; this is so to underline their advantage in distance and speed between locations. Aviation has been around for over one hundred years now, during which time many maps were published showing not so much the airways proper but gave simplified route structures of lines connecting destinations comparable to the design of the London Underground map. It seems that both space and mankind need to be reorganised in a more modern way at regular intervals. Where this concept might end is open to debate but travel to Mars will never be in a straight line but it will probably be shown as such when the time comes. Your Chairman is too old to see that happen.

While on the subject of future events, you may want to know that it was announced at the last AGM that I will be stepping down before the end of 2020, at which time I will become an octogenarian. I feel that our Society should not be led by an octogenarian; there are newer days and newer things that require more insight and power than I will be able to muster. A few more Chairman's letters maybe, but we are already looking for a younger, internationally orientated replacement to take over. Suggestions are welcome!

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EDITORIAL

Ljiljana Ortolja-Baird

Exploring is part of being human; people have always wanted to know what lies beyond the next mountain and across the sea, and it was by climbing the mountain and sailing the sea that the world became known. However, few of us adventure into the unknown. Instead, we have depended on the written accounts and sketches of those more intrepid individuals to reveal new discoveries. Before the advent of photography the responsibility of recording them was tasked to artists who accompanied pioneering expeditions.

Sydney Parkinson (1745?–1771) joined James Cook's first Pacific voyage (1768–71). A combined Royal Navy and Royal Society expedition, it set out from Plymouth bound for Tahiti where the 1769 transit of Venus could be measured, and then beyond to search for the illusive *Terra Australis Incognita*. Joseph Banks hired HMS *Endeavour*'s scientific recorders: Parkinson as the expedition's botanical draughtsman and Alexander Buchanan, who died before reaching Tahiti, as the landscape artist. Parkinson wrote in his posthumously published journal: 'I made drawings of a great many curious trees, and other plants; fish, birds, and of such natural bodies as could be conveniently preserved to be brought home'. Parkinson was the first European to draw the Australian continent: its landscape, people, flora and fauna.

A little shy of two hundred years later another expedition was launched carrying an artist who too would claim the title of the first artist to record his impressions of a remote land. On 19 November 1969 Lunar Model Pilot Alan Bean of the Apollo 12 mission stepped out from Saturn V onto the moon's surface with a spiral-bound notebook clipped to his glove. Alas, zero gravity does not easily facilitate sketching; Bean's notebook was full of instructive reminders and checklists of essential procedures. Recording his observations would have to wait on his return to earth. In fact it would not be until his retirement from NASA that he would devote himself to chronicling his lunar experiences. But unlike Parkinson whose job was to accurately draw what he saw, in the service of science, Bean followed more closely in the tradition of nineteenth-century American artists such as Albert Bierstadt and Thomas Moran who had accompanied surveying expeditions into the American West and whose romantic depictions of the magnificent wilderness helped to generate the idea of an American Eden in the public imagination and fuel migration and settlement in this vast land of opportunity. Bean saw the same monochromatic moonscape as other astronauts yet chose to give this grey world colour in his paintings. Talking of his work, he said, "If I were a scientist painting the Moon, I would paint it gray. I'm an artist, so I can add colors to the Moon". Bean recorded more than the geography of the lunar landscape, his work calls to mind the sentiment of patriotism and the recurring themes of exploration, discovery and settlement addressed by earlier American landscapists.


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Counties
1. Northumberland
2. Yorkshire
3. Lincolnshire
4. Nottinghamshire
5. Derbyshire
6. Staffordshire
7. Gloucestershire
8. Somerset
9. Middlesex
Outlying properties
NIA20 - Clerkenwell, London
NIA21 - Pontefract Park, Pontefract
NM34 - Ingoldmells and Addlethorpe
Points in red refer to the pages of mapped estates in the Atlas
Points in green (with a label prefixed 'NM') refer to the pages listing surveyed, but not mapped, estates in the Atlas
Points in black (with a label prefixed 'NIA') refer to estates neither mapped nor listed in the Atlas
1
2
NIA21
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8
9
NIA20
This map is based on data provided by the Historic County Borders Project.

THE WELBECK ATLAS

William Senior's maps of the estates of William Cavendish, first earl of Newcastle upon Tyne

Stephanos Mastoris

The Welbeck Atlas is the later of two magnificent volumes of manuscript estate maps created by the surveyor William Senior (?1565/68–*post* 1641) for each of the main branches of the Cavendish family in the north Midlands of England. It was drawn up in the latter half of the 1630s as part of an extensive survey of the estates of William Cavendish (1593–1676, created the first earl of Newcastle upon Tyne in 1628). The earlier volume, the Chatsworth Atlas, was compiled between 1609 and 1628 for Newcastle's uncle, also called William Cavendish (1552–1627, created the first earl of Devonshire in 1618). Both atlases are still held in their respective family archives. In 2017 the Thoroton Society of Nottinghamshire published an edition of the Welbeck Atlas in its Record Series. This comprises a digital copy of the whole volume on a USB flashcard and an accompanying book containing a detailed catalogue of the maps, commentary and indices. The research for this publication into the origins, production and use of this Atlas is summarised here.[1]

Newcastle was a grandson of the famous Elizabeth Cavendish (*née* Hardwick, popularly known as 'Bess of Hardwick', *c.*1527–1608) and by the late 1620s he had amassed a property portfolio of nearly 110,000 acres spread across seven counties in England (Fig. 1). This had been largely inherited from Bess (via his father, Sir Charles Cavendish, 1553–1617) and his mother (Catherine Ogle, *c.*1570–1629), and acquired in 1618 through marriage to his first wife (Elizabeth Bassett, 1599–1643). To manage and improve this widespread group of properties Newcastle commissioned William Senior to survey all of them and produce a volume of maps of the largest and most significant estates. This programme ran from 1629 to 1641 but was then interrupted by the start of the Civil War, in which Newcastle was an ardent supporter of King Charles I and played a leading military role during the first few years of the conflict. Following his defeat at the battle of Marston Moor Newcastle went into exile in 1644 and did not return until the restoration of the monarchy in 1660. Deemed a traitor by the Commonwealth, most of Newcastle's property was confiscated and sold in the early 1650s, but during the 1660s, he relentlessly re-assembled his property portfolio and even added to it by acquiring Nottingham Castle and its estate in 1663.[2]

Fig. 1 England: showing the location of the estates of William Cavendish, earl of Newcastle in *c.*1641. Stephanos Mastoris & Andrew Nicholson.

The structure and contents of the Atlas

The Welbeck Atlas is a large folio volume of 67 leaves, each measuring on average 686 x 401 mm (27 x 15.75 in), with its original binding largely intact. It lacks both title page and colophon but has an incomplete table of contents on the first vellum leaf. The Atlas contains 81 maps depicting about 130 individual settlements, together with annotations giving the acreages of an additional 38 properties that were surveyed but not 'platted' (*i.e.* mapped). Seventy-one of these maps are described in their title cartouches as surveyed by William Senior and a further seven are presumed to be by him. The remaining three were surveyed in 1632 by Huntingdon Smithson (grandson of Robert Smythson, the celebrated Elizabethan architect), who probably acted as Senior's assistant. The maps depict or reference over 106,000 acres of land in seven English counties: Derbyshire, Gloucestershire, Lincolnshire, Northumberland, Nottinghamshire, Somerset and Staffordshire. As was standard practice this Atlas was originally accompanied by at least one written 'Book of Surveys' that listed the tenant and size of every plot of land within each estate, with information on land use and value. This volume is lost, but a late seventeenth-century copy of a selection of the Nottinghamshire surveys survives amongst the Newcastle papers.[3]

Of the 81 estate maps 21 are drawn on single pages (Fig. 2), 37 on two pages, three occupy three pages and twenty are within composite maps on single or double-page spreads. In nine instances the shape of the estate



Fig. 2 Meering, Nottinghamshire. A single-page map showing a now-deserted settlement in the valley of the river Trent, close to Newark. Besthorpe village, at the top of the map, is not a Newcastle property. Welbeck Atlas, p. 33: William Senior, 1630. ©The Welbeck Estate Co. Ltd and the Thoroton Society.



Fig. 3 Welbeck Abbey estate, Nottinghamshire. The earl of Newcastle's primary home. Welbeck Atlas, pp. 3–4: William Senior, 1629. ©The Welbeck Estate Co. Ltd and the Thoroton Society.

surveyed required an extension of the map beyond the edge of the page, and shaped paper flaps were used for this. Most of these seem to have been applied after the main map was completed as a result of the acquisition of additional land. A further eleven maps that were created by a number of other surveyors between 1608 and *c.*1750 are known to have been pasted or bound into the Atlas either during or after its creation. Six remain and a note on the inside front cover lists the other five that had been removed in 1774.

Most pages of the Atlas are numbered with Arabic numerals near the top outer corner, but there is evidence that the volume had been paginated at least once (and possibly twice) before. The 'Table' of the surveys that begins the volume is arranged in two columns. The main entries for Nottinghamshire and Northumberland are written in the same hand,

while a second hand has written those for Derbyshire and Staffordshire and a third for Gloucestershire and Somerset. The lists for Nottinghamshire and Derbyshire have a number of additions written by at least three other hands and many of these refer to new and amended surveys carried out in the later 1630s. This suggests that the table was probably begun in the mid 1630s but not completed until after 1640 when the page numbers were added.

The maps are grouped by county in the following sequence: Nottinghamshire (19 maps), Derbyshire (27), Staffordshire (9), Northumberland (20), Gloucestershire (3) and Somerset (3). Within each county group the surveys begin with Newcastle's principal residence there. Thus Welbeck heads the Nottinghamshire section (Fig. 3), while Bolsover (Newcastle's second seat) comes first in Derbyshire. The Staffordshire section begins with Blore, the former seat of the Bassetts, the family of Newcastle's first wife. Likewise, in Northumberland Bothal comes first as this was the seat of his mother's family, the Ogles, and the small Somerset section begins with Knighton Sutton, which had been the residence of Newcastle's grandmother's third husband, Sir William St Loe. The rest of the properties in each county seem to have been arranged by the *charge* (a group of estates administered by a single bailiff) in which they were located.

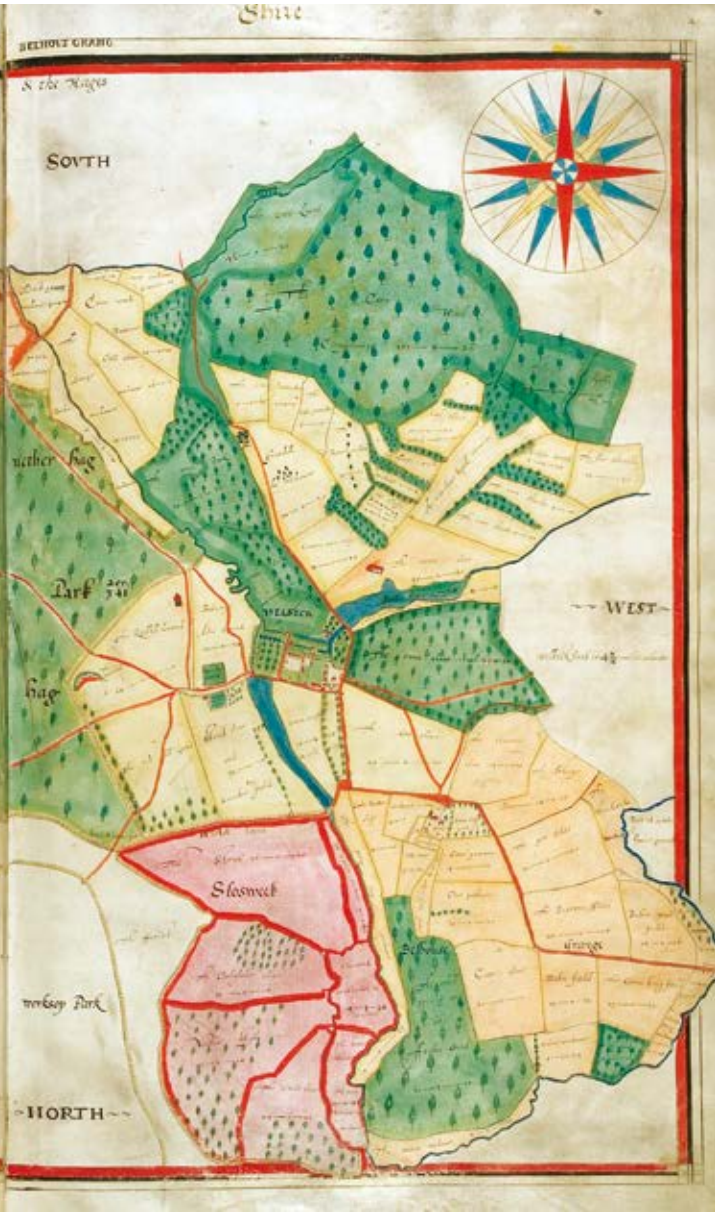




Fig. 4 Welbeck Abbey estate, Nottinghamshire. Detail of the main map (Fig. 3) showing the abbey and its gardens. Welbeck Atlas, p. 4: William Senior, 1629. ©The Welbeck Estate Co. Ltd and the Thoroton Society.

In addition to illustrating the buildings and grounds of these principal residences (Fig. 4), the rest of the estate maps in the Atlas depict a wide range of environments. Three towns are mapped in detail – Chesterfield (Fig. 5), Buxton and Bolsover – together with around one hundred villages and hamlets which are surrounded by a variety of landscapes, ranging from open moorland and medieval hunting parks to fully enclosed arable and pasture land. Several long-distance roads and pack-horse routes are delineated in some of the Nottinghamshire maps, while a few for


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Ballocke holme
2 — 2 — 13



Fig. 6 Kingsley, Staffordshire. Detail showing a water-powered slitting mill for making iron bars located on a tributary of the Churnet river. Welbeck Atlas, p. 78: William Senior, 1631. ©The Welbeck Estate Co. Ltd and the Thoroton Society.

Derbyshire and Staffordshire depict some early industrial sites for processing lead and iron (Fig. 6).

All the maps appear to be fair copies drawn up from written and measured field surveys that no longer survive. The way in which the double-page maps are drawn up to the gutter of the Atlas and not into it, indicates that they were entered into an already-bound volume. There is no evidence of pricking on the surface of the sheets to suggest direct copying from earlier paper versions. It is therefore unclear how the data was transferred accurately from the original surveys. However, a number of contemporary corrections are evident. One of the surveys was copied twice, the first version being discarded for some reason by having an additional leaf of the Atlas stuck over it, and the second copy drawn further on in the volume. Three page-stubs, a quarter of the way through the Atlas, suggest that either further deletions were made during its creation or that the volume was made up of some recycled folios whose used leaves were trimmed back to the gutter after binding. The third of these stubs is slightly wider and a small portion of an unidentified survey map is visible. The instruction, 'Paste this downe' is just legible and suggests that at least two of these excised leaves were stuck together in a manner similar to that used to cover up the cancelled map mentioned above. In several instances whole or parts of maps have been replaced with second versions made in the later 1630s following additional surveys of recently acquired extensions to the estates. The Atlas also contains eleven blank pages. One occupies half of a double-page spread with a cancelled duplicate map drawn on the other page. The remaining ten blank pages are grouped in six double-page spreads at the end of the county sequences. The numbering of these double-page spreads indicates that five leaves are missing from the Atlas and were extracted after the volume was paginated.

Fig. 5 Chesterfield, Derbyshire. Detail showing the town plan, including the church with its famous twisted spire. Welbeck Atlas, pp. 43–44: William Senior, 1633, with possible revisions in 1637. ©The Welbeck Estate Co. Ltd and the Thoroton Society.

Of the six surviving maps that are not part of Senior's survey, two date to 1608 and 1616. The first of these was surveyed by John Smythson (d. 1634), the architect and father of Huntingdon Smithson. Both relate to the enclosure of land near Welbeck by Newcastle's father, Sir Charles Cavendish, which had resulted in his being prosecuted by the Crown in 1612 for encroaching onto forest land.[4] It is therefore understandable that these two maps should have been added to the Atlas during its compilation two decades later. The remaining four non-Senior maps were created and added considerably later: *c.*1663 (by Edmund Browne, active 1636–64); in 1665; early in the eighteenth century; and in 1725 (by John Stanley, active 1710–28). The five maps removed in 1774 also seem to be later additions, created in the early eighteenth century.

Cartographic design and accuracy

In their most complete state Senior's surveys follow the standard format for seventeenth-century estate cartography with a cartouche describing the location and the owner of the land, a second providing details about the surveyor and the date the survey was undertaken, a compass rose and a scale bar surmounted by a pair of dividers. However, in many instances some of these features are not present. Only ten maps are decorated with compass roses, with the majority on the maps of Nottinghamshire and Derbyshire estates (four and three respectively), while those for Staffordshire, Gloucestershire and Somerset contain one each. None appears within the Northumberland maps. The designs used are also very varied, not only by the numbers of points shown, but also in the colours used and the overall draughtsmanship. Furthermore, the absence of compass roses on the majority of the maps cannot be attributed to lack of space, so once again this suggests a number of draughtsmen may have been involved in

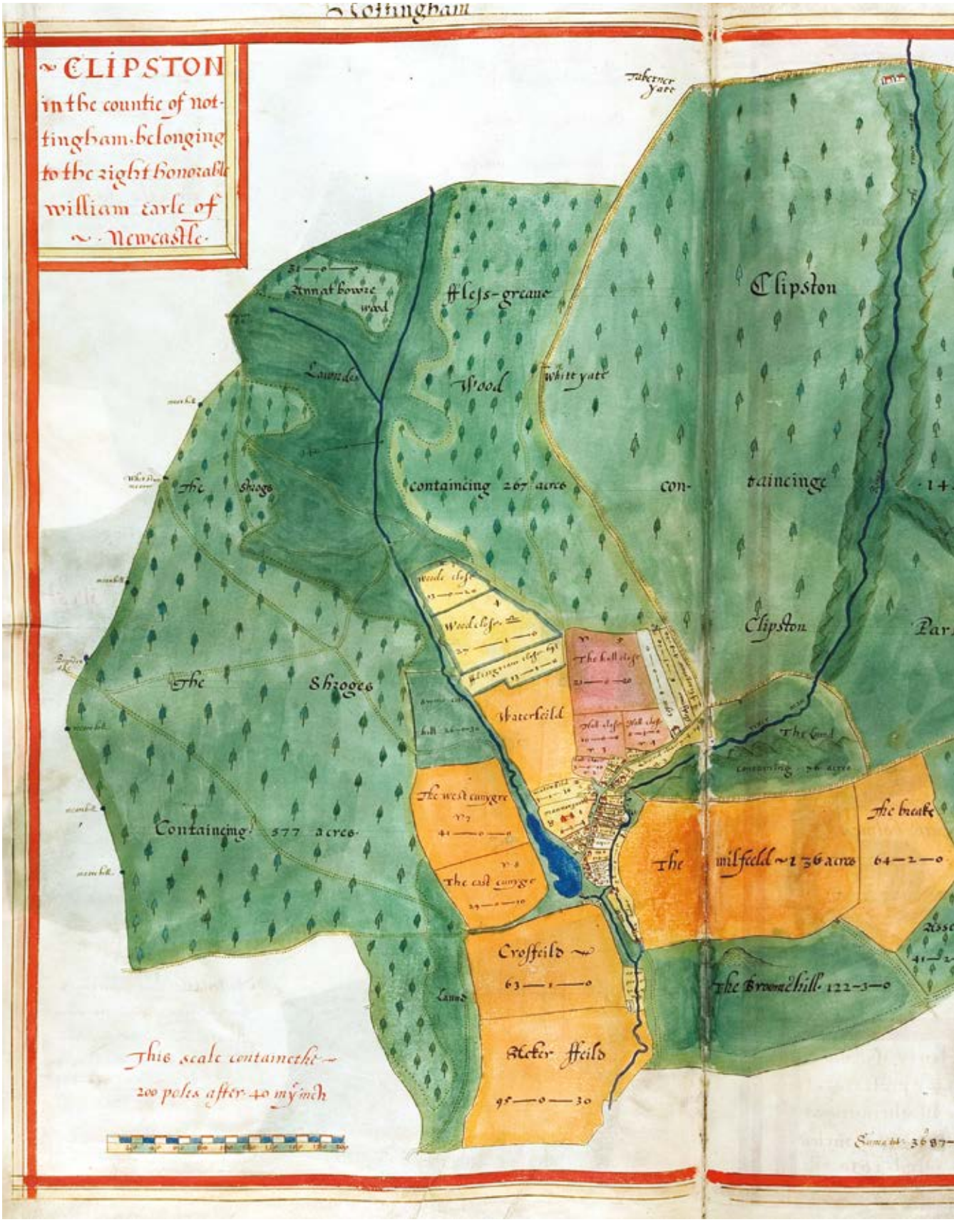

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Fig. 7 King's Clipstone, Nottinghamshire. On the map of this important royal hunting park the compass rose is orientated west. The boundary pale and landscape are clearly depicted (discussed fully in James Wright, *A palace for our kings*, Nottingham: Triskele Publishing, 2016). Welbeck Atlas, pp. 31–32: William Senior, 1630. ©The Welbeck Estate Co. Ltd and the Thoroton Society.

producing the Atlas over a long period and that supervision by Senior was not close. The orientation of the maps also varies according to the county in which the estates lay, but overall around 35 percent of maps have south at the top edge, 25 percent the north, 19 percent the east and 12 percent the west (Fig. 7). Most of the remaining 9 percent are orientated to the south-west.

Two systems of scale were used for both the surveys and the maps drawn from them. That of 16 perches (or poles) to the inch was most widely used for the surveys; if the area was less than 1,200 acres in extent, the resultant maps were usually drawn at this scale as well.[5] For larger areas the surveys were usually mapped at the reduced scale of 32 perches to the inch, or sometimes 64 perches to the inch for very large tracts of land. About 60 percent of all the maps were based upon these scales (best suited to the four-perch surveying chain that was becoming widespread at this time), while the remaining surveys were based on a scale of 20 perches to the inch, with several maps of larger areas drawn at 40 perches to the inch. Many of these areas comprised either steep hilly terrain, woodland or extensive tracts of open land. In two maps both types of scale were used. For the map of Chesterfield 32 perches to the inch was used for the town centre and 20 perches to the inch for the common waste of Grassmoor to the south. A map of Cheadle is more confusing, where Cheadle Common and Kingsley Moor are stated to have been surveyed at 16 poles to the inch while the adjoining Cheadle Park was surveyed at 20 poles to the inch. Furthermore, the preceding map showing Kingsley village and land by the River Churnet had been drawn up at 40 perches to the inch. These variations may possibly have arisen from the work of two survey teams working simultaneously with differing terms of reference.

Scale bars are included in 36 maps, ranging considerably in size and design. The majority show lengths of 90, 100, 110, 160 perches at 16 or 32 perches to the inch, or of 200 perches at 20 or 40 perches to the inch. Most have at least one division before the zero point and this is used to provide subdivisions in single or double units. Around a third of the scales are drawn



Fig. 8 Detail of Litchurch, Derbyshire. In just eight instances are a pair of dividers illustrated positioned on the scale bar. Welbeck Atlas, pp. 63–64: William Senior, 1631. ©The Welbeck Estate Co. Ltd and the Thoroton Society.

as double bars. Fifteen maps are embellished with drawings of a pair of dividers, but in only eight instances is this instrument shown surmounting the scale bar (Fig. 3). The rest are either lying parallel with it (Fig. 8) or completely separated from the bar in a different part of the map.

In general the quality of William Senior's survey work and its resulting cartographic representation is very high. In a sample of twelve maps, including one from each county and of a variety of landscapes, the planimetric accuracy is impressive. Regardless of the direction of linear traverses across the maps their accuracy remains consistent at over 90 percent. The least accurate are those covering large areas of upland or hilly terrain. This may suggest that Senior carried out these surveys with a basic theodolite or other instruments that did not take account of the surface distances of steep gradients. During the period Senior was undertaking surveys his compass bearing would have been to the east of True North by 5 degrees in 1630 and 3 degrees by 1640.[6] There are several instances when the compass bearings written on the maps are skewed by 10 to 15 degrees and in some instances completely inverted. In hilly areas some drift of orientation by about 5–10 degrees is also noticeable. Such problems probably also account for the poor orientation in the mapping of the Trent and Manifold rivers. Even taking account of later changes due to riparian erosion, their orientation is incorrect by up to 30 degrees in places, especially when their course is depicted at the extremity of the maps. Conversely, roads and trackways through both open land and within villages and towns are mapped with great accuracy. Not only would these routes have provided the most convenient means of access to the survey team, but they may also have provided the baselines and other key survey points for Senior's work.

Annotations for estate management

Within the body of the maps each parcel of land is annotated with its acreage together with other information in a variety of combinations that include field name, tenant's name and sometimes the land use. The tenants are identified either by name or by a reference symbol (astrological or alphabetic), and a number. The closes of those tenants holding more than one property were allotted numbers by the surveyors, starting with their principal house and yard or croft. In estates with demesne holdings or a major tenant the numbers tend to run in a clockwise sequence around the lordship, but for lesser tenants the pattern is far from uniform. In most maps the total acreage of the estate is listed, often at the bottom right-hand side, and in a number of instances reference is made to preceding or succeeding maps whose acreages are included in the total. Where the maps contain large landscape features such as parks, the circumference of these is sometimes given. A sum total of the acreage of Newcastle lands within a county is given at the end of each shire sequence, except Staffordshire. As mentioned above, the maps also contain brief information about the acreages of nearly forty estates that were surveyed but not mapped. There are no annotations suggesting subsequent audits of the

estates and no reference to their sale in the early 1650s after confiscation by the Commonwealth because of Newcastle's support for the monarchy during and after the Civil War.[7] Likewise, the Atlas is silent on the programme of repossession by Newcastle following his return to England from exile in 1660.

Comparing entries in the 1670's transcript of part of the Nottinghamshire section of the lost Welbeck Book of Surveys with the relevant sections in the Atlas it is clear that much tenurial information was omitted from the maps. They do not show an individual tenant's holdings in commonable fields (although sometimes the numerical size of the holdings here are recorded in the map), neither do they record the number of 'gates' (the right to graze an animal on the common pastures) held by tenants, nor their holdings in 'brecks' (areas of commonable or forest land taken into temporary cultivation). Furthermore, unenclosed holdings by freeholders in common fields are silently included in the maps and within the total acreages recorded for this land.

Use of astrological symbols and colour

Astrological glyphs and Arabic numerals are used in around 40 percent of Senior's maps in the Welbeck Atlas to identify the holdings of some or all of the tenants. This combination of symbols and numbers would have enabled the corresponding entries in the survey book of the estate to be quickly located. Senior describes the system in the preamble to his written survey of Glastonbury (Somerset) made in 1628 that is included in the Book of Surveys accompanying the Chatsworth Atlas.

> All which demesnes, being set by lease to diverse tenants for term of years or life, are distinguished one from another (in a platt and description thereof) by several characters, and alphabetical letters, and a certain number placed with the character or letter in the description of each parcel of land (except a tenant have but one parcel), which numbers are to be referred to their answerable numbers in the margin of this book, showing the name, measure, quality of each parcel, with the total sum of acres contained in every tenement.[8]

In this survey, and another of the same year (Latimer, Buckinghamshire), the symbols used are very varied and not based on astrological glyphs, but by 1629 Senior had refined his system and the symbols most

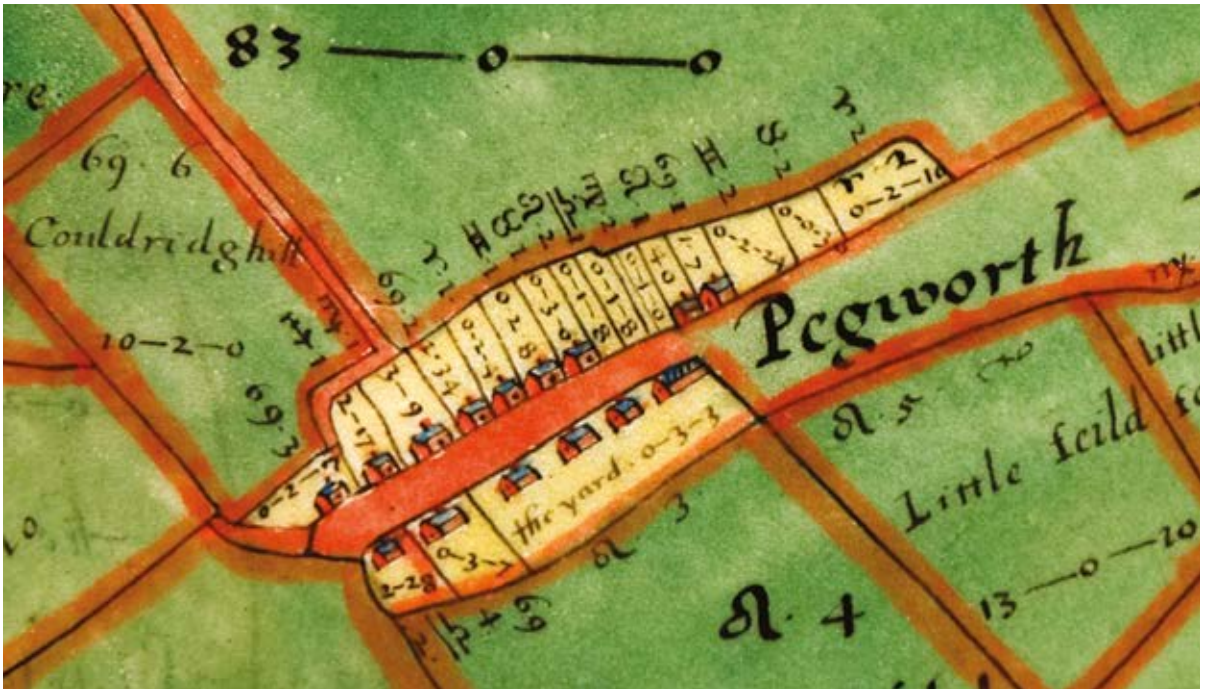
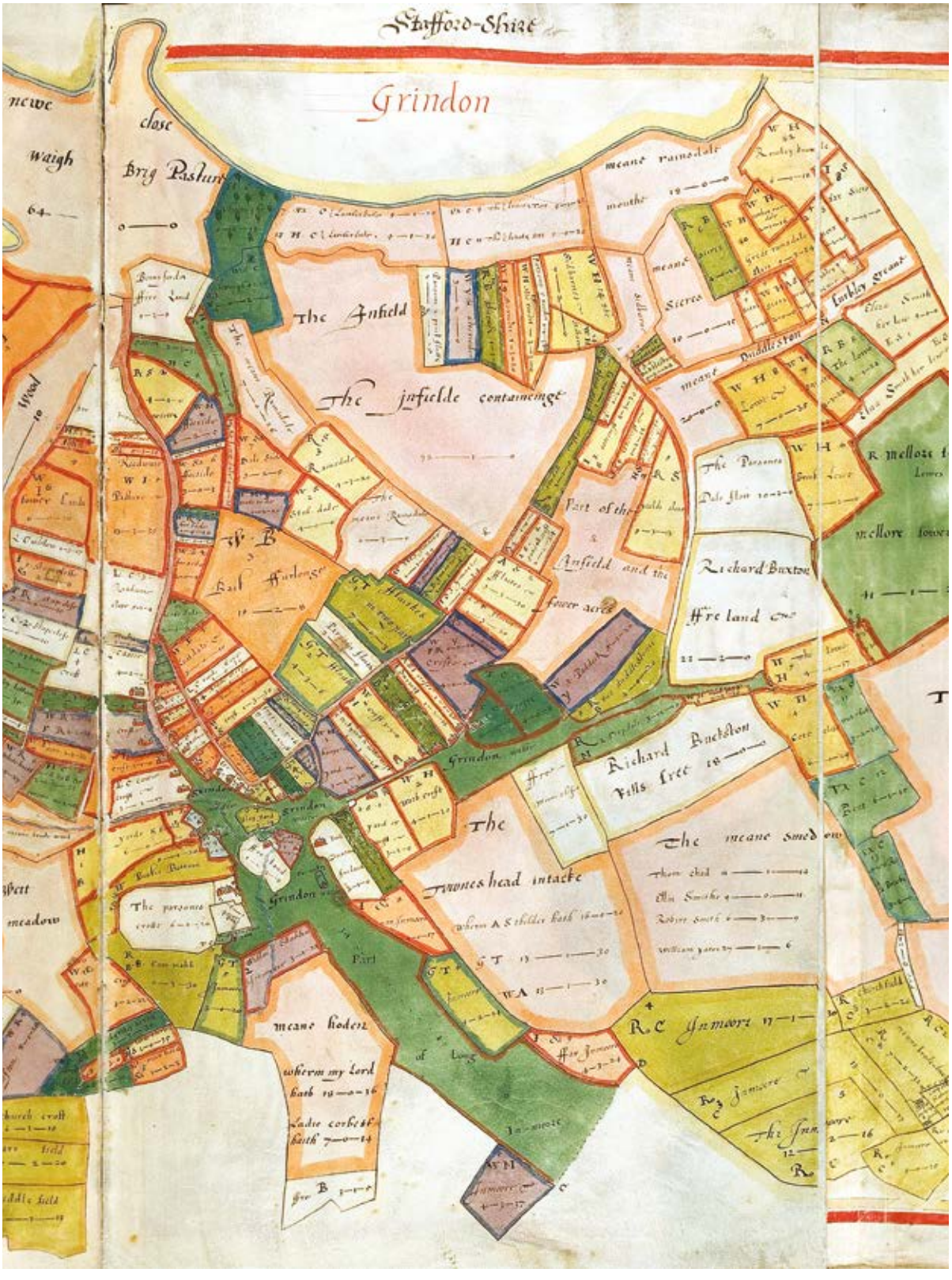


Fig. 9 Longhirst & Pegswood, Northumberland. Detail showing the use of astrological glyphs to denote individual tenancies within Pegswood village. Welbeck Atlas, pp. 95–96: William Senior, 1632. ©The Welbeck Estate Co. Ltd and the Thoroton Society.


Stafford-Shire
Grindon
newe
close
waigh
Brig Pasture
meane raindale
meane
Sieres
Middleton
The Anfield
The infielde containemge
Part of the
Anfield and the
fower acres
Richard Buxton
Fre land
Richard Buckston
Fells free
The meane
Grindon
The
Grindon
The parsonnes
Part
meane hodes
wherin my Lord
hath
Ladie corbet
hath
of
R. C Ynmoore
Ynmoore

used are the twelve signs of the Zodiac. If further tenants had to be identified, the glyphs for the seven (then known) planets, the Major Aspects and two Lunar Nodes were brought into play.

In those maps that include the glyphs the traditional astrological sequence within each group of symbols is rigidly maintained. A good example of this can be seen in the map of Pegswood Town, Northumberland (Fig. 9). When gaps appear in the sequence of astrological symbols within one survey map it may indicate that an estate nearby was surveyed at the same time and the missing symbols used to represent tenants only located there. This seems to have been the case in the surveys of the contiguous Nottinghamshire estates of Sibthorpe, Flawborough and Car Colston, where gaps in the sequence of astrological symbols used in one survey are found in the other two. There is no apparent logic to the way in which most of the glyphs have been allotted to tenants. They certainly do not follow any hierarchy based on size of land-holding, nor any geographical sequence based on location of residence within the lordship. The only exception to this is the use of the glyph for Aries (traditionally the first sign of the Zodiac) to denote the holdings of the principal tenant or the demesne lands. The sequence for the rest of the tenants was probably determined by the order in which they were examined by the court of survey that would have been held in each estate or by their presence on an earlier rental.

The percentage of maps using these symbols varies considerably between each county. Around half of the Nottinghamshire and Staffordshire maps include astrological glyphs, compared with just over a quarter for Derbyshire and about a third for Northumberland. They are not found in the Gloucestershire maps, but all of the Somerset maps include them. This variety suggests that several teams undertook the initial written surveys using differing numbering systems to identify the tenants. Furthermore, none of the surveys made after 1638 use the glyphs, and this, combined with a noticeable difference in colour and layout in the later maps, may also point to less involvement by Senior as the Atlas neared completion.

In both the Welbeck and Chatsworth Atlases Senior uses a remarkably wide range of vibrant colour washes on his maps, mainly to distinguish between tenants and sometimes to denote differing land uses. In the Welbeck Atlas the four most used colours are green, followed by a pale yellow, orange and buff. Others include pink, maroon, a more vibrant green and a mid-brown (Fig. 10). Further variations are achieved by the use of contrasting colour-washed borders of red, blue-green, orange and even black. Those parcels of land not owned by Newcastle are left uncoloured or with a very light colour-washed border. Woodland and larger tracts of rough pasture in upland areas usually appear as a dark green, while unenclosed common or common arable fields are most often a sandy brown. Senior was extremely skilful in using a wide colour palette to provide layers of tenurial information, but this system was not uniform, and colour could sometimes be used to indicate tenancies, land use or neighbouring owners. In at least two instances the colouring of certain portions of a map has been altered.

William Senior

Compared to many surveyors of the period, William Senior's professional practice has been fairly well documented, thanks largely to the considerable quantity of his dated work that has survived. However, his origins are still uncertain, but thanks to recent research by Adrian Henstock, it seems likely that Senior was born in the South Yorkshire parish of Bradfield, where a John Senior had his son, William, baptised in 1565. This date almost tallies with a brief statement that Senior made about his own career in September 1617 when he describes himself as 49 years old, a gentleman of Chesterfield, and that he 'Hath practised the art of plotting and other mathematical arts by the space of thirty years last or thereabouts'. Furthermore, the major landowner in Bradfield at the time was a Richard Wortley (d.1603) and Senior's first known commission in 1600 was a survey of property belonging to Wortley. The text of this is included in the 'Terrier' or Book of Surveys that accompanied the Chatsworth Atlas. The date of Senior's birth as well as the date of his first known surveying commission suggest that he began working in the late 1580s, probably apprenticed to an established surveyor. Given the extensive work by Christopher Saxton (*c.*1540–*c.*1610) in south and west Yorkshire in the 1590s and that two of his surveys are included in the Chatsworth Book of Surveys, it is tempting to speculate that Senior might have been apprenticed to Saxton. Senior's self-advertised skills were varied, describing himself in 1609 as a 'Professor of the Mathematiques' and by 1637 as a 'Professor of Arithmetique, both

Fig. 10 Grindon, Staffordshire. A detail from this triple-page map of Grindon demonstrates Senior's rich colour palette to provide tenurial information and land usage. Welbeck Atlas, pp. 75, [75a] & 76: William Senior, 1631. ©The Welbeck Estate Co. Ltd and the Thoroton Society.

natureall and in Loggars, also Geometrie, Astronomy and Dialling as well instrumentall as Gnomonicall'. These phrases suggest Senior earned part of his living from teaching surveying and mathematics and possibly basic instrument making. He was probably working in Hull by 1607 and wrote a treatise (unpublished) on the use of globes, citing observations made there in 1608. He was also acquainted with Edward Wright (1561–1615) the mathematician and cartographer.[9]

In 1604 Richard Wortley's widow, Elizabeth, married William Cavendish, the first earl of Devonshire and uncle to Newcastle and it seems likely that Senior's early work for Wortley led to a series of major commissions from both branches of the Cavendish family between 1609 and 1641. Initially, Senior was employed by Devonshire from 1609 until 1614 and again in 1616, when his property portfolio was enlarged following the death of his brother, Henry. This work lasted until 1619, after which there was a further gap in his employment that was only resumed during the brief tenure of the title by the second earl between 1626 and 1628.[10] Much of this work is recorded in both the Chatsworth Atlas and its associated Book of Surveys. Senior then began to be employed by the earl of Newcastle from 1629 and this continued until at least 1641 but it too was undertaken over a number of periods. From the dates written on the maps in the Welbeck Atlas it is clear that he organised his work in the field in the following manner. The Nottinghamshire estates were the first to be surveyed in 1629–30 followed by those in Derbyshire in 1630–31, Staffordshire in 1631–32, and Northumberland in 1632. There was then a break (apart from updating his survey of Chesterfield in 1633) until 1636–38 when Newcastle's lands in Somerset and Gloucestershire were surveyed along with some additional properties in Nottinghamshire and Derbyshire. Nothing was recorded during 1639, with Senior's three last-known surveys being undertaken in 1640. During the breaks in his work for both branches of the Cavendishes, Senior undertook surveying commissions for at least ten other landowners in Derbyshire, Leicestershire, Staffordshire and Yorkshire. After 1640 there are no further references to him nor are any more examples of his work known. However, evidence from later documents suggests that Senior was employed by Newcastle until at least 1641, after which he disappears from the written record. The date and place of his death are unknown.

Senior's cartographic practice was very extensive. Between 1600 and 1641 he is currently known to have surveyed over 300,000 acres and created around 170 maps. Such productivity was partly due to having very wealthy clients who could afford to provide him with a number of assistants, but also because he was a fast worker by the standards of his contemporaries. In 1632 he surveyed his greatest amount of land in one year – over 40,000 acres for Newcastle as well as a further 13,227 acres for Sir John Harpur in Derbyshire and Leicestershire. Assuming the whole of the year outside the main growing season (May to September) was available for work, this suggests he was surveying an average of over 250 acres a day, which is at the higher end of the amount of land expected of most seventeenth-century surveyors. It suggests that Senior may have used advanced equipment including a simple (azimuth only) theodolite. This instrument would certainly have been necessary to survey the large tracts of open moorland that feature in some of the Derbyshire, Staffordshire and Northumberland maps. The identities of only a few of Senior's assistants are known. Huntingdon Smithson has been already mentioned, but others are documented in the Chatsworth Atlas and archives. In May 1610 Thomas Hobbes (1588–1678), the philosopher and tutor to the future second earl of Devonshire, assisted with a survey of Little Longstone and Monsal Dale in Derbyshire. The following year Senior's son John was helping him and in 1616 a William Hill assisted him with a survey of Tutbury. It is not known if he had a number of survey teams working for him simultaneously, but as discussed earlier, some maps suggest this, as portions were surveyed at the same time at different scales.[11]

A chronology for the creation of the Atlas and its subsequent use

As the Welbeck Atlas lacks both a title page and concluding colophon the chronology of its production is unclear. To compound this problem it is evident that it is an unfinished document. Throughout the volume both its decoration and calligraphy show omissions and incomplete draughtsmanship, while maps of estates known to have been owned by Newcastle at this time are lacking. So the date during which the Atlas was created can only be surmised from a number of sources. Most obvious are the dates of surveys written on the maps. The earliest is 1629 and the latest 1640. However, these are the dates when the surveys were undertaken in the field, not when they were transcribed into the Atlas, which could have taken place substantially later. But it is unlikely that work continued after the outbreak

of the Civil War in August 1642, and especially after Newcastle's defeat at the battle of Marston Moor and his subsequent self-imposed exile on the Continent from July 1644.

Despite being left unfinished by the summer of 1642, the Atlas has a number of features that suggest it was being used as a working document several years before. The annotations that provide total acreages for each county and the grand total of survey acreages at the end of the Atlas do not tally and this suggests that it was being used for administrative purposes by early 1638. Some comments in both Newcastle's papers of the 1650s and in his biography, written in the early 1660s by his second wife, Margaret Cavendish (*née* Lucas, 1623–1673) show that the benchmark date of a valuation and description of the pre-war estates was 1641.[12] By this date Senior and his team would have had time to draw up the last dated maps in the Atlas (Tissington and Langley in Derbyshire) surveyed in the previous year. Furthermore, in the transcript of parts of the Nottinghamshire section of the Welbeck Book of Surveys the written accounts of some of the estates surveyed in 1629 and 1630 had been amended to reflect subsequent divisions and amalgamations of properties during the late 1630s. But these changes were not recorded on the maps within the Atlas.

More detailed evidence occurs in the chronology of Senior's other surviving survey work after 1629. Although this shows him undertaking commissions from a number of other landowners in Derbyshire and the West Riding of Yorkshire it also hints at periods of reduced activity in 1634 and 1638, with nothing surveyed in 1639. The amount of surveys he carried out for Newcastle between 1629 and 1633 (all of his estates in Staffordshire and Northumberland and most of Nottinghamshire and Derbyshire), in addition to 39,565 acres for Sir John Harpur in 1633, would have left him little time to draw up fair copies into the Atlas before 1634. Furthermore, in July of that year Newcastle entertained King Charles I at a scandalous cost both at Welbeck and Bolsover, where a masque commissioned by Ben Jonson was performed. Perhaps this would also have been seen by Newcastle as a timely opportunity to show off the first phase of this lavish record of his extensive estates?[13]

In 1636–37 Senior updated some earlier surveys and also documented and mapped the estates in Newcastle's 'Western Lands' in Gloucestershire and Somerset, so that an apt time to assess the total acreage of each county would have been very late in 1637 or early 1638. Again, Newcastle's personal circumstances may also have influenced this part of the project, as in March 1638 he was appointed Governor of the king's son (the future Charles II) and his move to Court may have required this work to be brought forward before Edwinstowe in Nottinghamshire (surveyed in June 1638) and the Bassett estates in Derbyshire (1640) could be included.

The survey campaign for Newcastle does not seem to have included certain properties known to have belonged to him at this time. The majority of these unrecorded properties comprised individual houses and small parcels of land mostly of low value (the one exception being Newcastle House in Clerkenwell, London, which had a rental value of £100 a year), so it would have been impractical to illustrate them cartographically. However it is unclear why they were not at least listed along with the other 'not platted' properties. More surprising is the omission of any reference to three fairly sizeable freehold estates: Mansfield and Mansfield Woodhouse, Newton in Nottinghamshire (with a combined annual rental value of over £110), and Little Longstone in Derbyshire (£63), and Newcastle's considerable leasehold property in Yorkshire (Pontefract Park).[14] The most likely explanations for this lie with William Senior's age and the onset of the Civil War. Although the date of Senior's death is not known, by the early 1640s he would have been between 70 and 75 years old and so quite possibly no longer able to travel or undertake surveys. He may even have died before the War broke out.

Newcastle's decision in 1629 to appoint Senior to undertake a uniform survey of his properties signifies his progressive approach to estate management, and this was equally applied to his administrative staff and the detailed documentation they had at their disposal. It is clear from the surviving leases of Newcastle's properties that there was a significant increase in rental income after each survey was completed. The location of the Atlas, the Book of Surveys as well as the other estate records during Newcastle's sixteen-year exile abroad is not known, especially for the periods when Welbeck was garrisoned by Parliamentary forces between August 1644 and November 1645. Certainly a large quantity of muniments from before the War has survived to this day, and these were in use during the conflict. Newcastle's key administrators, his long-serving secretary John Rolleston (*c.*1597–1681), together with Robert Butler and James Whitehead

(who had been appointed as his trustees in 1640), generated a steady stream of documents when occupied in buying back confiscated properties between February 1652 and March 1655. There are also some oblique references from the 1650s suggesting that the Atlas was accessible and in use during this period. The lack of many later annotations to the maps also suggests that the Atlas was well looked after by Rolleston and his team. When Newcastle's second wife Margaret listed his property in her biography of him she was greatly assisted by Rolleston, who would almost certainly have been involved in the original commissioning of Senior. Indeed, the epitaph on Rolleston's memorial in Warsop parish church praises his 'management and preservation of [Newcastle's] estate at a time when the government itself was too weak to preserve anything from rapine and ruin'.[15]

By the early 1660s Newcastle was not only trying to rebuild his former estate but also to add to it, and his most notable purchase was of Nottingham Castle in 1663. At some time after this a fragment of a larger survey of the Castle estate was bound into the Atlas. Recent studies have shown that during the last sixteen years of his life Newcastle was troubled with the discontent of his son and heir, Henry, over the nature and extent of his inheritance. The Book of Surveys and the Atlas would have been key documents in the many discussions between father and son, and indeed they were used for many years afterwards to express the extent and value of the Newcastle estate portfolio. Following Newcastle's death in 1676, Henry, now the second duke, made a point of showing off the Atlas to his visitors, particularly highlighting the extent of his property. John Beaumont, who had known Henry for thirty years, remembered such an occasion well, as he was expected to lift the volume down from a shelf. Henry took Beaumont 'Into his study at Welbeck and showed him the maps of his estate in several counties, which was so exact as they made a great imposition of [Beaumont's] arms'. On another occasion in 1689 the duke showed John Cookson, steward to the earl of Thanet, 'Some books and maps of his estate, telling [him] that his debts were very great but that he had timber and coppice wood upon his estate sufficient to pay all his debts'. A note on the inside cover of the Atlas shows that the volume was produced as evidence in a Chancery court suit in 1700. Two further maps were stuck into the Atlas in the early eighteenth century, although five maps were removed in 1774, lent to the third duke of Newcastle under Lyme but not returned. Even in 1825 Senior's surveys were being used as evidence in a court of law, as testified by another inscription inside the front cover of the Atlas.[16]

Conclusion

Viewed simply as a collection of maps the Welbeck Atlas is an important example of English estate surveying in the first half of the seventeenth century. But this significance is enhanced by it being in its original binding (so providing insights on the methods by which the maps were drawn) and by the large archive of surviving associated legal and estate documentation. This material not only contextualises the Atlas but also enables the economic geography of the properties mapped to be better understood. The volume also forms the concluding part of an impressive body of surviving work by the prolific William Senior that extends over four decades. More of his work is still coming to light and such an extensive cartographic practice provides considerable insight into land surveying in early Stuart England.[17]

Notes

1 I wish to dedicate this article to the memory of the late Dr Rosalys Coope (1921–2018), architectural historian and former President of the Thoroton Society of Nottinghamshire, who always took a keen interest in my cartographic research. The Atlas is catalogued as Portland Collection: no. 010937. I am extremely grateful to Derek Adlam, Honorary Curator of this collection for providing me with extensive and repeated access to this document during the research for my edition of the Atlas. D. V. Fowkes & G. R. Potter (eds), *William Senior's survey of the estates of the first and second Earls of Devonshire, c.1600–28*, Chesterfield: Derbyshire Record Society, vol. xiii (1988). Stephanos Mastoris (ed.), *The Welbeck Atlas: William Senior's maps of the estates of William Cavendish, earl of Newcastle, 1629–1640*, Nottingham: Thoroton Society Record Series, vol. 47 (2017).

2 For biographies of Newcastle see: Lynn Hulse, 'William Cavendish', *Oxford Dictionary of National Biography*, Oxford: 2004, vol. 10, pp. 654–63; Geoffrey Trease, *Portrait of a cavalier, William Cavendish, first Duke of Newcastle*, London: Macmillan, 1979; Katie Whitaker, *Mad Madge, Margaret Cavendish, Duchess of Newcastle, royalist, writer and romantic*, London: Chatto & Windus, 2003; Lucy Worsley, *Cavalier,* London: Faber, 2007.

3 Nottinghamshire Archives: DD P 37/4.

4 S.N. Mastoris & S. Groves, *Sherwood Forest in 1609*, Nottingham: Thoroton Society Record Series, vol. 40, pp. xxxviii.

5 The perch or pole is a linear unit of measurement equal to 5½ yards (approximately 5.03 metres).

6 National Oceanic and Atmospheric Administration, National Geophysical Data Center: Global maps of historic declination for 1630 and 1640. Accessed via ftp://ftp.ngdc.noaa.gov/geomagHistoric_UFM_maps/Historic_Mercator_Maps/Dec_1630.pdf.

7 Mary Anne Everett Green, *Calendar of the proceedings of the Committee for Compounding &c, 1643–1660*, London: 1891, pp. 1734–37.

8 Fowkes & Potter, pp. 192, 203.

9 I am very grateful to Adrian Henstock for generously sharing his research on William Senior's origins and introduction to the Cavendish family; Andy Wood, *The memory of the people: custom and popular senses of the past in early modern England*, Cambridge: CUP, 2013, pp. 197–98; The National Archives: DLA 4/67/59; Ifor Evans & Heather Lawrence, *Christopher Saxton, Elizabethan map-maker,*

Wakefield: Wakefield Historical Publications, 1979; British Library: Sloane MS, 1490, ff. 31.
10 Fowkes & Potter, pp. x–xi.
11 G. Scurfield & J. M. Scurfield, 'To be as a looking glass to their estates: the early 17th century surveys of William Senior', *The Cartographic Journal*, 33(2) (196), pp. 149–56; A. Sarah Bendall, *Maps, land and society,* Cambridge: CUP, 1992, pp. 137–38; Fowkes and Potter, p. x.
12 C. H. Firth, (ed), *The life of William Cavendish…by Margaret, Duchess of Newcastle*, 2nd ed., London: Routledge, 1906. pp. 75–77.
13 Mastoris, Appendix 4.
14 *Ibid.* Appendix 2.
15 Firth, pp. xlvii, 75; For an illustration and text of Rolleston's memorial see:http://southwellchurches.nottingham.ac.uk/warsop/hmonumnt.php
16 Katie Whitaker, pp. 277–82; Thanks to Dr Trevor Foulds for the accounts of how Duke Henry used the Atlas to demonstrate his wealth and for sharing his current research on the estate management of Henry Cavendish, the second Duke of Newcastle.
17 Harold Nichols, Mary Wiltshire and Susan Woore, *A catalogue of local maps of Derbyshire, c.1528–1800*, Chesterfield: xxxvii, 2012, pp. xiv, 234.

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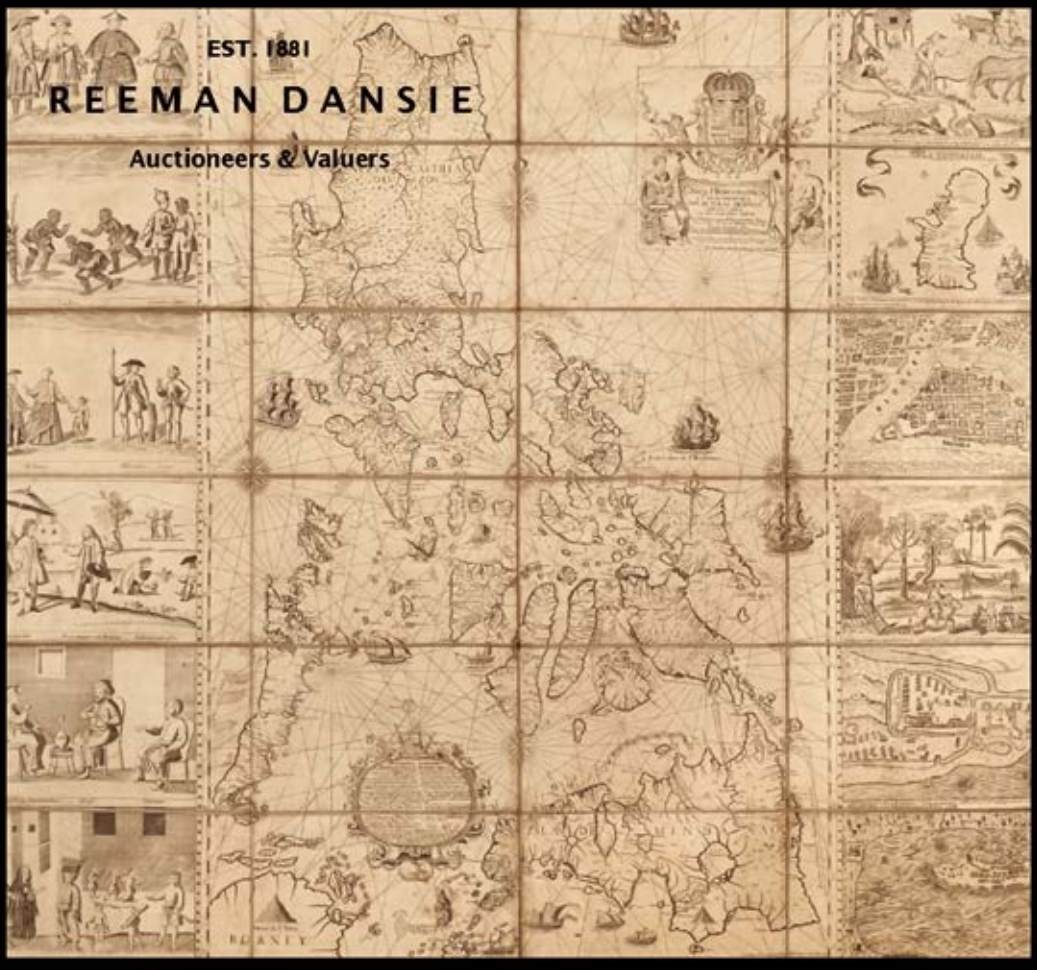
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CARTOGRAPHY IN THE EUROPEAN ENLIGHTENMENT

A map collector's view

Matthew H. Edney and Mary Sponberg Pedley

A little wager to begin. We are betting that a 'person who loves maps', presented with four or five maps, without author or date, could easily date each to the appropriate century, based only on style. Why are the odds in our favour? Because the 'person who loves maps' is a true *amateur*, someone with an attachment or taste for something. A prolonged and profound taste for maps has the inevitable effect of developing a connoisseur's eye for distinguishing styles of layout and design. The *amateur* reading this magazine will find much to satisfy the inner connoisseur in *Cartography in the European Enlightenment*, Volume Four of *The History of Cartography*.[1]

A matter of taste

This encyclopedic volume explores all aspects of mapping in Europe, Europe's colonies and the Russian and Ottoman empires in the period from around 1650 to 1800. In particular, Volume Four examines issues surrounding taste and maps through entries on the Art and Design of Maps; Color and Cartography; Iconography, Ornamentation and Cartography; the Cartouche; and Landscape, Maps and Aesthetics. From these essays, we learn something about how eighteenth-century mapmakers, critics and consumers assessed maps and understood their artistic qualities. Their contemplation of these subjects informed a sense of taste and manifestation of styles that today's *amateur* will quickly recognise.

At a glance our *amateur* of maps will recognise the map in Figure 1 as an eighteenth-century product. Its conic projection is surrounded by an unadorned rectangular frame marked by longitude and latitude; it leaves areas blank; colour is restrained if present at all; it lacks any decoration around the multiple scales; there is minimal text within the map; its engraving is elegant and clear. A map from a century earlier would have filled the empty spaces of land and sea with human and animal figures; would have inserted the surrounding frame with vignettes of cities, local costumes, events or natural features; would be highly coloured; and would have employed baroque strapwork around the scales. A map from a century later would replace frames with simple line boxes, would colour the regions more fully, would place explanatory text in its own box marked 'Explanation' or its equivalent. Such stylistic features were decisions of taste and could determine a printed map's success in the marketplace or its inclusion in a collection. Geographers and mapmakers of the eighteenth century felt as strongly as their consumers about what constituted a successful map.

The author of this map, Jean Baptiste Bourguignon d'Anville (1697–1782), devoted three pages of his work on map composition solely to the question of the writing and placement of names.[2] After discussing projection, scale and assessment of sources, d'Anville declared the aesthetics of lettering to be of equal importance to the preceding subjects and emphasised that a map should be 'agreeable to the eye'. To this end, he averred, letters should be spaced equally and in proportion to the place or thing named. To always write place names strictly horizontally risked becoming fastidiously monotonous, even fatiguing to the viewer, and would not emulate Nature's variety and disarray.

For d'Anville, eminent geographer of the eighteenth century, design quality was an equal, if not stronger, criterion for the distinction of a 'good' map than was 'accuracy'. Accuracy was too slippery a concept, difficult to judge on sight alone without recourse to an accompanying memoir or explanation of construction.

To judge a map on its aesthetic virtues emphasises that maps in the eighteenth century were considered a type of visual knowledge that fell under the heading of 'Art', even though maps resulted from the practice of 'Science'. The editors of the grand *Encyclopédie,* Jean d'Alembert and Denis Diderot, distinguished between 'Art' and 'Science' not by their logical ends – both aimed to better understand Nature – but by their form and practice. To paraphrase Diderot's explanation in his article on Art in the *Encyclopédie,* the **thing**

executed by a human to represent an understanding of Nature was Art while the **process** of observing and recording the understanding of Nature was Science.[3] Thus understanding cartography as both the art of the map and science of mapmaking helps to emphasise why the criteria of taste, proportion and pleasure were so important for maps.

Other mapmakers were equally concerned with the application of taste to their products. Property owners enjoined surveyors to use the same style in creating maps of each of their land holdings. Military mapmakers aimed to represent relief by remembering that 'if they are not rendered with good taste, they have no effect or are only disagreeable to view'. Determining what constituted good taste was the subject of many treatises and essays, perhaps most succinctly expressed by Charles Louis de Secondat Montesquieu in his *Essai sur le gout* (Essay on Taste) of 1757, in which he maintained that a product like a map provided 'a visual whole that is rich, varied, and ordered, easy to grasp visually, and easy to read'.[4]

The vast array of maps published during the long eighteenth century demonstrates that mapmakers interpreted ideas of 'rich, varied, and ordered' in many ways. Maps, for example, produced by the Homann publishing house in Nuremberg were deeply coloured, endowed with highly decorative cartouches and employed illustrative material to further enhance the map's content (Fig. 2). Such maps eschewed the spare aesthetic of a d'Anville (Fig. 1). Yet Homann's maps, as well as those of his German counterparts in the related publishing houses of Seutter, Lotter and Probst, were as popular and reached as many collections as the French maps. To our twenty-first century eye, they may offer quite a different 'look' but by eighteenth-century standards they succeeded by being easily grasped and readable.

Aesthetic standards were employed not only by mapmakers but also by their critics. A public discourse surrounding maps may be found in the periodicals and pamphlets that advertised and analysed recently published maps. In addition, separate works aided the map buying public by providing complete lists of maps available for all regions of the globe. Two in particular have come down to us: Johann Gottfried Gregorii's *Curieuse Gedancken von den vornehmsten und accuratesten Alt- und Neuen Land-Charten* (1713) and Nicolas Lenglet du Fresnoy's *Méthode pour étudier la géographie* (1716 and several later editions). Gregorii gives his reader over five hundred pages that summarise the lives of

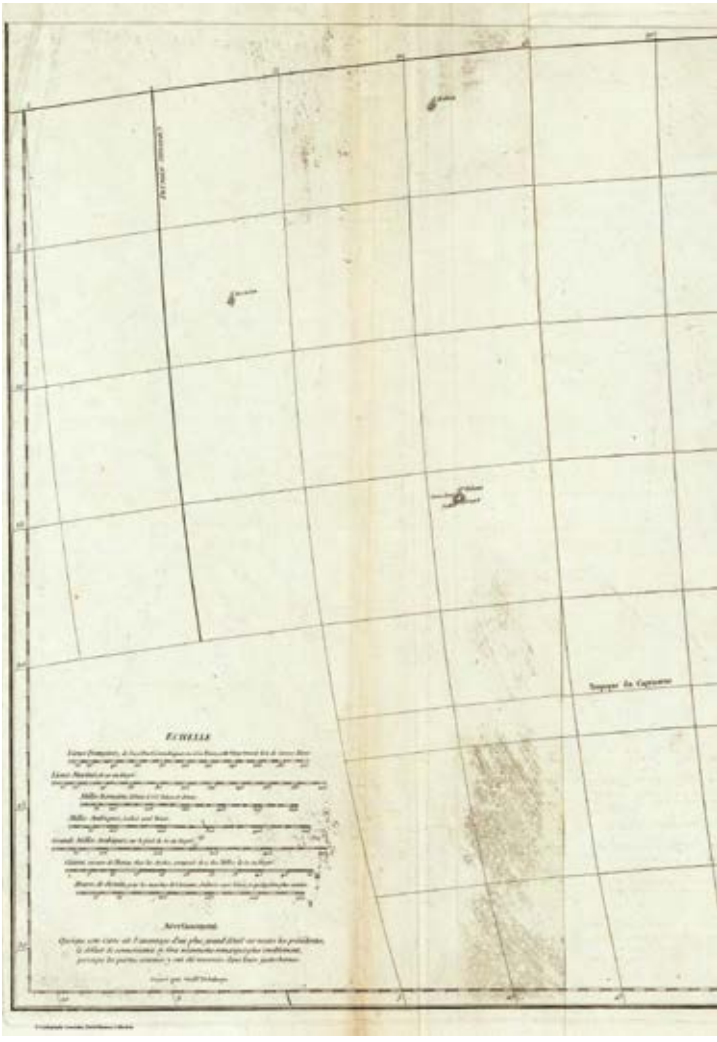


Fig. 1 Southern Section of Jean Baptiste Bourguignon d'Anville, 'Afrique' (Paris, 1744), engraved by Guillaume Delahaye. Copper engraving, 48 × 98 cm. Courtesy of the David Rumsey Collection; www.davidrumsey.com.

mapmakers and their products, ranging from the sixteenth-century geographers Ortelius, de Jode and Mercator, to contemporary names such as Delisle, Schenck and Mortier. He also provides a list of available maps by region, noting their size by the number of their sheets. Lenglet du Fresnoy's six-volume work offers a broader sweep of the geography of regions, and his first volume closes with a 'Catalogue des meilleures cartes geographiques': 252 pages that list maps by both region and author. Lenglet du Fresnoy frequently remarks on map quality: 'bonne carte', 'assez belle carte avec explications', 'belle carte et d'une grande netteté', 'carte originale' or 'carte copiée'. His use of



'good, beautiful, neatness' speaks to aesthetic rather than content-based criteria, and his taste is adamant. He contrasts two maps of the same region thus: 'Guillaume SANSON, le Royaume de Hongrie, en deux feuilles, **médiocre**, 1708. Jean-Baptiste NOLIN, le Royaume de Hongrie, en quatre feuilles, Carte **très-bonne & très-estimée**'.[5]

Later in the century, in 1763, the Paris map dealer and publisher, Roch Joseph Julien issued a 'new catalogue' of the maps available in his capacious shop. He, too, noted maps by size (number of sheets) and author. He continued Lenglet du Fresnoy's succinct analyses and occasionally provided historical commentaries. For example, in describing one of the city plans by Jean (John) Rocque ('Plan de la Ville de Lyon, réduit sur le Plan de 4 feuilles, levé par le Sieur C. Seaucourt; verifie & orienté par le Pere Grégroire de Lion… publié en 1746') he added: 'This plan is engraved with a perfect beauty which renders it even more precious, since the plate perished along with most of the plates of the other in a fire at his place in the month of November 1750'. In a rare moment,

Overleaf

Fig. 2 A highly decorative regional world map, in two sheets, in the *Hommansche* style: Latin text; heavily engraved ornate title cartouche and other ornamentation; and full colour. Homann Heirs, 'Dvcatus Electoratq et Principatq Dvcvm Saxoniæ' (1731), after a map compiled by the brothers Philipp Heinrich Zollman (before 1690–1748) and Friedrich Zollmann (1690–1792). The cartouche displays Augustus II of Saxony (1670–1733) receiving the crown of Poland, among other laudatory allegories; the marginalia are the coats of arms of the different districts of Saxony, which are distinguished by the map's colouring. This is one of many maps brought together by an eighteenth-century collector and bound into a composite atlas. Courtesy of the Osher Map Library and Smith Center for Cartographic Education, University of Southern Maine (Smith Collection); oshermaps.org/map/14002.0118c.


BRAUNSCH
HERZOGTHUM
MAGDEBURG
MANSFELD
NORTHAUSEN
ERFURT
LEIPZIG
VOIGTLANDISCHE
GRAFSCHAFT
SACHS. HILD.
BAMBERG


Scala Milliarium
Signorum Explicatio
NIEDER
SPREMBERG CREYS
OBER LAUSITZ
GORLITZ CREY
DUCATUS
ELECTORALIS PRINCIPATUS
DUCUM
SAXONIÆ
prout illorum conditio hodierna est
Geographice exhibitus
PHIL. HENR. & FRID. ZOLLMANN
in lucem prolati
HOMANNIANIS HEREDIBUS
TAB. I

Julien also vouches for the accuracy of a plan. Of the four-sheet map of the burgravate of Nuremberg and the margravate of Anspach by Johann Georg Vetter (1681–1745), he comments: 'This map, which contains even the smallest details, is of an admirable exactitude and can serve as a guide to the traveler. I have journeyed all around a greater part of this region and I have not noticed a single fault on it'. [6]

Such guides as Gregorii, Lenglet du Fresnoy and Julien allowed map collectors of the eighteenth century to create collections that did not require great space or great fortunes, though collections of prestige and status continued to be built.

Map collecting in the Enlightenment

The development of map collections, large and small, may be tracked in Volume Four's two large composite entries on Map Trade and Map Collecting, both considered in their various national contexts. Map Collecting in particular reveals consumer desires, the quality and quantity of collections, the manner in which collections were organised and displayed and their integration with the choices offered by the marketplace for different kinds of maps.

The desiderata that emerge were beauty of execution in design and engraving, concern for size (in terms of number of sheets, a surrogate for the scale or resolution of the map), originality or unusual features and renown of author and engraver. These demands were met by the rapidly developing map market. The abundance of cartographic material was generated by a number of factors. General growth of the European economy after the end of the Thirty Years' War (1618–48) had increased both the buying power of the collector and the number of skilled copperplate engravers who expanded the supply of copperplate prints. These in turn sustained an increase in the number of news journals and periodicals that incorporated maps or discussed them in their pages. Peace encouraged travel for business and for pleasure. Maps placed the goals of travel – natural wonders, human events, cultural artifacts – in a spatial context.

'An obsession with collecting is as old as human curiosity.' [7] Map collecting continued a tradition of acquisition of visual knowledge whose roots extend into the Middle Ages and flowered by the time of the European Renaissance and the introduction of printing in Europe. Maps and collections enjoyed the shared function of inventory and encyclopedia. They aided memory and accommodated new information about the world into old ideas. A personal library could be filled with illuminated manuscripts and incunabula, illustrated books beautifully bound, as well as folios of copperplate engraved prints; such a collection satisfied the owner's curiosity and also served as a status symbol of his or her erudition and culture. Map collecting developed hand in hand with the sixteenth- and seventeenth-century *cabinets de curiosités* or *Wunderkammern*, those organised collections of antiquities, works of art, natural objects and human artifacts that presaged the modern museum.

The collectors

As in the Renaissance, map collecting in the eighteenth century was practised across many social classes from royalty and nobility, to statesmen and scholars, to the educated commoner. Royal palaces and libraries and administrative institutions were the natural home for many map collections, given their owners' responsibilities for governance. A well-known and patently visible collection is that of King George III of Great Britain, whose royal library today fills the architectural glass core of the British Library in London. George's Geographical Collection, which includes maps, is split between Windsor Castle and the British Library, where his Topographical Collection contains around 50,000 items: manuscript and printed maps, topographical drawings, watercolours, prints and local printed ephemera. George III's personal map library exemplifies the collections of European monarchs but also the private interests of a king who loved maps (Fig. 3).

At the top level of government, administrators of state both collected maps, domestic and foreign, and initiated large-scale mapping projects as efficient tools of governance. Privately, large landowners collected maps, perhaps more focused on their own region or personal land holdings as a practical matter, but also built personal libraries or special rooms as a place to display maps. The wealthy merchant classes and educated elites similarly indulged their curiosity through the building of libraries which included the collection of maps.

The private collections that are the most well known to us are those whose prodigious size subjected them to serious cataloguing. They often became attractive gifts or ripe for sale to public institutions, such as a government agency or a public library. The number of maps included in these large collections can be quite staggering. The Danish statesman Count Otto Thott (1703–1785) accumulated 200,000 maps. When Thott's

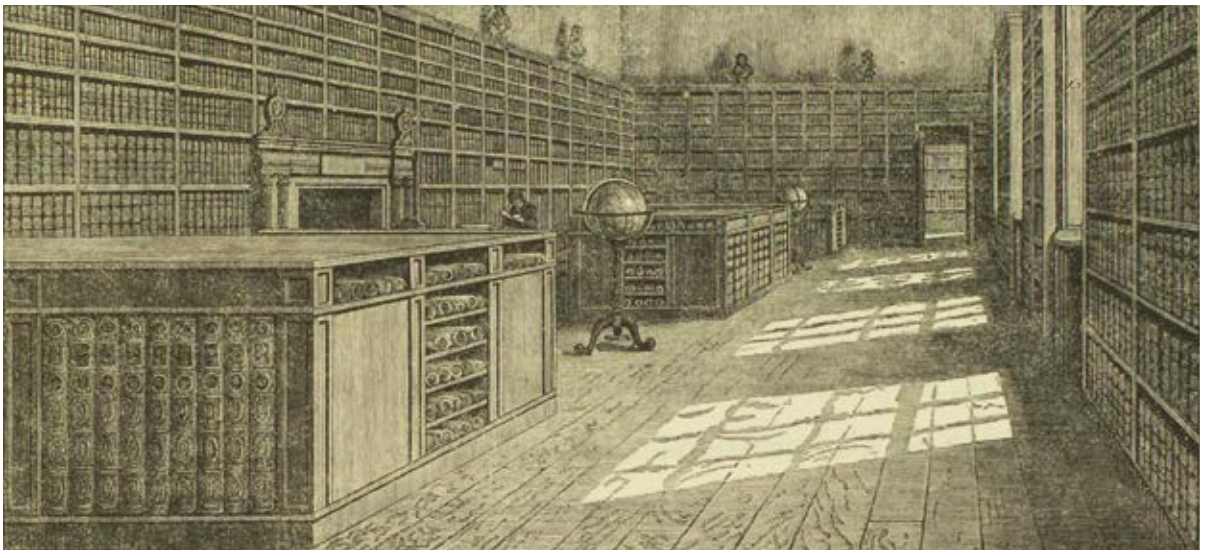


Fig. 3 Engraving of King George III's specially constructed map library at Queen's House (now Buckingham Palace). From Frederick Augusta Barnard, *Bibliothecæ Regiæ Catalogus*, 5 vols. (London, 1820–29), 1:i.

collection was sold at auction, in 1785–92, the catalogue comprised no fewer than eleven volumes and listed a wide range of works, including many early editions of atlases by Ortelius, Münster and Mercator. The auction dispersed the collection to buyers like the king of Denmark, the university in Copenhagen and to the Kongelige Bibliotek (Royal Library). Thott's outsize holdings makes the geographer d'Anville's collection of around 10,000 maps seem downright puny, yet the latter's value lay in the fact that it was d'Anville's working collection, filled with printed and manuscript material, including items of great rarity and importance to royal administrations. France's Louis XVI authorized its purchase from the geographer while he was alive, offering a safe and secure refuge for the geographer's lifetime accumulation; it is now housed in the Bibliothèque nationale de France.

Other considerable collections, although all smaller than Thott's, are described in each of Volume Four's entries on Map Collecting in specific regions. A good example of how one collector organised his collection, discussed in Map Collecting in Switzerland, may be found in the detailed set of instructions about how to acquire, organise and catalogue a map collection prepared by the eminent Swiss collector, Johann Friedrich von Ryhiner (1732–1803). Donated to the Stadtbibliothek of Bern in 1867, Ryhiner's collection of 16,500 maps, plans and views has now been digitised and can be consulted online.

What constituted a collection?

A closer look at the map collections of George III, Ryhiner and others reveals their broad scope. They comprised everything from globes and published atlases to portfolios of plans and topographical views, a rich variety that allowed the collector to study place in the broadest sense. Many collections also included books, pamphlets and broadsides, material to accompany and enrich the understanding of the maps. There was little distinction between 'old' and 'new': collections embraced material from all periods, with early printed editions of Ptolemy, Ortelius, Mercator and Münster next to composite atlases of maps based on more recent surveys or compilations. A strictly antiquarian desire to acquire early maps is only discernable at the end of the eighteenth century.

As varied as the collections were the methods of storage. Map collections established in the seventeenth or early eighteenth century tended to keep single or multiple sheet maps, plans and views bound, either permanently or loosely, in composite 'atlases': gatherings of particular geographic areas. These could stand alongside published atlases, such as Ortelius's *Theatrum* or Joan Blaeu's *Atlas maior.* More novel was the approach of the Dutch lawyer and collector, Laurens van der Hem, who re-organised and expanded his copy of the *Atlas maior* by interspersing the published Blaeu material with other maps and views, many of them manuscript, and rebinding the enlarged atlas in 46 volumes. As the century progressed, a movement developed towards keeping maps in portfolios or specialised cabinets – rooms dedicated to the study of maps equipped with

large tables – as implemented by Augustus II of Saxony (pictured with a map in Figure 2). The same attributes of desirable maps applied to housing the collection: a retreat from the luxurious bindings and impressive display of the seventeenth century to more efficient and easily accessed portfolios, with a strong emphasis on cataloguing, classification and systematic order, as described in Ryhiner's treatise on organising a collection. The eighteenth-century's intellectual emphasis on classification and comprehensiveness led to an encyclopedic approach to map collecting.

Yet what of the small collector, the *amateur* who acquired twenty or thirty maps of some particular place or simply maps that appealed to his or her taste? Swedish research shows that even such a small body of material might be considered a collection and that probate inventories and auction records tell us much about the more modest yet enthusiastic consumer of maps. Such a person also appears frequently on subscription lists to atlases, especially in Great Britain or France, where that sales device was most popular and offers a productive avenue for more research.

The modest yet avid collector was vividly portrayed in the character of Uncle Toby in Laurence Sterne's novel, *The Life and Opinions of Tristram Shandy, Gentleman* (1759–67). Uncle Toby suffered grievously from a wound received at the siege of Namur during the Nine Years' War (1688–97). He found relief from his pain by acquiring a fortification plan of Namur and deploying a pin at the exact spot where his wound was received (Fig. 4). So positive was the effect of the map on Uncle Toby's constitution that he determined to procure plans of all the fortified towns in Italy and Flanders that were involved with this war. Sterne's description of Toby's response to studying a map perhaps captures best the map *amateur*'s enthusiasm:

> But the desire of knowledge, like the thirst of riches, increases ever with the acquisition of it. The more my uncle Toby pored over his map, the more he took a liking to it:– by the same process and electrical assimilation,…thro' which…the souls of connoisseurs themselves, by long friction and incumbition, have the happiness, at length to get all be-virtu'd—be-pictur'd—be-butterflied, and be-fiddled. [8]



Fig. 4 Frontispiece to the third edition of volume 1 (1760) of Laurence Sterne, *The Life and Opinions of Tristram Shandy, Gentleman*, 9 vols. (London: R. and J. Dodsley, 1759–67). Dr Slop dozes while Colonel Slim explains the siege of Namur, the plan for which is prominently displayed on the wall. It was the centrepiece in Uncle Toby's collection of plans of fortified towns in the southern Netherlands and northern Italy. Copper engraving, 14.8 × 9 cm. Courtesy of the William L. Clements Library, University of Michigan, Ann Arbor (C2 1760 St).

What Volume Four offers a map collector

As 'be-virtu'd' map collectors did not hesitate to acquire all kinds of graphic expressions of place in their collections, large and small, Volume Four offers an encyclopedia that describes the kinds of mapmaking that occurred in the long eighteenth century and the variety of products available for the 'be-butterflied' eighteenth-century map collector. In doing so, its fully-indexed one million words, spread across some two thousand pages, invite the modern collector to journey widely through Europe and her overseas territories and interests.

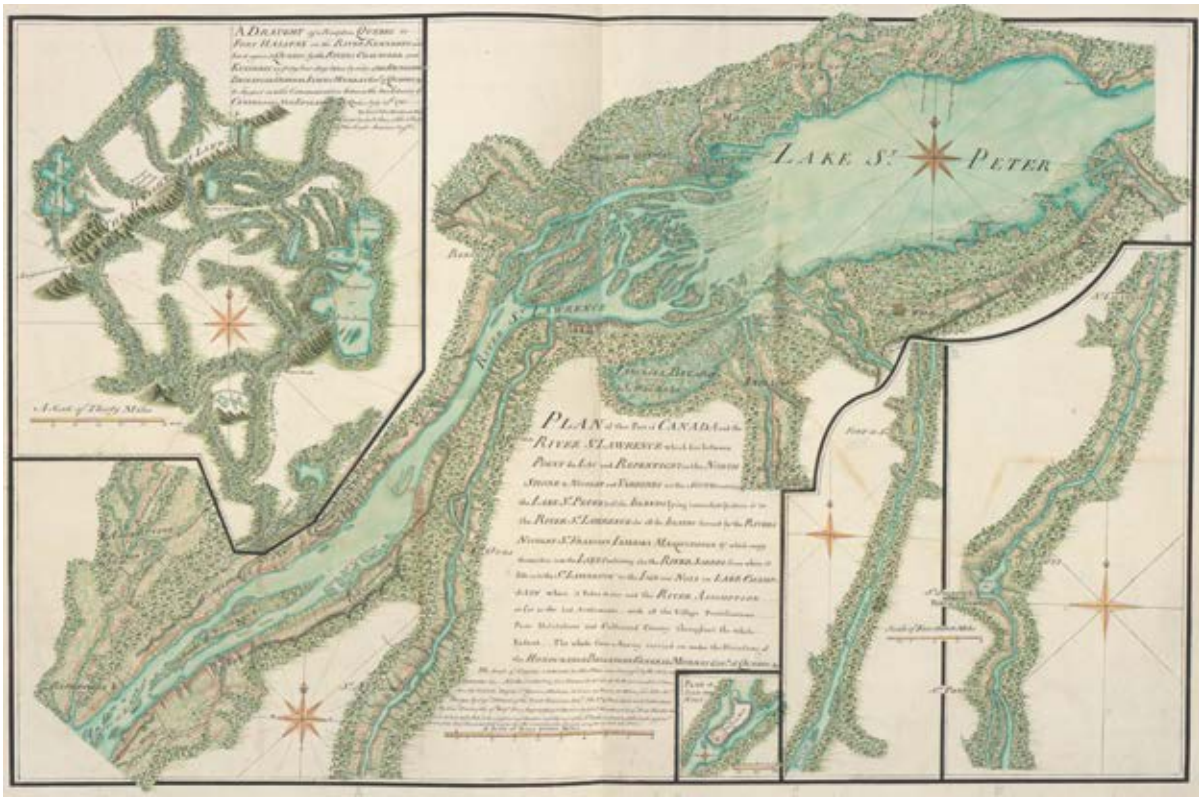
Even such a large volume is too small to exhaustively detail every aspect of mapping in the Enlightenment. (We have just realised, in writing this essay, for example,

that Volume Four makes no mention of Johann Georg Vetter whose map of Nuremberg and Anspach was so well received by Roch Joseph Julien!) Rather, we sought to address exemplars that together permit discussion of as many different aspects of mapping as possible. We also consciously sought to cover the many minor endeavours of Enlightenment mapping and not to focus solely on the names and surveys that are already well known to map historians, because 'small' maps are as important as 'great' maps in understanding the history of cartography and are of great significance to the modern map collector. Yet we could not let the major achievements of Enlightenment mapping be swamped.

In short, we needed to design and then adhere to a coherent *structure* for the volume. That structure came from the consideration of the different kinds of contexts into which we might situate early maps. The most important of these were: the *representational contexts* within which maps were produced and consumed; the *methodological and technological contexts* within which maps were physically produced (the science, craft and art of cartography); and the *political contexts* within which maps were commissioned and collected, both civil and commercial (especially the map trade) and governmental (military and administrative). The first thing that Volume Four provides, therefore, is a series of contextual slices through the complexity of Enlightenment cartography. Significantly, the endpapers to the volume list all the contexts and the entries appropriate to each, to guide readers through each slice so as to simplify and comprehend mapping in the Enlightenment.[9]

The several *representational contexts* are the core of the volume, one for each of the different ways in which people made and used maps for various ends. We learn that there is not just one kind of map, but many, each a distinct product of different spatial conceptions and social needs.[10] Indeed, we treat the world and regional maps that often function as the 'default map' for map historians and map collectors as a particular kind of mapping, Geographical Mapping (Figs. 1 & 2). Just as important are topographical (Fig. 5), property

Fig. 5 One of the more detailed maps – 'Plan of that Part of Canada and the River St. Lawrence which Lies between Point du Lac and Repentigny on the North Shore & Nicolet and Varrenes on the South', surveyed in 1761 by John Montresor – from the Murray Map of Canada. The insert shows Montresor's route in July 1761 from the Chaudière to the Kennebec rivers, a route that would be followed by Benedict Arnold during the American Revolution. Manuscript, 49 × 71.3 cm. Courtesy of the William L. Clements Library, University of Michigan, Ann Arbor (Atl 1761 Mu sheet 16).




A MAP OF THE FARM CALLED ARNOLDS IN THE PARISHES OF STAPLEFORD ABBY AND LAMBORN IN THE COVNTY OF ESSEX BEING PART OF THE ESTATE OF
RIVER
MEAD
FOURTEEN ACRE PEICE
BOOK TREE MEAD
HOGS COURT MEAD
LITTLE HOGS COURT MEAD
ROAD
ELEVEN ACRE PEICE
LITTLE MEAD
HOME FIELD
MEAD
FIVE ACRE PEICE
WOOD
LONG MEAD
GRAVEL PITT FIELD
FOURTEEN ACRE PEICE
LITTLE MOOR
WOOD
RUSHEY MOOR
UPPER FIELD
UPPER OATE FIELD
FOXBOROUGHS
THE EARL OF GRANVILLE'S LANDS
OXEN
BUTTS
TUKES LANDS
MILDMAYS
LANDS
REFERENCES

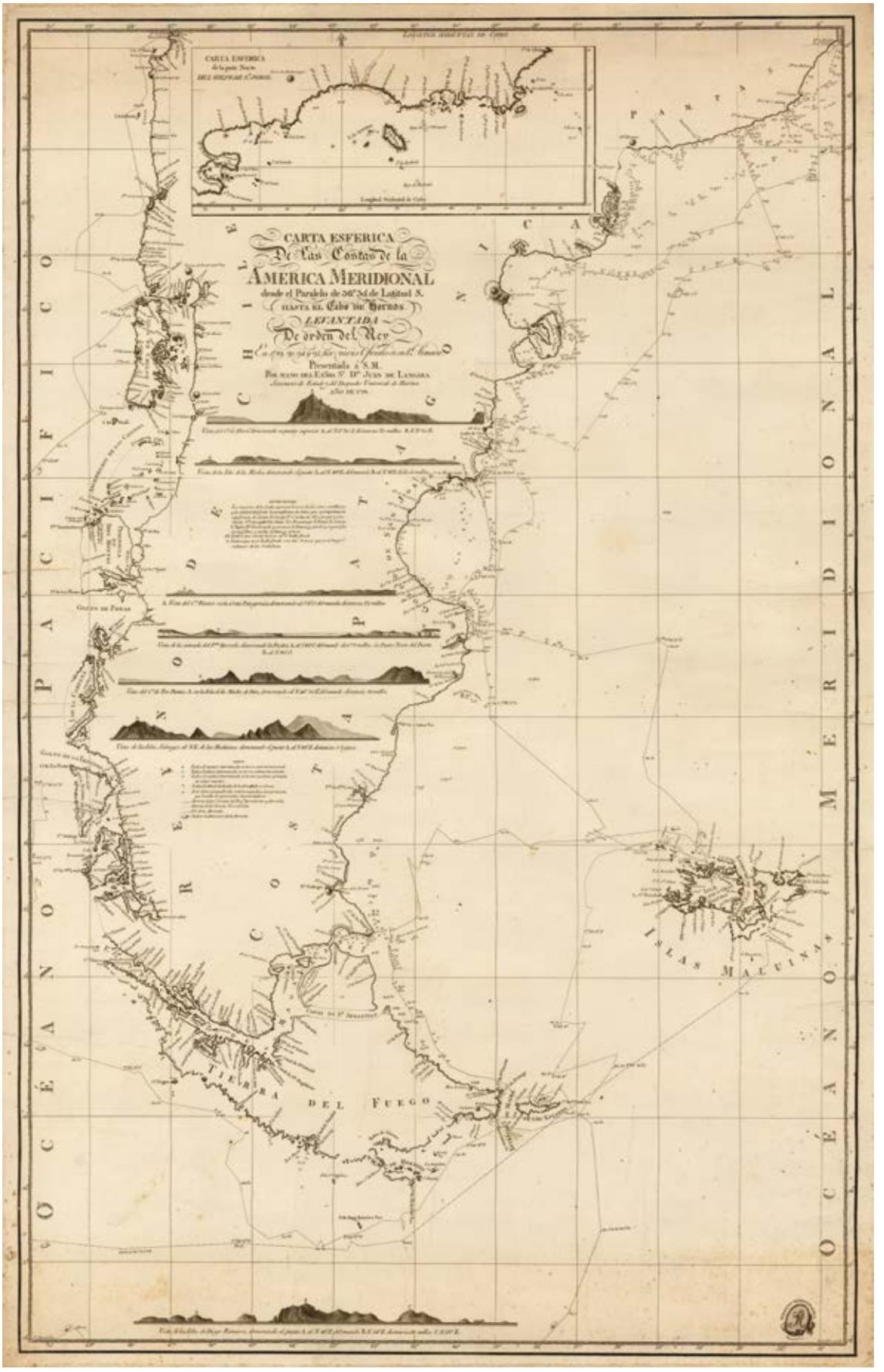
(Fig. 6), boundary, urban, celestial, marine (Fig. 7), thematic and geodetic mapping. Volume Four provides overviews of each and more detailed studies of how each were manifested in each *regional context*. The volume is quite granular in its regional distinctions, covering each of the major centres of mapping activity – France, Britain, the German States, the Austrian Monarchy and Russia – while also giving equal attention to the European periphery in Scandinavia, the Iberian and Italian peninsulas, the Ottoman east and in Europe's burgeoning overseas colonies. By grouping together entries on each representational context, Volume Four allows readers to identify commonalities and differences in similar practices undertaken across European culture.

The *methodological and technological contexts* embrace a wide variety of subjects that will interest map collectors. The subcontext of art and craft includes not only entries pertaining to aesthetics, which we have already mentioned, but also a suite of entries about the contemporary methods for the Reproduction of Maps, both by hand and in print, methods that in part give rise to the specific look of eighteenth-century maps. The entries within the subcontext of science and technology in large part address issues that have been made famous in recent decades by a number of popular works of the history science, starting with Dava Sobel's account of the famed chronometer completed in 1761 by John Harrison (1693–1773).[11] Although excellent in and of themselves, these popular works have tended to focus narrowly only on certain aspects of cartographic science, so our entries give fuller accounts of why and how Enlightenment scholars determined the size and shape of the earth itself (Geodesy and Geodetic Surveying), and how they developed techniques to determine Longitude and Latitude on land and at sea. The entries also unravel the many confusions surrounding the idea of the prime or zero Meridian. Although the treatment of each topic in every entry in the volume is necessarily brief, the entries all have bibliographies to permit readers to follow up the issues in greater detail.

Political contexts encompass the work by government administrators and bureaucracies in commissioning and using maps of various kinds in their official work. The obvious subjects here are administrative (civil) and military mapping (Fig. 5). Both activities surged in importance over the course of the eighteenth century, although not to the point where so many bureaucrats and generals wanted maps that it became necessary to print them. Rather, such maps were uniformly hand-drawn in the eighteenth century, sometimes in only one or two copies; the thousands of sheets of the great Austrian military survey, the *Josephinische Landesaufnahme*, were kept in only two neat sets, one for the emperor, the other for the general staff. For the military, the late seventeenth-century shift away from siege warfare (commemorated in Figure 4) and towards large, highly mobile armies and pitched, open-field battles led to the formation of staff structures who sought detailed Topographical Surveys of the different terrain over which their units would have to travel and fight. By the end of the century, various kinds of maps had also become part of daily administrative life in many European states. It was not always possible to tell administrative and military maps apart. For example, was the map in Figure 5 military or civil? It was made during the Seven Years' War (1756–63) by British military engineer and topographer, John Montresor (1736–1799), who followed the same methods developed by military engineers on the continent for delineating potential theatres of war. And it was commissioned by a general, James Murray (1721–1794), but in his capacity as the new military governor of the annexed province of Quebec. Murray commissioned a detailed survey, yes, but also a census. The resultant 'Murray Map' is really an atlas of four large maps at a medium scale and over forty detailed maps of specific areas, such as that in Figure 5. Seven copies of the entire work were prepared, though only five survive; this copy is probably that presented to General Thomas Gage (1721–1787), commander-in-chief of British forces in North America (1763–75).

Paralleling the formation of European states was the development of the 'public sphere'. This was the sociable realm in which the middling sort came together in new spaces, such as London coffee houses, Parisian salons and Dutch freemason lodges, and more especially in print, to claim a say in creating policy, whether about aesthetics (above), religion, economics, war and (yes) mapping. To participate in public discourse and debate current events required one to be knowledgeable and for that one needed to be literate in both the methods and facts of

Fig. 6 'A map of the farm called Arnolds in the Parishes of Stapelfore Abby and Lamboun in the County of Essex... .' (*c.*1790). An anonymous sampler that also captures the common attributes of the English estate plan: individual fields are named and their precise acreages specified. Embroidered woollen canvas with coloured silks and chenille thread, 64 × 54 cm. Courtesy of the Victoria and Albert Museum, London (T.65-1954).


CARTA ESFERICA
De las Costas de la
AMERICA MERIDIONAL
desde el Paralelo de 36° 3d de Latitud S.
HASTA EL Cabo de Hornos
LEVANTADA
De orden del Rey
Presentada á S. M.
POR ELMO. SEÑ. Dn. JUAN DE LANGARA
AÑO DE 1786.
OCEANO PACIFICO
OCEANO MERIDIONAL
TIERRA DEL FUEGO
ISLAS MALVINAS

geography. As the poet and publisher Robert Dodsley, himself a humble-born autodidact, opined in 1748, in his compendium of 'polite learning':

> The necessity of some Acquaintance with *Geography* and *Astronomy* will not be disputed. If the pupil is born to the Ease of a large Fortune, no Part of Learning is more necessary to him, than the Knowledge of the Situation of Nations, on which [a large Fortune's] Interests generally depend; if he is dedicated to any of the Learned Professions, it is scarcely possible that he will not be obliged to apply himself in some Part of his Life to these Studies, as no other Branch of Literature can be fully comprehended without them; if he is designed for the Arts of Commerce, or Agriculture, some general Acquaintance with these Sciences will be found extremely useful to him; in a word, no Studies afford more extensive, more wonderful, or more pleasing Scenes, and therefore there can be no Ideas impressed upon the Soul, which can more conduce to its future Entertainment.[12]

The public sphere was supplied its useful information by the marketplace for print: maps made to inform public discourse ranged from the Atlas and Wall Maps (Fig. 1), to geographical textbooks and treatises on history, politics and religion, to maps in the new monthly magazines and newspapers. Together, these many maps constitute the majority of collectible maps from the Enlightenment: bought as having long-lasting value, they were generally preserved by their owners – to form those myriad, small and unsung collections otherwise obscured by those of Thottian proportions – and so have been able to descend to the present-day marketplace for print.

As a rule of thumb, the kinds of maps that were printed in the long eighteenth century were those that contributed to the knowledge infrastructure of public discourse. This especially was the case with world and regional maps (Figs. 1 & 2). Other such contexts that were relevant to public discourse included Urban Mapping and Celestial Mapping as well as the still fledgling practice of Thematic Mapping. Maps that showed the distribution of phenomena such as magnetism, language, minerals, or body types, did not fit contemporary definitions of provincial and regional maps; Eberhard David Hauber instead called them *curiose Vorstellungen* ('curious representations').[13]

Maps relevant only to a limited number of private users remained in manuscript. In addition to official and military works, like the 'Murray Map of Canada' (Fig. 5), such maps include Property Maps, that is, maps of entire estates, taxable districts and individual land holdings (Fig. 6). Designed for landowners, lawyers and tax officials, these works remain preserved in personal, institutional, local and legal archives. The particular plan reproduced in Figure 6 is a variant of the usual ink-and-watercolour-on-paper form of such works: it is a sampler, in which an anonymous daughter has copied a plan of an English farm to display her skills in embroidery. This work epitomises how, when property plans do enter the modern marketplace, they are sold today as much to collectors of folk and juvenile art, as to map collectors.

Inevitably, the rule of thumb is not perfect. Marine Charting entailed some manuscript production even in the eighteenth century, and the printing of charts was intended both for actual mariners as working documents and for landlubbers interested in marine trade and naval affairs. The chart reproduced as Figure 7 was one of the former, one of the products of the expedition by Alejandro Malaspina (1789–94), in part to chart the coastlines of Spain's global empire with the latest techniques and to the newest standards. Those standards explain the chart's construction on Mercator's projection. As several entries in Volume Four make clear, most early modern charts were actually not made on that projection because it was too difficult to use; but now, equipped with chronometers and precise astronomical tables, Malaspina and his hydrographers could determine longitudes at sea and so made 'spherical charts' as opposed to the older form of unprojected 'plane' charts.

The broad scope of Volume Four is clear from this account of its content. Yet what will immediately engage and delight the 'be-pictur'd' *amateur* are the 954 illustrations in full colour. They offer a mix of printed and manuscript images exemplifying both the Art of maps and the Science of mapmaking, something for every collector to respond to and want to know more about. We hope this reference volume with a long shelf life will find a home in every map collector's library.

Fig. 7 'Carta esferica de las costas de la America meridional' ([Madrid], 1798). Compiled from hydrographic surveys during the Malaspina expedition, the chart was constructed on Mercator's projection (*carta esferica,* spherical chart). Copper engraving, *c.*98 × 62 cm. Courtesy of Barry Lawrence Ruderman Antique Maps, La Jolla, www.raremaps.com.

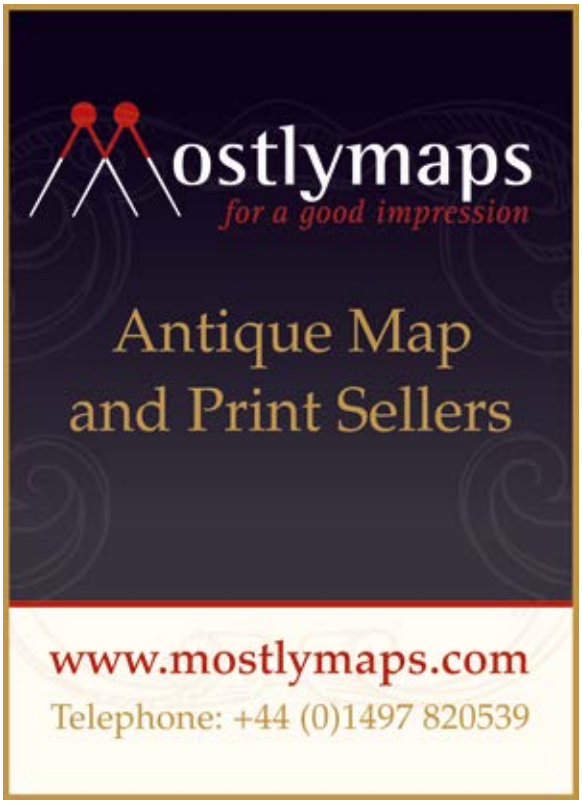
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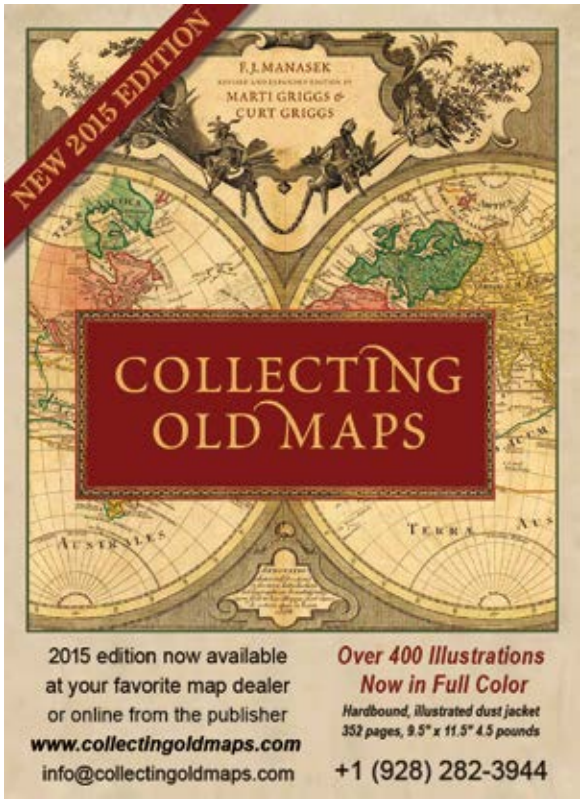
1 Matthew H. Edney and Mary Sponberg Pedley, *Cartography in the European Enlightenment*, vol. 4 of *The History of Cartography*, Chicago: University of Chicago Press, 2019. ISBN: 978-0-226-18475-3.
2 Jean Baptiste Bourguignon d'Anville, *Considerations générales sur l'étude et les connoissances que demande la composition des ouvrages de géographie*, Paris, 1777, pp. 66-68.
3 Denis Diderot, 'Art', *Encyclopédie ou Dictionnaire raisonné des sciences, des arts et des métiers*, Paris, 1751, 1:713–17.
4 Both quoted by Jean-Marc Besse and Nicolas Verdier, 'Art and Design of Maps', in *Cartography in the European Enlightenment*, pp. 117–18.
5 Nicolas Lenglet du Fresnoy, 'Catalogue', in *Méthode pour étudier la géographie*, Paris, 1742, p. 21, emphasis added.
6 Roch Joseph Julien, *Nouveau catalogue de cartes géographiques et topographiques*, Paris, 1763, pp. 82 and 90, respectively. Author's translation.
7 George Tolias, 'Maps in Renaissance Libraries and Collections', in *Cartography in the European Renaissance*, edited by David Woodward, vol. 3 of *The History of Cartography*, Chicago: University of Chicago Press, 2007, p. 648.
8 Laurence Sterne, *Life and Opinions of Tristram Shandy, Gentleman,* London: R. and J. Dodsley, 1760, 2:19–20.
9 For more information, see our introduction to Volume Four, and our essay, 'Writing Enlightenment's Cartography', forthcoming in *The Cartographic Journal* in February 2020.
10 See Matthew H. Edney, *Cartography: The Ideal and Its History*, Chicago: University of Chicago Press, 2019, pp. 26–49.
11 Dava Sobel, *Longitude: The True Story of a Lone Genius Who Solved the Greatest Scientific Problem of His Time*, New York: Walker & Co., 1995.
12 Robert Dodsley, *The Preceptor: Containing a General Course of Education, Wherein the First Principles of Polite Learning are Laid Down*, London: R. and J. Dodsley, 1748, pp. xix–xx.
13 Eberhard David Hauber, *Versuch einer umständlichen Historie der Land-Charten: Sowohl von denen Land-Charten insgemein*, Ulm: Bartholomäi, 1724, p. 65.

Matthew H. Edney and **Mary Sponberg Pedley** edited Volume Four of *The History of Cartography*. Among their own contributions to this huge work is their cowritten entry on Map Collecting in the Enlightenment.

Edney is Osher Professor of the History of Cartography, University of Southern Maine, and Director of the History of the Cartography Project, University of Wisconsin–Madison. He is author of many essays and books, most recently *Cartography: The Ideal and Its History* (Chicago, 2019).

Pedley is Adjunct Assistant Curator of Maps, William L. Clements Library, University of Michigan, Ann Arbor. She is author, in particular, of *Bel et Utile: The Work of the Robert de Vaugondy Family of Mapmakers* (Tring, Herts., 1992) and *Commerce and Cartography: Making and Marketing Maps in Eighteenth-Century France and England* (Chicago, 2005).





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Oceani occidetalis sive terre nove tabula, woodcut map by L. Fries from the Ptolemaeus edition by J. Grüninger, Strasbourg, 1525

IMCoS MATTERS

DATES FOR YOUR DIARY

12–14 May 2020
IMCoS trip to Leith Scotland

The IMCoS UK 2020 event will be based in Leith, Edinburgh's port town. A three-day trip will include visits to Trinity House of Leith, the National Library of Scotland Map Library in Edinburgh, Wanlockhead Lead Mining Museum in the Scottish Borders, Drumlanrig Castle, one of the finest seventeenth-century buildings in Scotland, and the Great Polish Map of Scotland. Further information will be available on the IMCoS website and in the next issue of the journal.

7–9 September 2020, Sydney
37th International IMCoS Symposium

Mapping the Pacific; by stars, wind and water

The next IMCoS symposium will be held in conjunction with a major cartographic conference organised by the State Library of New South Wales to commemorate the 250th anniversary of James Cook's charting of the east coast of Australia and New Zealand. The conference will consider the traditional way-finding knowledge of the Pacific community and the European exploration and mapping of the Pacific from the early modern era through to the nineteenth century, including the cartography of James Cook.

The conference is planned as a three-day event, commencing with an opening reception at the State Library on the evening of Sunday 6 September. Keynote presentations and lectures will take place over Monday 7 and Tuesday 8 September. On the third day a post-conference trip to Canberra with a visit to the National Library of Australia, and its wonderful collection will be offered.

The Library is also planning a major exhibition to reflect the themes of the conference while also highlighting the Library's international cartographic collections.

The venue for the conference is the State Library of New South Wales, Australia's oldest library, located in the centre of Sydney, opposite the Botanic Gardens. The Library is a short distance from a wide range of accommodation options, from backpacker hostels to five-star hotels, as well as numerous bars, cafés and restaurants.

The conference convener, Maggie Patton is assembling a group of speakers comprising distinguished academics, curators and prominent collectors. Additional information is available from Maggie Patton at maggie.patton@sl.nsw.gov.au.

Cyrus Alai's maps of Persia online

In January 2013 long-time IMCoS member Cyrus Alai donated his significant collection of specialist maps of Persia to the Centre for Iranian Studies at the London Middle East Institute. The collection is now fully digitised and is available online at https://digital.soas.ac.uk/mapsiran.

IMCoS London Weekend, June 2019
Annual dinner & The Malcolm Young Lecture

The annual dinner was an enjoyable evening. Professor Mario Cam from Macau University delivered the Malcolm Young Lecture. The Martini/Blaeu atlas of China was the subject of his excellent talk. An abridged transcript can be found on page 42. The dinner was followed by the announcement of the 2019 IMCoS / Helen Wallis award. The citation, on the following page, was prepared and read by Vice-Chairperson Valerie Newby and the presentation of the silver salver was made by President Peter Barber.



Jürgen Espenhorst winner of the IMCoS/Helen Wallis Award receiving the silver salver from President Peter Barber with Vice-Chairperson Valerie Newby. (Photo: Jenny Harvey).

Citation for the 2019 IMCoS/Helen Wallis award

"Although this year's winner is well known in his own country of Germany he is less well known elsewhere. His name is **Jürgen Espenhorst** and it was only in 1990 that he 'discovered' his first atlas. It was Andree Stieler Meyer's *Handatlas*, shown to him by his brother-in-law. From then on he was hooked.

Jürgen is here tonight in person to accept the IMCoS/Helen Wallis Award. This is given every year to an individual who, in the opinion of the selection sub-committee, has been responsible for cartographic contributions of great merit and wide interest to map collectors worldwide. His son Ingo has accompanied him. We are honouring Jürgen for his research, his map collecting and his publications on German *Handatlases*. He has also created the Internationale Atlas-Tage (atlas days), a conference which has been held every year since 2006 in different German towns. Next year, for the first time, it will be held outside Germany in Strasbourg.

He has developed his collections around several focal points which are as follows. Firstly his collection of 1,750 atlases from 1800 to the middle of the twentieth century which serve as the basis for his scientific research and publications, the identification of atlas families and the establishment of a digital record in an atlas database. He has also amassed a collection of about one hundred road maps and eight hundred early aviation maps, as well as maps printed on cloth of which he currently has fifty examples.

Jürgen has written a number of books including *Andree Stieler Meyer & Co. Handatlanten des deutschen Sprachraums (1800–1945): bibliographisches Handbuch* (1994), *Diercke Atlas fur Generationen, Hintergründe, Geschichte und biographische Daten bis 1955* (together with Erhard Kümpel) (1999) and *Petermann's Planet. A Guide to German Handatlases and their siblings throughout the world, 1800 to 1950*, Vol. I: 'The Great *Handatlases*' and Vol. II: 'The Rare and Small *Handatlases*'. These last volumes have been published in English. In 1991 Jürgen started his own publishing company Pangaea Verlag so that he was not subject to the whims of other publishers. This company is still in business today.

Jürgen was born in 1944, in Wernigerode, a small town near the Harz Mountains in Saxony-Anhalt. Later the family moved to Bavaria where he completed his secondary school education. He studied political economics and personnel management in Tübingen and Bonn University after which he found work as a tutor at the Lutheran Academy of Villigst in Schwerte, now in North Rhine-Westphalia. Then from 1989 to 2006, when he retired, he was in charge of the department of business ethics at Münster University.

In 1990, on discovering Andree Stieler Meyer's *Handatlas,* Jürgen was intrigued and set out to investigate its mysteries. His research developed into a passion, which he still has today. Lothar Zogner, at that time Head of the Map Room at the Staatsbibliothek in Berlin, encouraged Jürgen in his research and in 1994 saw publication of his first bibliography of German *Handatlases*. A job as volunteer at the Washington contact bureau of the United Church of Christ (to which incidentally Barack Obama also belongs) created an opportunity to expand Jürgen's cartographic horizon. In between workshops and study sessions he gatecrashed the House of Representatives and visited the Library of Congress where he met Ronald E. Grim and Ralph Ehrenberg who decided that his atlas bibliography needed to be translated into English to attract a wider audience. An encounter with George R. Crossman, an official at the Dept of Defence and later US Ambassador to NATO in Brussels, accelerated the course of events.

Crossman, who had studied in Heidelberg and was interested in cartography, encouraged Jürgen to create *Petermann's Planet: a guide to German Handatlases,* Vol. I: *The Great Handatlases*. Crossman translated the work into English; it was progressively expanded resulting in the publication of two volumes. This work, which is devoted to the different types of *Handatlases* produced in German-speaking countries, has been used by scores of collectors all over the world, helping them to unravel the complicated history of production and development.

Jürgen has always followed two basic lines of action: a detective style examination of the unknown or unexplained and a desire to teach and guide people of all ages. A few years ago he discovered in a flea market an apparatus called *Karten-Wunders*, a device with sliding maps. It was also called Auto-Mapic and was used for navigation. He painstakingly researched the history of this pre-GPS machine and published a book *Das Geheimnis des Karten-Wunders* on it in 2017.

He is not finished yet! His next targets will be early aviation maps and WWI German maps. He intends to research into these two subjects while he is in England.

I would like to thank Wulf Bodenstein (who is also here tonight) for interviewing Jürgen in Germany on my behalf and extracting a great deal of information from both him and his wife!"

8 June 2019, IMCoS Annual General Meeting Chairman's report by Hans Kok

Like every year I have prepared a written statement, that I will read out to you to ensure that the website information will be synchronised with the information promulgated during the AGM.

The Executive Committee held its customary four meetings in the UK, with multiple emails and telephone calls being exchanged amongst members in between meetings. Our visit to Cambridge in April was organised by Valerie Newby, our Vice-Chairperson and national representative for the United Kingdom. The only thing she got wrong was the weather, but I understand British weather does not come under the Vice-Chair's responsibilities and Brexit does not either, otherwise she would have fixed both.

Our yearly Malcolm Young Lecture in June was given by Alan Ereira on 'The Nine Lives of John Ogilby'; the IMCoS/Helen Wallis Award landed in the familiar hands of our Past President Roger Baskes for his lifetime merits as a collector and his generous donations, in particular to the Newberry Library in Chicago, not to speak of his activities as a much appreciated President for IMCoS between 2002 and 2007.

Our yearly International Symposium was ably organised by our Representative Rudolf Lietz and his wife Elizabeth in Manila/Philippines and, being a double-headed symposium, the Hong Kong part was in the hands of Richard Wesley Director of the Hong Kong Maritime Museum and his staff. Both events were very successful and IMCoS is grateful indeed to those who spent so much time, money and effort in the preparation of the 2018 Symposium for the benefit of our members.

The Executive Committee has performed smoothly; reports from our Treasurer and Journal Editor are separate agenda items, both positive, with a Journal going strong and a satisfactory and stable financial status for the Society's affairs. Where other Executive Committee members may be operating out of the limelight, their contribution is crucial for IMCoS, nevertheless: David Dare as General Secretary; Peter Walker our Financial Administrator with membership and website responsibilities; Jenny Harvey who takes care of all aspects of our advertising and library; Mike Sweeting is fast becoming pivotal on PR matters and computer aspects; and Diana Webster who looks after our archiving and Scottish outings; whilst Katie Parker is good at map research and contacts with dealers.

The situation of our National Representatives is being investigated; our President Peter Barber has been asked for advice on this matter and it will come up later under Agenda item 8 as well, as the Committee seeks the advice of the AGM also on this matter before arriving at whatever decision in concert with Robert Clancy, our coordinator of the National Representatives.

This concludes the Chairman's Annual Report for the year 2018; I am open to questions, assuming these would not better be asked under some of the upcoming agenda items, but then I would keep them until then, of course.

However, there is another matter I would like to address, although not really related to the calendar year 2018, and that is the Chairman's position. In 2016 I announced that while accepting the renewed appointment as Chairman, I might not be available for the full term of four years. Meanwhile, the four years being almost done anyway, I would like to announce that I will step down no later than 31 December 2020, hopefully providing enough time to appoint a successor, any time before that. By then, I will have completed fifteen years as Chairman, which is enough in establishing a measure of continuity, but maybe too long to avoid complacency and probably barring new developments in the Society's leadership. I feel that the Society should be led by a younger Chairman with more affinity with digital ways and newer ideas. We will be looking for a replacement, and any recommendations from the AGM, now or later, are welcome.

Treasurer's report by Jeremy Edwards

The Society's accounts for 2018 were presented and approved at our AGM, which was held at the Royal Geographic Society in conjunction with the annual London Map Fair. Our income increased by about £2,000 to £41,378, largely due to an increase in advertising revenue for the Journal. Unfortunately our expenditure was up by £4,500 so instead of the surplus in 2017 of £2,555, we were reduced to £72. At least this was on the right side! Although most of our costs are fairly constant and within our expected revenues, the committee authorised two extra expenses in that year: Improvements to our website and computer operating systems and promotional expenses in connection with the International Symposium in Manila and Hong Kong.

As always, I am grateful for the advice and comments by our independent examiners, Cyrus Alai and Peter Batchelor who have seen the details of these account on your behalf and confirmed their correctness.

28th International Conference on the History of Cartography (ICHC), Amsterdam

Congratulations to the conference director Dr Bram Vannieuwenhuyze (Professor of Historical Cartography at the University of Amsterdam) and his team for hosting a stimulating, lively and memorable event. *Early Maps, Modern Perspectives, Studying the History of Cartography in the 21st Century* attracted over 250 delegates from across the world over the six conference days. The location for the 2019 meeting was KIT, The Royal Tropical Institute whose history dates back to 1864 when it began as the country's Colonial Museum, founded to house the collection of artefacts brought back from the Dutch colonies, and not surprising a number of conference papers addressed colonial cartography.

With over one hundred papers, delivered in parallel sessions, participants were spoiled for choice as to which to attend. A well-produced programme, edited by Paula van Gestel-van het Schip, with abstracts of the papers and posters presented made the selection process a good deal easier.

Outstanding papers were delivered by Mario Cams (who gave The IMCoS Malcolm Young Lecture) and and Lin Hong. Both speakers discussed complementary aspects of the Martini-Blaeu Atlas of China. Nick Barron spoke on visual learning and the construction of Stalinist space in Soviet school maps; Martijin Storms gave a fascinating account of the auction of maps belonging to Cornelis Krayenhoff; Gloria Kuzur and Swagata Basus considered the key themes of violence, drama and tradition in the pictograms surrounding the regional maps of India by French mapmaker Jean-Baptiste-Joseph Gentile; Eloi Ficquet examined in detail Hiob Ludolf's 1683 map of Ethiopia revealing the revisions Ludolf made to the map after gaining first-hand geographical knowledge from the Ethiopian scholar Abba Gorgoryos.

The poster session, perhaps a little tightly assembled and in competition with a map fair, took place mid-week. The 22 presenters offered a varied range of geographical and cartographical topics.

The conference coincided with several impressive exhibitions to which delegates were invited. Following the official opening of the conference we were introduced to the new exhibition *From the Nile to Amstel* at the Allard Pierson Museum. Designed as a bird's-eye view of cultural history, it was rich with splendid maps of the Dutch Golden Age.

At the Royal Palace we were treated to an exceptional exhibition in the magnificent Citizen's Hall. Completed in 1667 by architect Jacob van Campen it was designed as a city hall to reflect Amsterdam's power and wealth. Here at floor level are the world's largest maps – three circular mosaics depicting the eastern and western hemispheres and the northern night sky – each measuring 624 cm in diameter. The exhibition *The Universe of Amsterdam, Treasures from the Golden Age of cartography* is, as the title suggests, a display of works celebrating Amsterdam as the unparalleled centre of Dutch cartography. It featured works by all the leading Dutch map and chart makers. Blaeu, who was involved in the production of the floor maps, was represented by eleven volumes of his original *Atlas Major*, housed in a sumptuous seventeenth-century cabinet. Also attributed to Blaeu was the giant atlas of the Great Elector of Brandenburg, Frederick William. Measuring 170 x 220 cm, it is one of three huge atlases believed to have been made by Blaeu.

A trip to The Hague gave participants the opportunity to visit the National Library and the National Archives where a pop-up exhibition had been specially curated for the conference. Memorable amongst the host of plans of Amsterdam was a 1601 ship's log open on a spread of pages illustrated with dodos. At the Library, conveniently adjacent to the Archives, was an exhibition based on the recently published *The history of the Netherlands in 100 old maps* co-authored by the library's Curator of Prints Marieke van Delft and Reinder Storm (Curator of Maps at the University of Amsterdam). Both guided us through some of the collection's cartographic treasures. A standout item was a book of prints published by Pieter Schenck *c.*1700. *Admirandorum quadruplex spectaculum* records Nijmegen artist Johannes van Call's journey along the Rhine from Schaffhaussen to Amsterdam. Remarkable is that it is one of the earliest experiments with multi-colour printing using a technique called 'a la poupee' in which the colours are applied to different sections of the plate and printed at the same time.

Conference delegates were invited to the Amsterdam City Archives to the opening of their new exhibition *Estate Atlases of Amsterdam 1559–1703*. It included maps of land ownership of individual citizens as well as institutions such as the City Orphanage and the Leper's Asylum. The nature of land ownership in Amsterdam changed radically on 26 May 1578 when Protestant reformers expelled the Catholic council, after which they confiscated their churches and repurposed their institutions. Curator of cartography at the archives

continued on page 50

THE MALCOLM YOUNG LECTURE 2019

The Martini-Blaeu Novus Atlas Sinensis

Mario Cams

The Malcolm Young Lecture is presented annually at the IMCoS dinner to coincide with the London Map Fair in June. This year's speaker was Dr Mario Cams Assistant Professor in the Department of History at the University of Macau. He is the winner of the 2019 Imago Mundi Prize *which is awarded to honour the* Imago Mundi *article judged to have made the most significant contribution to the discipline.*

The *Novus Atlas Sinensis* or New Atlas of China was printed for the first time in 1654 by Joan Blaeu, constituting the sixth and last volume of his *Novus Atlas* series. In contrast to what is suggested by its title, the volume is not only an atlas of China but includes descriptions and maps of all of East Asia, making it the first full atlas of the region available to the European readership. All Europeans who could afford the expensive volume could now familiarise themselves with the internal structure of East Asia and learn about

Fig. 1 Willem & Joan Blaeu, 'China Veteribus Sinarum Regio nunc Incolis Tame Dicta' (Ancient China, Territory of the Chinese [Sinae], Now Called TAME [*Da Ming*] by the Locals), *c.*1636, *c.*50.8 x 40.6 cm. Private collection.

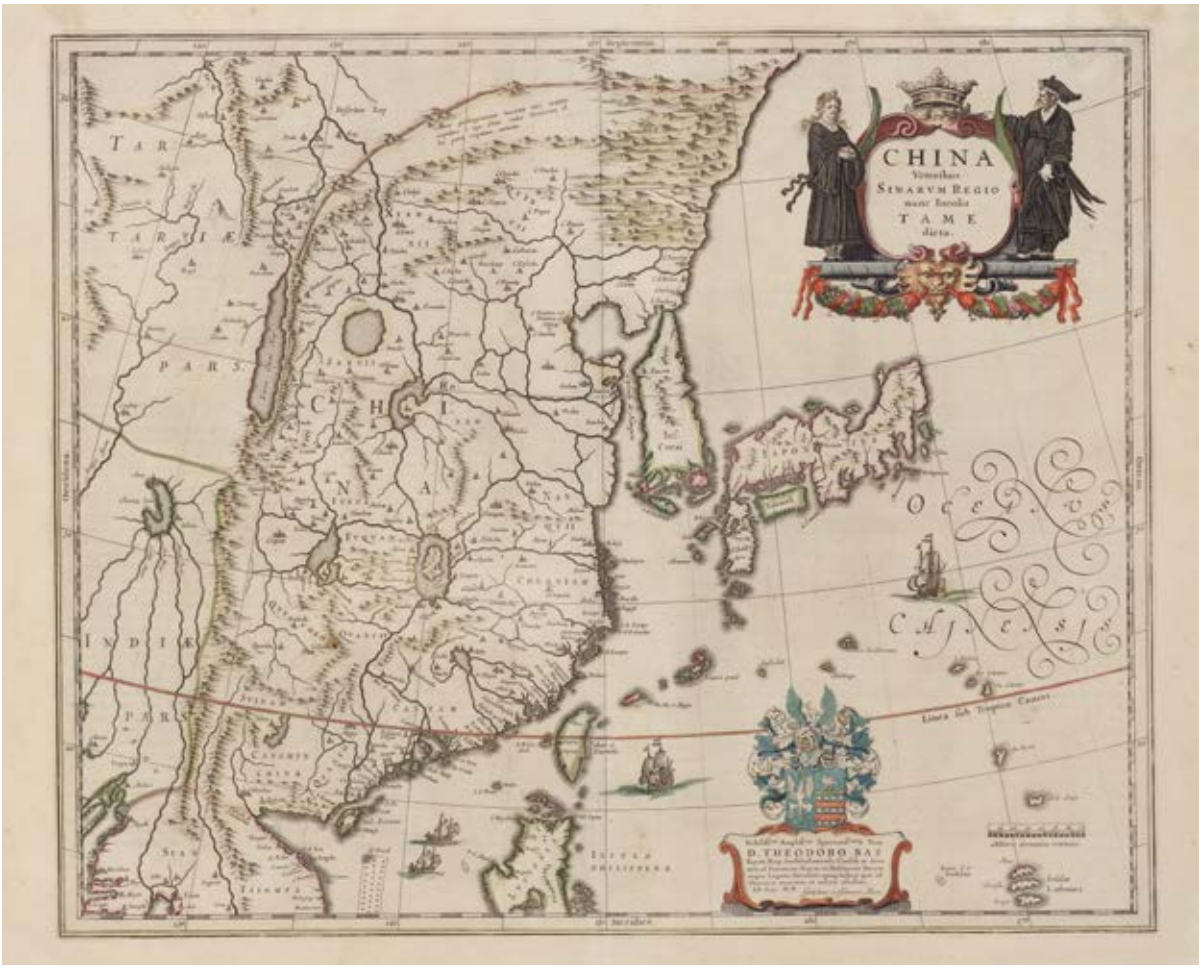




Fig. 2 Joan Blaeu, 'Imperii Sinarum Nova Descriptio' (A New Description of the Chinese Empire), 1655, *c.*60 x 46 cm. Private collection.

its administrative hierarchies, political practices and cultural specificities. As such, the atlas thoroughly shaped how Europeans in the second half of the seventeenth century came to understand, interact with and imagine the 'Far East'.

This shift is best understood when we consider the older single-sheet maps depicting China, Korea and Japan that enjoyed a reasonably wide distribution. For example, the first separate China map ever printed was included in Abraham Ortelius's world atlas of 1684 and lays out the basic image of East Asia. It imagines China as a vertically shaped land, closed in by a mountain range and sections of the Great Wall to the north and west, and with a long seaboard to the south and east. The southern half of this coastline includes most of the place names, undoubtedly information of Iberian provenance. On the other hand, areas inland and north along the same seaboard contain almost no information and seem fully based on an imagination of China informed by much less detailed representations of Asia. After Ortelius, this basic outline of continental East Asia would be reproduced with minor changes for no less than seven decades. In the 1640s, Willem Blaeu, founder of the Blaeu publishing house, printed maps of China that still included the same features (Fig. 1). All the more remarkable then, that it was his son Joan who went on to print the *New Atlas of China* in 1654, unveiling a wealth of specific new information on East Asia and thereby radically altering the way Europeans understood and imagined that part of the world (Fig. 2).

The man who provided Joan Blaeu with the manuscript for the atlas was the Jesuit missionary Martino Martini (1614–1661). Having sailed to China around 1640, at the height of Portuguese-Dutch rivalry on the seas and shores of Asia, he soon found himself pulled into the heart of yet another struggle with global implications: the transitional war between Ming China

and the Manchu-Qing Empire. Because of his knowledge of mathematics, which in the Jesuit curriculum included the art of ballistics, Martini was able to witness the Ming-Qing war firsthand as he served the Ming court in its military defence against the Manchu of the Qing. On top of that, after he was forced to defect to the Manchu side in 1646, he was sent back to Europe as procurator for the China Jesuits, with the task of informing European patrons of events in China and ensuring their continuous support for the Jesuit mission there. When he tried to find his way back to Europe, carefully navigating the Portuguese-Dutch and Ming-Qing rivalries in Asia, he found passage on a Portuguese ship sailing from Macassar to the Coromandel Coast, when the ship was captured by the Dutch and brought to Batavia. In his effort to appease the Dutch, Martini shared much sought-after intelligence about the ongoing war on the continent and offered to produce an atlas for the Dutch on the basis of the Chinese-language books and maps he carried in his luggage. Thus, Martini moved along with the two major power shifts of the mid-seventeenth century: the Ming-Qing and Portuguese-Dutch transitions, enabling this Catholic missionary to China and his manuscript atlas of East Asia to reach the heart of the Calvinist Dutch Republic in the fall of 1653.

In the preface of the atlas, Martini explicitly mentions that he faithfully copied from Chinese atlases and maps. In the quest to identify these, scholars most often link the Martini-Blaeu maps to the *Maps of Enlarged Territories* (Guang yu tu 廣輿圖), an authoritative atlas compiled by Luo Hongxian 羅洪先 (1504–64) and first printed in 1561. Although this claim is repeated widely in the literature, the main problem with this assertion is that it raises more questions than it is able to answer: which of the seven different editions of the *Maps of Enlarged Territories* that existed at the time did Martini use? Or did he perhaps use maps that were to some extent derived from those contained in the *Maps*? If this is the case, quite a number of early seventeenth-century Chinese atlases and gazetteers qualify as potential candidates.

Another thesis (albeit somewhat forgotten) holds that Martini in fact used a different work, the *Records of Enlarged Territories* (Guang yu ji 廣輿記). This gazetteer-type work originally did not include maps, but some of its later editions feature one overview map of China and fifteen provincial maps. Along with other scholars, I have recently independently confirmed that Martini used a copy of the *Records* now kept at the Vatican Library, copying and adapting both the maps and the text for his manuscript atlas. The provincial maps in this Vatican copy even carry added gridlines and many Latin notes, all certainly from Martini's hand, as he made sense of the Chinese maps and tried to gauge longitudes and latitudes of major cities by imposing his own graticule on top of each of the (originally distance-based) provincial maps.

However, Martini's atlas contains detailed numerical data that is simply not found in the *Records*. These include both the provincial statistics given at the beginning of each chapter and the handy distance chart for provincial capitals that is inserted in the preface of the *Novus Atlas Sinensis*. Although both types of data can be found in early seventeenth-century Chinese gazetteers and atlases, and despite a scholarly quest of about a century, a close match was never found. But a rare wall map, extant in at least three copies, holds the key to this puzzle. Entitled 'Complete Map of Allotted Fields, Human Traces and Routes in the Nine Regions under Heaven' (Tianxia jiubian fenye renji lucheng quantu 天下九邊分野人跡路程全圖, Fig. 3), the map was printed in the spring of 1644 and sold at the bookshop of a certain Cao Junyi 曹君義 in the city of Nanjing, the centre of China's commercial printing industry at the time. The bottom margin of this map contains all of the statistical and distance data contained in Martini's text. This discovery finally makes it possible to identify the Chinese maps and works of geography that provided Martini with the basic information for the manuscript *Novus Atlas Sinensis*.

With these renewed insights into the production context and the source materials behind the Martini-Blaeu atlas, we can better appreciate how the atlas so radically displaced the image of East Asia for its European audience. As a late Renaissance product, the atlas was in the first place intended to unveil the position and composition of East Asia within expanding (Western) European horizons. This was achieved by the wholesale copying of geographical knowledge produced in East Asia and by inserting this new knowledge in the accepted framework of the late Renaissance atlas, with maps displaying a graticule and inserted among a descriptive geo-historical narrative by the traveller-missionary who had seen it all. All this was made possible by the coming together of Joan Blaeu, arguably the most renowned publisher of commercial atlases in Europe, and Martino Martini, a Jesuit missionary to China who successfully navigated the two principle power shifts of the seventeenth-century world.

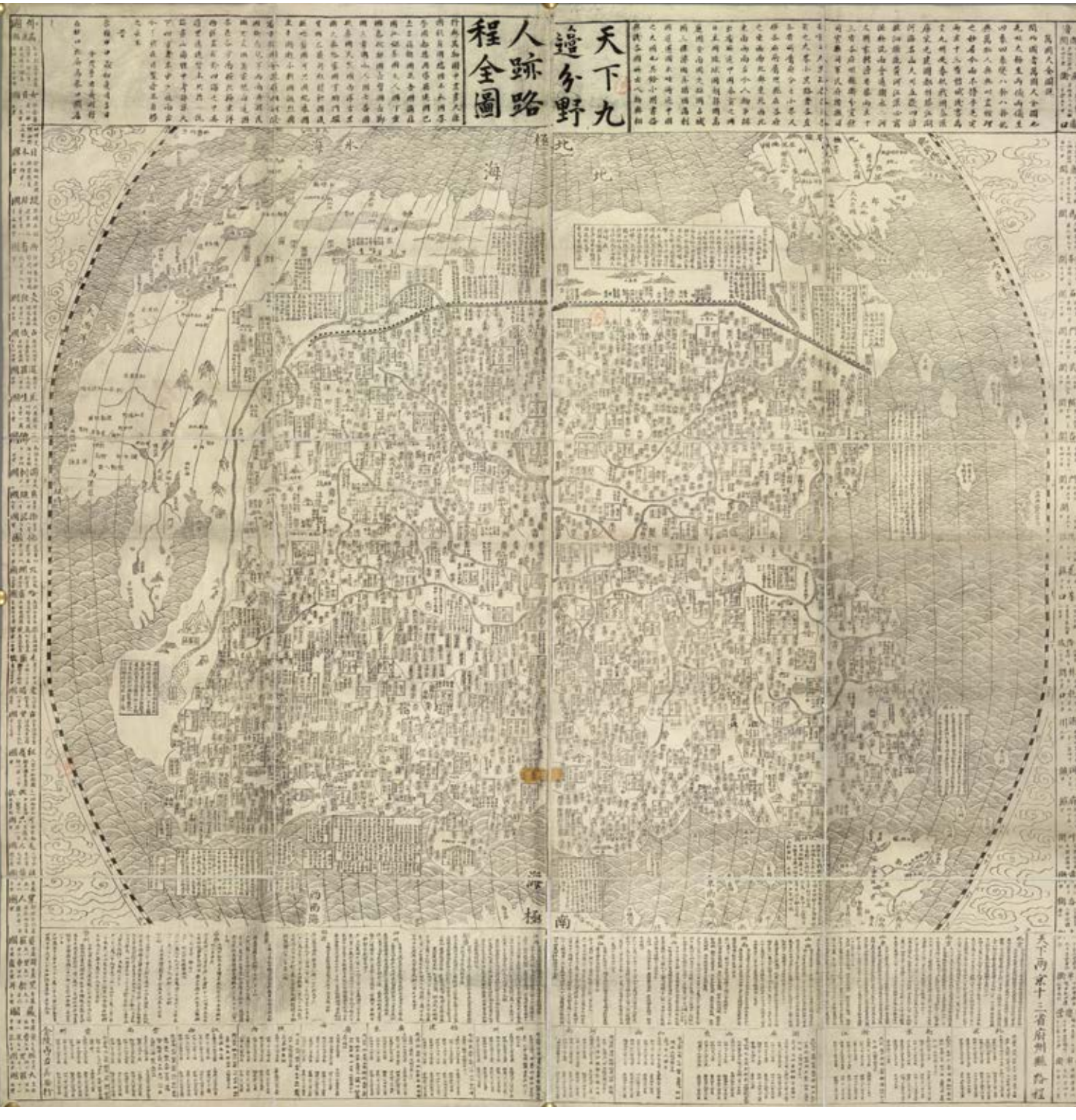


Fig. 3 'Cao Junyi 曹君義, Tianxia jiubian fenye renji lucheng quantu 天下九邊分野人跡路程全圖' (Complete Map of Allotted Fields, Human Traces and Routes Within and Without the Nine Borders under Heaven), 1644, *c.*124 x 126 cm. Textual information used by Martini is at the bottom of the map. ©British Library (Maps* 60875.(11)).

WHAT TO COLLECT?

Civil aviation maps

Hans Kok

Since the first flight made by the Wright Brothers in 1903, in a heavier-than-air machine, aviation has passed from an obscure and risky game into a worldwide transport industry. Around the turn of the century when prices for early maps went up considerably, collectors were on the lookout for cheaper maps that promised to be equally interesting.

Aeronautical mapping developed very much along the same lines as maritime mapping in earlier centuries, but much more quickly. Data collection became a government and an international affair though, resulting in treaties and obligatory provision of data, including height information as the third dimension was of paramount importance. Private or state-owned commercial airline companies provided the vast majority of maps as each one considered mapmaking from this data a strategic capability. For fear of being denied access to maps for their international operations in case of political complications, the airlines believed the production of their maps could not be left to third parties, let alone foreigners. Military aviation maps for fighter aircraft turned out to be incompatible with civil mapping, as their requirements were very different and civil organisations did not want to come under military control in any way at all.

Fig. 1 Detail from an Imperial Airways map showing the flight paths across the English Channel to Amsterdam, Brussels and Cologne, 1925. Private collection.



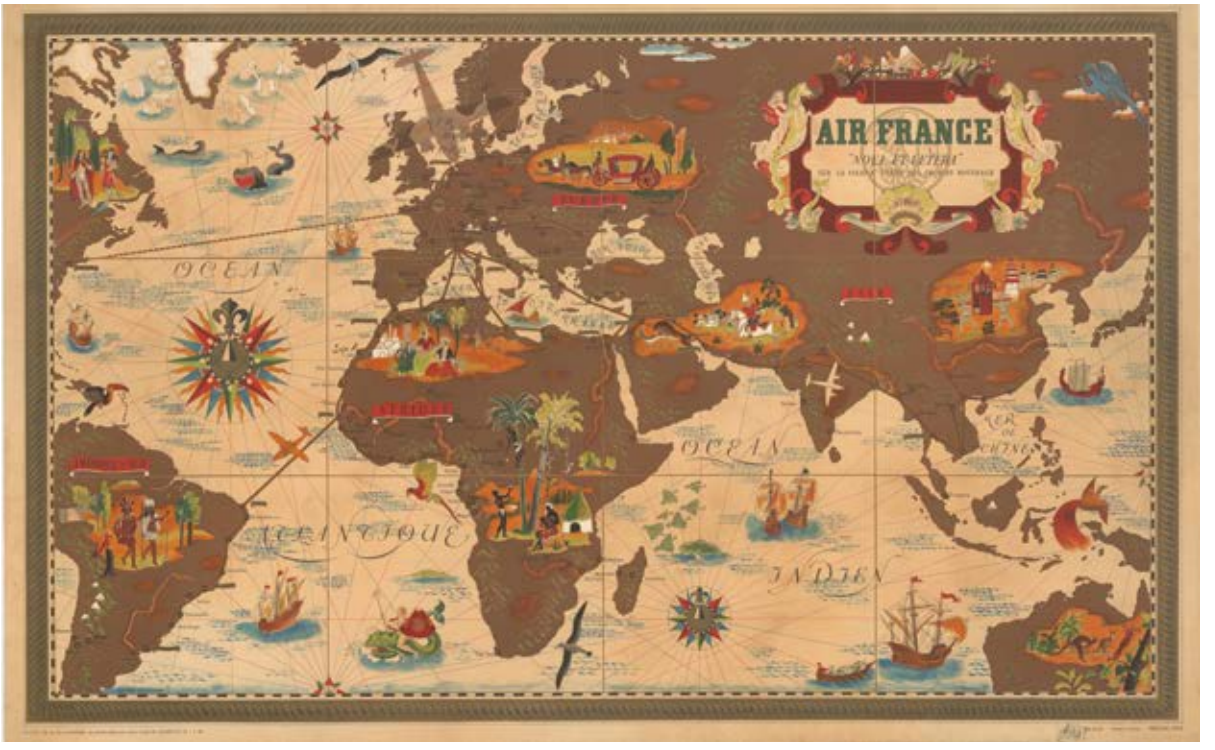


Fig. 2 Air France poster designed for display in travel offices by L. Boucher, 1938. Private collection.

Quite a variety of aviation maps can be collected:

- Early airmen's notes on routes and airports (1910–30). These would be chance purchases, normally costing in the order of £30–£100.

- Geographical/topographical maps that have been adapted to aviation use for passengers (Fig. 1) and navigation in visual flying conditions. Showing compass roses, track lines and airport locations (1920–40) when intended for piloting use. Occasionally in auction catalogues at prices from £50 –£300.

- Military maps, specifically those produced during times of war (WW I and WW II), either for fighters or Transport Command. Available at auctions and smaller book markets; priced up to £250.

- Airline marketing and public relations type of maps, intended to impress potential passengers, presenting the then current route network, prepared by contemporary artists of note (1925–65) (Fig. 2). These were often displayed in plush travel agencies along with aircraft models; they showed little cartography, but rather more of a country's touristic attractions. These maps have recently gone up in price, starting from £400 and fetching £2,000 and more when designed by a reputable artist for a well-known airline.

- Real aircraft navigation maps, dedicated for airline use (1945–95). These were used under instrument flight rule conditions, in low visibility, in and above clouds. These Radio Facility Charts or long-range plotting sheets are available at low to moderate prices (£10–£200) at auctions or flea markets.

- Commercial airline maps, produced in-house by the airline to satisfy special airline considerations. These maps were based on government maps which under international law they were required to supply to the commercial airlines. As these were produced in large numbers they can be bought for as little as £5–£20.

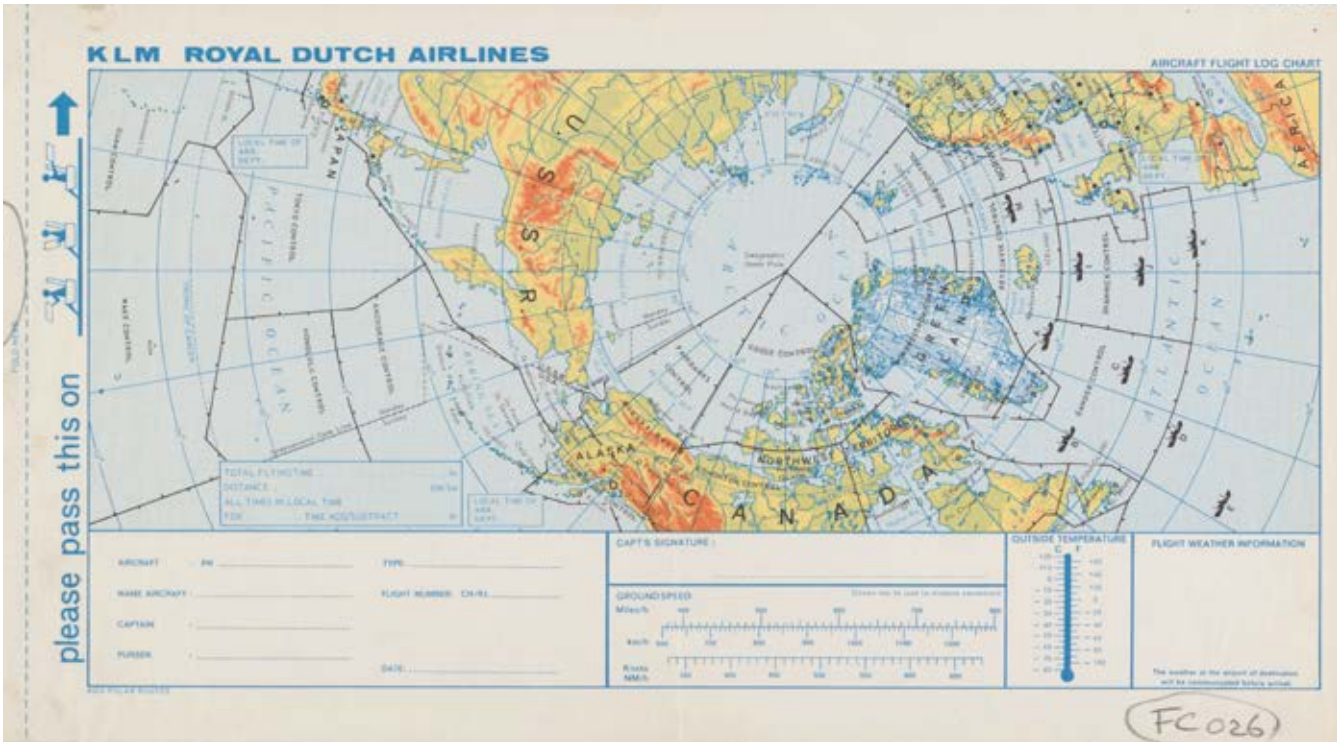
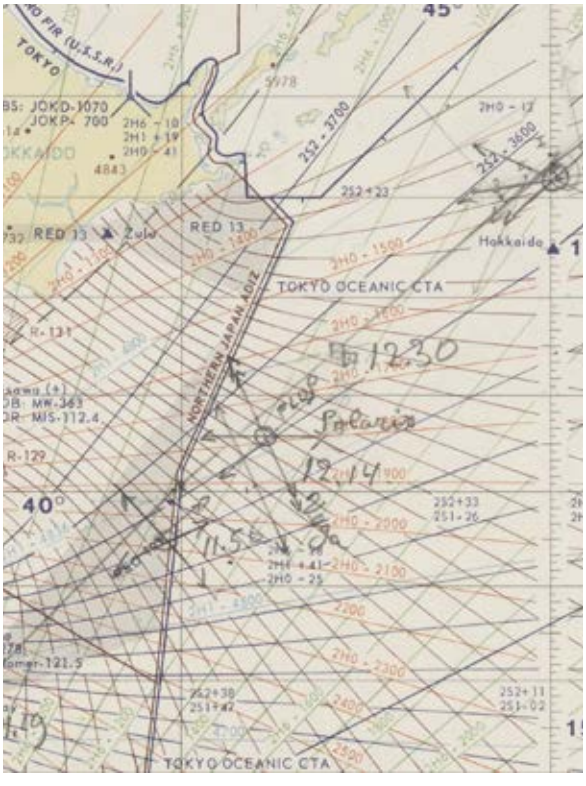


Fig. 3 Example of a KLM flight log designed to be passed through the cabin as passenger information, *c.*1965. Private collection.

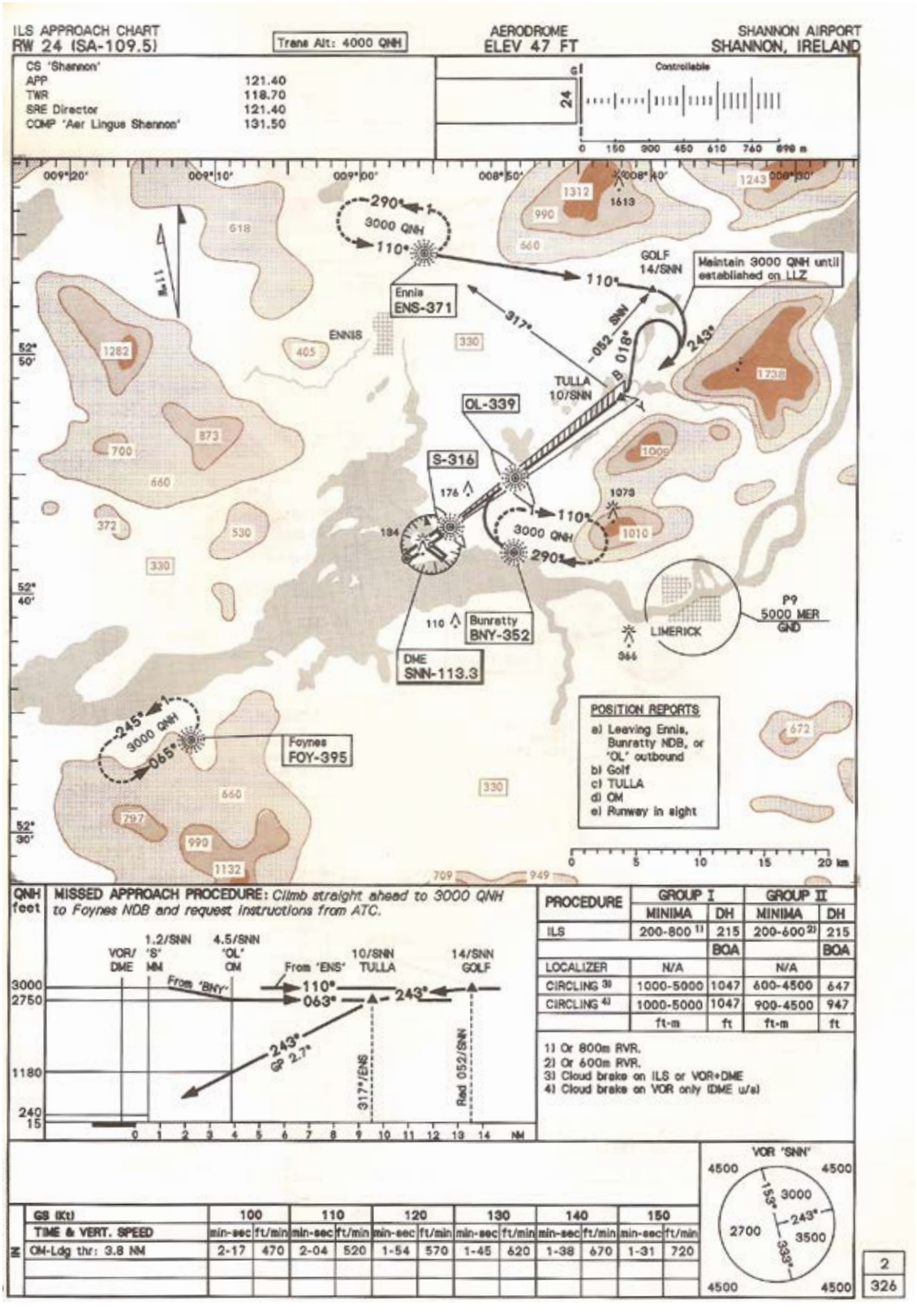


- Oddities, like passenger cabin information leaflets and long-range route information booklets can be found at auctions and flea markets for under £20 unless they contain politically relevant information (Fig. 3).

Radio Facility Charts show mainly airways and radio beacons such as the radio navigation systems Radio-Range, Non-directional beacons, Very High Frequency Omnidirectional Ranges over land; they also show minimum safe heights according to specified considerations. The large long-range navigation charts predominantly show the latitude/longitude grid, magnetic compass variations and little more than coastlines, large rivers and lakes. Consolan and Loran hyperbolic antennae patterns etc. are shown over oceans and remote areas; the maps will also accommodate celestial navigation (Fig. 4) and later

Fig. 4 Detail of KLM North Pacific plotting chart with actual aircraft positions, 1961, Tokyo to Anchorage/Alaska. Private collection.

Fig. 5 KLM approach plate for Shannon Airport runway 24 ILS system, 1982. Private collection.


ILS APPROACH CHART
RW 24 (SA-109.5)
Trans Alt: 4000 QNH
AERODROME
ELEV 47 FT
SHANNON AIRPORT
SHANNON, IRELAND
CS 'Shannon'
APP 121.40
TWR 118.70
SRE Director 121.40
COMP 'Aer Lingus Shannon' 131.50
Controllable
290°
3000 QNH
110°
Ennis
ENS-371
ENNIS
GOLF
14/SNN
Maintain 3000 QNH until established on LLZ
317°
052° SNN
018°
243°
TULLA
10/SNN
OL-339
S-316
110°
3000 QNH
290°
Bunratty
BNY-352
DME
SNN-113.3
LIMERICK
P9
5000 MER
GND
POSITION REPORTS
a) Leaving Ennis, Bunratty NDB, or 'OL' outbound
b) Golf
c) TULLA
d) OM
e) Runway in sight
Foynes
FOY-395
245°
3000 QNH
065°
QNH feet
MISSED APPROACH PROCEDURE: Climb straight ahead to 3000 QNH to Foynes NDB and request instructions from ATC.
VOR/DME
1.2/SNN 'S' MM
4.5/SNN 'OL' OM
From 'ENS'
10/SNN TULLA
14/SNN GOLF
From 'BNY'
110°
063°
243°
243° GP 2.7°
317°/ENS
Rad 052/SNN
3000
2750
1180
240
15
NM
PROCEDURE
GROUP I
GROUP II
MINIMA
DH
ILS
200-800 1)
215
200-600 2)
BOA
LOCALIZER
N/A
CIRCLING 3)
1000-5000
1047
600-4500
647
CIRCLING 4)
900-4500
947
ft-m
ft
1) Or 800m RVR.
2) Or 600m RVR.
3) Cloud brake on ILS or VOR+DME
4) Cloud brake on VOR only (DME u/s)
GS (Kt)
100
110
120
130
140
150
TIME & VERT. SPEED
min-sec
ft/min
IM
OM-Ldg thr: 3.8 NM
2-17 470
2-04 520
1-54 570
1-45 620
1-38 670
1-31 720
VOR 'SNN'
4500
3000
2700
3500
153°
243°
333°
2
326

Inertial Navigation and satellite/GPS navigation in overview. Where civil and military maps were made to comparable specifications (airline long-range navigation and maps for military transport command and non-fighter aircraft), map production remained separate for various reasons, mostly involving political and strategic reasons. After the end of the Cold War, when military budgets were cut, strategic military systems were offered to civil aviation, discounting the huge military development cost. As a consequence the Inertial Navigation Systems (INS) used in commercial operations (they were independent of any ground-based systems) were replaced by GPS-type navigation. The military authorities guaranteed continuous availability in times of war, maybe at reduced accuracy, but sufficient to support civil aviation.

After *c.*1970, airline map production was limited to printing only from internationally available databases covered by international law, allowing for local distribution. After 1995 hard copy maps became obsolete for on-board use in aircraft as they were replaced by digital versions, stored on on-board computers. This process has just about been finalised, and even stored digital maps serve as master copies only; they are easily updated, cheaply distributed and guarantee a standard level of information to all users of the airspace infrastructure.

Civil aviation maps may be distinguished as government provided data carriers prescribed on various scales by the International Civil Aviation Organisation (ICAO World map 1: 1.000.0000 etc.). Since 1944 maps were produced by airlines and private suppliers on the condition that they would be certified for use (International Air Transport Association – IATA, Jeppesen Company etc.). These maps exist as airport maps, standard instrument departure and arrival maps (SIDs and STARs), Terminal Area Maps and the majority as Approach and Landing plates for each runway and approach system separately. These will also contain information on the minimum allowable weather conditions for landing and an approach profile, consisting of time versus distance for each approach type (Fig. 5), thus introducing the fourth dimension – time – into maps.

Maps resulting from space exploration are available, but the number of collectors is still limited, though the 50th anniversary of the momentous moon landing by the Apollo 11 team should spark a flurry of interest.

continued from page 41

Marc Hameleers authored *Kaartboeken van Amsterdam 1559–1703* to accompany the exhibition.

Dutch maritime history was brought alive with a visit to the Het Scheepvartmuseum (National Maritime Museum). Located in the old harbour area of Amsterdam, the group travelled leisurely by boat along the canals to former navy storehouse. There we viewed the museum's latest exhibition *Maps & Marvels* which explains how Dutch seafarers in the Golden Age found their way at sea, and how these voyages defined the way Europeans saw the world in the seventeenth and eighteenth centuries. In addition to the charts and globes, there was a feast of 'curiosities' on display; items brought back by mariners and traders to entertain and enlighten the expanding Dutch merchant class. In the Museum courtyard, under a spectacular glass-domed roof, criss- crossed with metal casing, fashioned to represent rhumb lines, the conference proceedings formally ended with an elegant dinner and an introduction to the 2021 ICHC host country Romania by its conference director Dr Cristina Toma.

Amsterdam has so much to offer scholars, collectors and enthusiasts of map history and ICHC 2019 did its city's cartographic legacy proud.

Ljiljana Ortolja-Baird



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Claudius Ptolemaeus, *Geographicae Enarrationis Libri Octo*, with 50 woodcut maps, Lyons, 1535. Estimate $20,000 to $25,000.

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CARTOGRAPHY CALENDAR

Exhibitions

Until 15 September 2019, Amsterdam
The City Archives
Estate Atlases of Amsterdam 1559–1703
The exhibition is a unique opportunity to see a number of beautiful historical manuscript maps of Amsterdam. Information: https://www.amsterdam.nl/stadsarchief/agenda/.

Until 22 September 2019, Amsterdam
Royal Palace
The Universe of Amsterdam: Treasures from the Golden Age of cartography
Information: https://www.paleisamsterdam.nl/en/visit/.

Until 30 September 2019, Stanford
David Rumsey Map Center
Coordinates: Maps and Art Exploring Shared Terrain explores the shared terrain of maps and art. Information: http://library.stanford.edu/rumsey/exhibit.

Until 27 October 2019, London
Museum of London, Docklands
Secret Rivers: London's Historic Waterways
The intriguing histories of the rivers Effra, Fleet, Neckinger, Lea, Wandle, Tyburn, Walbrook and Westbourne are all featured in the exhibition. Information: https://www.museumoflondon.org.uk

Until 10 November 2019, Boston
Norman B. Leventhal Map Center
America Transformed: Mapping the 19th Century, Part I
The exhibition will illustrate early settlement of western land that displaced native peoples; the country's economy diversified through coal and iron mining as well as plantation agriculture; and the development of roads, canals, steamboats and railroads that allowed for the vast expansion westward to occur. Information:www.leventhalmap.org.

Until 7 December 2019, Zurich
Zentralbibliothek Zürich
Kosmos in der Kammer
On display are globes, astronomical clocks and maps which provide insights into pre-modern worldviews. Information: https://www.zb.uzh.ch/de/exhibits/kosmos-in-der-kammer.

Until 29 December 2019, Philadelphia
The American Philosophical Society
Mapping a Nation: Shaping the Early American Republic traces the creation and use of maps from the mid-18th century through 1816 to investigate the way maps, as both artworks and practical tools, had political and social meaning. Information: www.amphilsoc.org.

Until 5 January 2020, London
National Maritime Museum, Greenwich
The Moon
The exhibition celebrates fifty years since NASA's Apollo 11 mission. It presents a cultural and scientific story of our relationship with the Moon over time and across civilisations. Information: www.rmg.co.uk/whats-on/moon-exhibition.

Until March 2020, Edinburgh
National Library of Scotland
Northern Lights is billed as 'a showcase of the leading role Scotland took in the intellectual and scientific progress of the later 18th century', and will feature rarely seen books, manuscripts and maps from the library's archives. Information: https://www.nls.uk.

Until 1 March 2020, Oxford
Weston Library
Talking Maps will explore how maps are neither transparent objects of scientific communication, nor tools of ideology, but rather proposals about the world that help people to understand who they are by describing where they are Information: nick.millea@bodleian.ox.ac.uk.

Lectures & conferences

5–6 September 2019, Oxford
International Map Collectors' Society visit to the exhibition *Talking Maps* at the Bodleian Library, guided by Nick Millea and co-curator Jerry Brotton, followed by the annual Collectors' Meeting at Wadham College. Information on the IMCoS website www.imcos.org.

12 September 2019, Oxford
Lecture Theatre, Weston Library
Lunchtime talks, 1.00pm: Jerry Brotton
The Selden Map of China and Global Mapmaking
To book a free place go to: www.bodleian.ox.ac.uk/whatson/whats-on.

21 September 2019, New York
Avenues HQ, 11 East 26th Street
New York Map Society meeting
Chet Van Duzer, ***Frames that Speak: An Introduction to Cartographic Cartouches***
Information:MapSocietyNY@gmail.com.

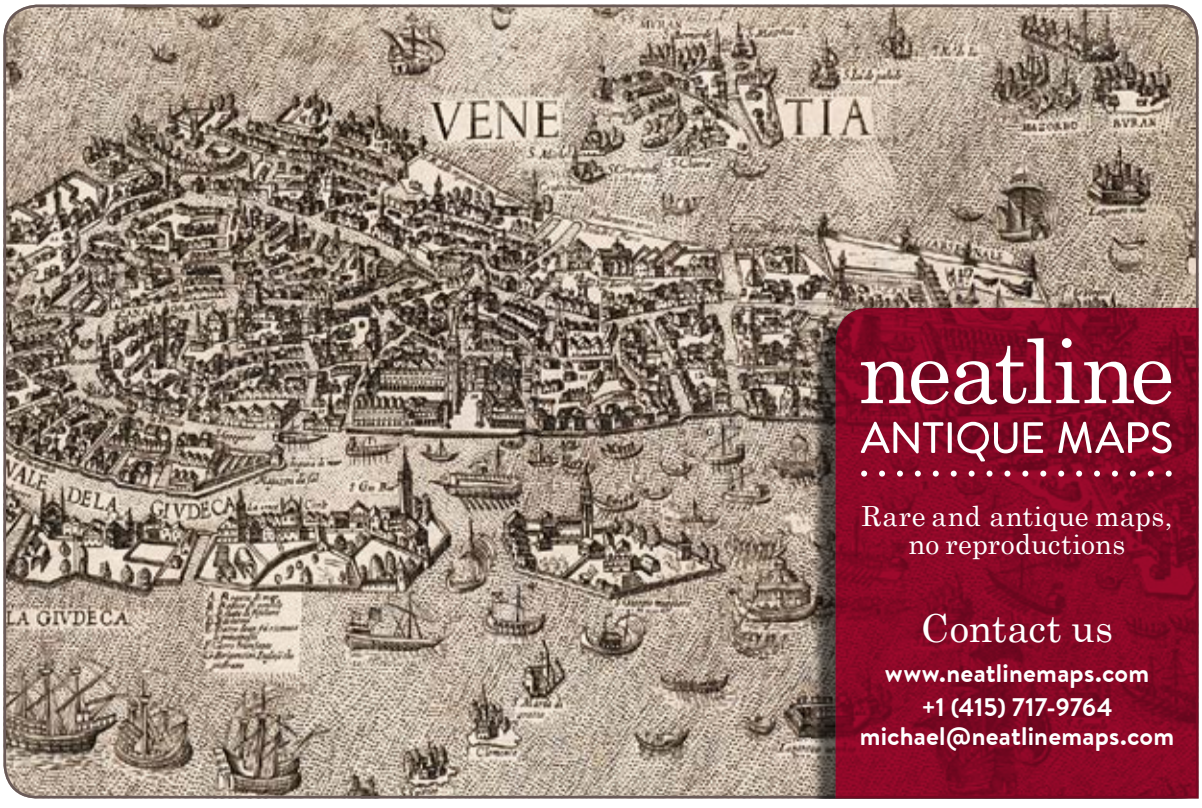
2–5 October 2019 Zurich
XIV symposium of the International Coronelli Society for the Study of Globes
Information: heide.wohlschlaeger @ coronelli.org or Jan Mokre, vincenzo@coronelli.org.

10–12 October 2019, Philadelphia
American Philosophical Society Library
Conference: ***The Power of Maps and the Politics of Borders***
Information: www.amphilsoc.org.

10–12 October 2019, Stanford,
David Rumsey Map Center
Gender, Sexuality, Cartography
Barry Lawrence Ruderman Conference on Cartography. This year's meeting will focus on the relationship between gender, sexuality and cartography. The keynote speaker is Prof. Susan Schulten. Information: https://library.stanford.edu/rumsey/programs/barry-lawrence-ruderman-conference-cartography.

14–16 October, 2019, Strasbourg
Faire connaître les mondes en découverte
The symposium is sponsored by the Bibliothèque Nationale et Universitaire, University of Strasbourg and the University of Paris VII-Diderot. It will focus on the process of discovery in its social context, and the links between discoverers and media and the mechanisms of transmission by the media. Information: www.bnu.fr/action-culturel/agenda/colloque-international-faire-connaitre-les-mondes-en-decouverte.

19 October 2019, New York
Avenues HQ, 11 East 26th Street



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'Maps and Society' Lectures

2019–2020 TWENTY-NINTH SERIES

Warburg Institute, London, 5 pm
Sponsored by the Antiquarian Bookseller's Association and the International Map Collectors' Society (IMCoS).
Information: Catherine Delano-Smith (c. delano-smith@qmul.ac.uk) or Tony Campbell (tony@tonycampbell.info)

17 October 2019
Dr James A. Welu (Director Emeritus, Worcester Art Museum, Worcester, MA). ***Vermeer's 'Mania for Maps'***

5 December 2019
Dr Mordechay Lewy (Ambassador (ret.) Bonn, Germany). ***The apocalyptic Abyssinian: Transferring an Islamic Motif to Europe and Giving the Horn of Africa an Eschato-logical Meaning after the Fall of Acre***

16 January 2020
Jon Quixley (co-author, with R.C.E. Quixley, of *Antique Maps of Cornwall and the Isles of Scilly,* 1966, 2018). ***How Cornwall Took Shape from Saxton to the Ordnance Survey, with Quirks and Gaffes on the Way***

20 February 2020
Philip Curtis (Director, The Map House, London). ***When Maps Go to War: Pictorial Conflict Maps, 1900–1950***

19 March 2020
Dr Ronald Grim (formerly Curator of Maps, Norman B. Leventhal Map and Education Center, Boston Public Library, USA). ***Annotated Atlases: Unravelling Stories of Personal Provenance***

30 April 2020
Dr Jacob Gestman Geradts (Early Modern History, Catholic University of Leuven, Belgium). ***Cornelis de Hooghe (1541–1583): Emperor's Son and Cartographer***

New York Map Society meeting
John Huth will expand upon his book ***The Lost Art of Finding Our Way***.
Information: MapSocietyNY@gmail.com.

2 November, 2019, New York
Avenues HQ, 11 East 26th Street
New York Map Society meeting
Ian Fowler will speak on ***Cartographic Visions of New Netherland and New Amsterdam.*** Information: MapSocietyNY@gmail.com.

7–9 November 2019, Chicago
Newberry Library
Redrawing the World: 1919 and the History of Cartography
The 20th series of the Kenneth Nebenzahl, Jr., Lectures in the History of Cartography commemorates the Centennial of the landmark Paris Peace Conference that led to the signing of the Treaty of Versailles. The lectures are free and open to the public.
Information: www.newberry.org.

14–17 November 2019, Gainesville
University of Florida
The Caribbean: A Cultural Encounter,
Annual Meeting Society for the History of Discoveries.
Information: https://networks.h-net.org.

16–17 November 2019, Valetta,
Presidential Palace, Malta
The Malta Map Society 10th anniversary
Seminar and conference entitled *Imago Melitae, 2019.*
Information: https://mmaltamapsociety.mt.

19 November 2019, Cambridge
Cambridge Seminars in the History of Cartography
Hugh Torrens (University of Keele), ***Geologist William Smith (1769-1839) and his struggles to both earn a living, and finance his scientific and cartographic projects to 1820.*** Information: sarah.bendall@emma.cam.ac.uk.

21 November 2019, Oxford
Lecture Theatre, Weston Library
Lunchtime talks, 1:00 pm:
Alexander Kent & John Davies
Secret Soviet maps of Britain and the World.
To book a free place go to: www.bodleian.ox.ac.uk/whatson/whats-on.

5 December 5 Oxford
Lecture Theatre, Weston Library
Lunchtime talks, 1:00 pm: Hilary Turner ***'To beautify his hall': Ralph Sheldon's tapestry maps in the Bodleian Library.***
To book a free place go to: www.bodleian.ox.ac.uk/whatson/whats-on.

7 December 2019, Tervuren, Belgium
Royal Museum for Central Africa
The Brussels Map Circle Conference 2019 Mapping Africa with lectures by Prof. Em. Elri Liebenberg and Prof. Dr Imre Demhardt, followed by a presentation of maps from the collection at the Royal Museum for Central Africa by Wulf Bodenstein. Information: http://www.bimcc.org/.

Into the future

April 2020, Strasbourg
15th International Atlas Day
This will be held over Friday and the weekend in the last or penultimate week of April.
Information: francis.fischer90@sfr.fr.

21–23 April 2020, Istanbul
8th International Symposium on the History of Cartography
Mapping the Ottoman Realm: Travellers, Cartographers and Archaeologists
The symposium is open to everyone interested in the (former) Ottoman countries. Information: https://history.icaci.org/istanbul-2020.

6–9 September 2020, Sydney
State Library of New South Wales
Mapping the Pacific: by stars, wind and water. The next ***38th IMCoS Symposium*** will celebrate the 250th anniversary of Cook's discovery of the east coast of Australia. See page 38 for more information.

Map & book fairs

27–29 September 2019, San Francisco
San Francisco Map Fair
Information: https://sanfranciscomapfair.com.

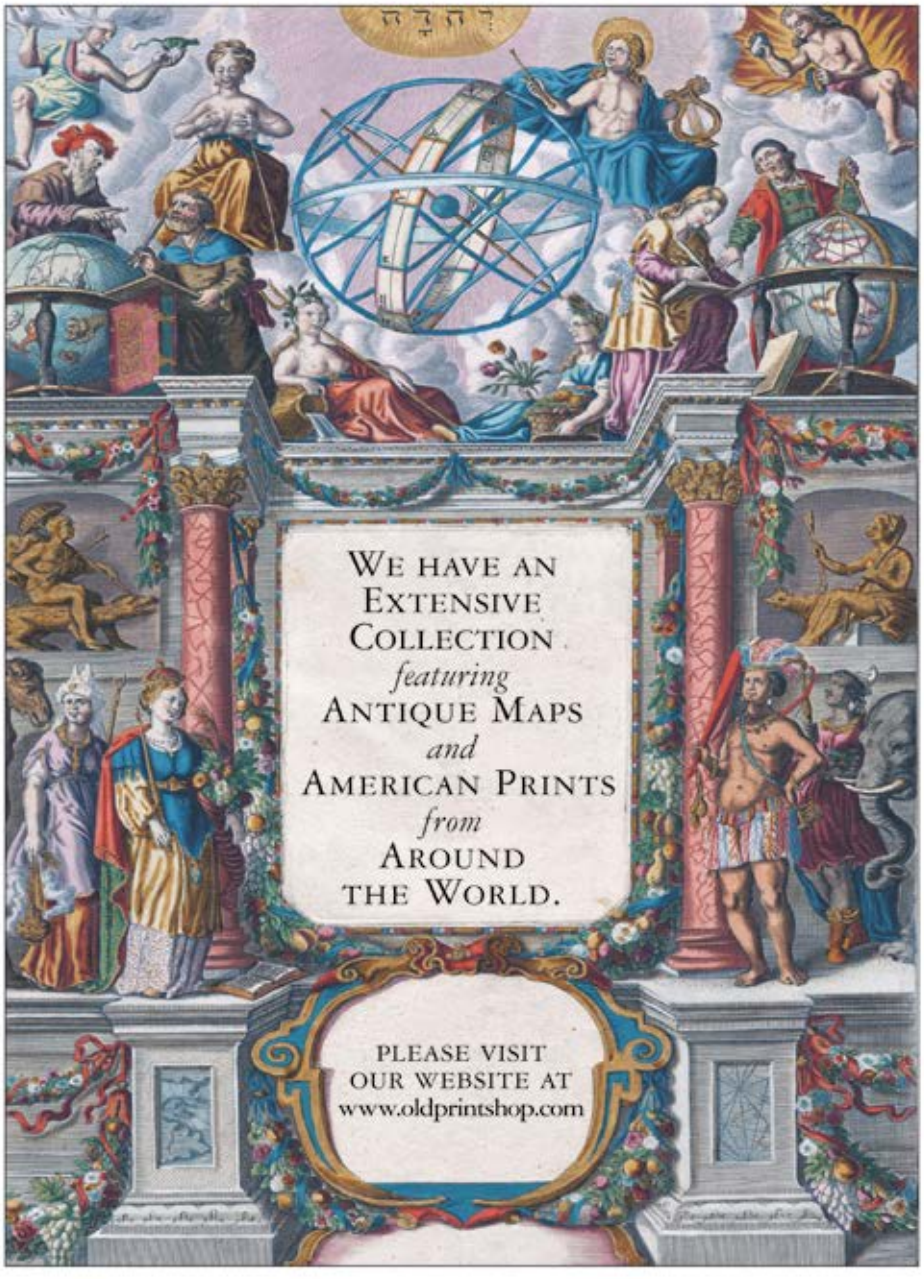
9 November 2019, Paris
18th Paris Map, Globes, Scientific Instruments Fair
Information: www.map-fair.com.

9 18 January 2020, Milan
Milano Map Fair
Information: http://www.milanomapfair.

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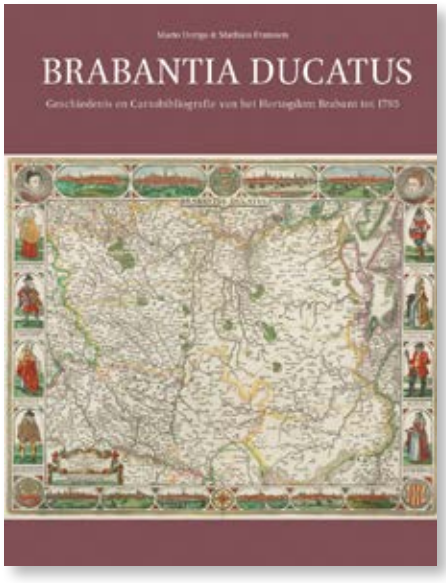
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BOOK REVIEWS

Brabantia Ducatus: Geschiedenis en Cartobibliografie van het Hertogdom Brabant tot 1795 *by Mario Dorigo and Mathieu Franssen. Leiden: Brill Hes & De Graaf, 2018 (Explokart Historisch-Cartografische Studies 18). ISBN 9789004367029. HB with jacket, 712, multiple colour illustrations, English summary, alphabetical list of map titles, bibliography, alphabetical index for personal names. € 165.*



During the past year, the series of carto-bibliographies, resulting from the Explokart Research Programme has been expanded by yet another interesting new volume. After *Hollandia Comitatus: Een kartobibliografie van Holland* (2000), *Frisia Dominium: Kaarten van de provincie Friesland tot 1850* (2006) and *Zelandia Comitatus: Geschiedenis en Cartobibliografie van de provincie Zeeland tot 1860*, the core of the Seventeen Provinces, the Duchy of Brabant was next in line to be examined. The authors Mathieu Franssen, Kees Oomen († 2017) and Mario Dorigo began working on this substantial volume in 2000. Similar to the preceding studies, the work comprises of a number of introductory chapters, followed by the carto-bibliography proper.

The first chapter rapidly covers the history of Brabant, starting with the settlement of the Franks in the fifth century. During the late Middle Ages, the Duchy developed into *primus inter pares* of the Seventeen United Provinces. The fact that Emperor Charles V commissioned the map of Brabant as the first of five regional maps, made by Jacob van Deventer between 1536 and 1549, is case in point. Its central role was however, rescinded shortly thereafter by the Dutch Insurrection; Brabant was effectively split into two border regions acting as buffer zone between the Republic and the Austrian Netherlands. The idea of one domain, one Duchy in fact persevered only until the Austrian Netherlands was incorporated into the French Republic in 1795. Thus 1795 has become the natural end date for the carto-bibliography that starts in 1536 with Van Deventer's regional maps.

In the second chapter, the authors discuss the surveying of the Duchy. They claim that a number of base maps may be identified. Works by Van Deventer, Van Langren and Visscher/Hondius and French mapmakers Sanson, Jaillot and Delisle are considered to be models for the publications of many others. Not only are printed maps discussed but a number of small-scale manuscript maps are covered as well, such as examples by Sgrooten, Ferraris and the Hattinga family. The chapter terminates with a very useful novelty: a 'chronology of publishers' which shows the interrelation between the various printed maps. As such, it provides a veritable family tree of base-maps and the works derived thereof. It shows clearly which version was modelled after which base map.

In the third chapter, this 'family tree' is further amplified in terms of the content of the map image and changes thereto. The authors focus on the cartography of some regions: the Scheldt River and its immediate surrounds, the Meuse River and the Biesbosch tidal area, polder reclamations, peat dredging in the northwest Peel area and the rendition of certain elements like woods and forests, roads and waterways, windmills and manors.

In the fourth chapter the accuracy of some fifteen maps is analysed (using MapAnalyst software). It concludes that the geometrical accuracy of the Brabant maps shows hardly any improvement on Van Deventer's work and that on Jaillot's Brabant map accuracy is subordinate to clear presentation. This chapter adds little to the whole story such as the war effort of the late sixteenth century which led to a *de facto* division of the area, negating all efforts to try and execute a survey

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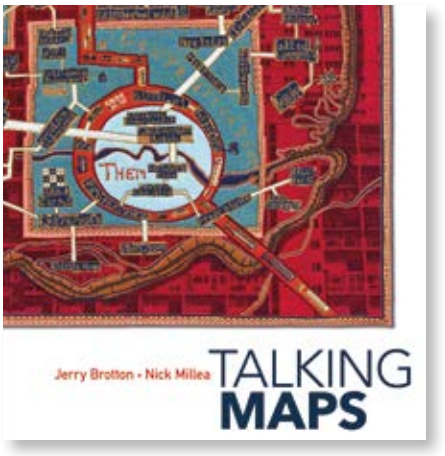
operation under central control. The political situation prevented an update of the map image of a Duchy that had meanwhile separated into two peripheral regions.

The carto-bibliography proper shows the results of an almost twenty-year-long period of research. It truly is a *pièce de resistance*. In over 500 pages, 120 maps of the complete Duchy, four regional maps, thirteen maps concerning the Republican area on the one hand, and the Austrian Brabant region on the other, and four historical maps are examined. In line with previous Explokart publications, the book attempts to provide a complete overview of the various states and variants of each individual map. It is of note that the authors have reviewed an unusually large number of examples of the many hundreds of listed variants. The remarks in the Preface, in which the authors express their gratitude to their respective spouses for accepting holiday destinations which accommodated visits to certain libraries and their quest for establishing a measure of balance between 'complete and more than adequate' coverage, speak in their favour. The impressive number of maps has been studied exhaustively and each variation and change has been documented. For this purpose, 56 lists of comparison are a case in point. The book contains exemplary illustrations; collectors and researchers are provided with a new reference work of unmatched quality. However, criticism must be levelled at the publishing company; a renowned publisher like Brill should have paid more attention to the editing; the introductory chapters contain some sloppy grammar – even if attributed to typical Brabant vernacular – and sometimes the text reads as a jumble of misplaced cuts and pastes. The third chapter in particular suffers from these faults. Inconsistencies in the spelling of names bother the reader, for example Nicolaes II Visscher and Nicolaus Visscher feature alternately in the text. These comments are immaterial indeed in judging the result of the enormous task achieved by Dorigo and Franssen (Oomen had to step down in 2006); the authors are deserving of much praise for completing this work. Rumours on the grapevine are that they have meanwhile embarked on yet another project: a carto-bibliography of the County of Flanders. Should their new endeavour reach the heights of *Ducatus Brabantia*, we might very well have another first rate book on the horizon. I can hardly wait!

Gijs Boink, The Hague
(trans. Hans Kok)

Talking Maps

by Jerry Brotton and Nick Millea, with a contribution by Benjamin Hennig. Oxford: Bodleian Library, 2019. ISBN 9781851245154. HB, 205, with colour maps throughout. £35 STG.



Talking Maps, co-authored by a map scholar and the Bodleian Library's Maps Librarian, is meant to accompany an exhibition of the same name on at the Weston Library in Oxford until 8 March 2020. This book is much more than an annotated catalogue, however, as it can double as an informative primer on ideas central to the history of maps and mapping. Each of the ten chapters is centred on a single concept, often tackling the topic from a refreshing perspective.

The book begins with a feature fundamental to the understanding of maps and their construction, yet one that is often misunderstood or simplified unnecessarily: orientation. To counter the reductive notion that north 'belongs' at the top of maps, the Bodleian's superb collection of medieval T-O manuscript maps are featured prominently. These are oriented to the east, due to the Christian worldview in which they were drawn, which places earthly paradise to the east. They are contrasted with contemporary Islamic maps, which often have south at the top, although it is not yet understood precisely why this orientation was chosen. It is only in the sixteenth century, with the prevalence of north as an orientation for nautical charts in a Western world increasingly dominated by overseas trade, that north became a more common – but not universal – orientation convention.

While some chapters feature a variety of examples to present their related concept, others focus more minutely on a single, impressive specimen. This is the



Antonio Lafreri [Carta Marina] Olavs Got. Benigno Lectori... 1572.

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case for the Gough Map in a chapter on administration. One of the treasures of the Bodleian's collection, it is 'the earliest surviving geographically recognisable map of an individual country' (39). Although study of the map is ongoing, including the use of palaeographical and three-dimensional imaging analysis, results currently suggest that the Gough Map was intended to aid in the governance of England, a rare survival in a time when many extant maps suggest a religious context and alignment.

Other chapters focused on singular examples include the Laxton Map in a chapter on land use and the Worldmapper project in the final chapter. A manuscript map made in 1635, the Laxton Map shows the open field system that is now the unique surviving example of this form of crop rotation and management in England. 'The World on the Move' discusses neocartography methods that integrate digital tools to further the study of maps. Their main example is the Worldmapper project, initially housed at the University of Sheffield and now at the University of Oxford. The cartograms generated under the umbrella of this project, provided by Benjamin Hennig, challenge our entrenched assumptions about space and 'help us to gain new insights into the social and physical environments in which we live' (192).

The authors often approach subjects from a new angle, which achieves the dual purpose of showcasing the collection and revitalising ongoing conversations about maps and mapping. For example, a chapter on Oxford focuses on both actual and unrealised visualisations of the urban space, expressing what Oxford has been and could have been. One fascinating map is a 'false' 1644 map of Oxford made during the Civil War; its confusing details were perhaps intended to confound the Parliamentarians, as the city was then held by Royalists.

Another chapter that tackles well-trodden ideas in a stimulating way is the chapter on war. Rather than focus on the perennially popular topic of propaganda maps, it instead shares maps that were made as a result of war, particularly World War I and World War II. A highlight is a map of Clacton-on-Sea and Harwich that was captured from the Germans and reprinted on the reverse to provide British troops with geographic information to aid in the invasion of Germany.

Other chapters discuss the country, the sea, sacred topographies and imaginary plots. Each is packed with gems from the Bodleian's and Oxford's holdings, including the Selden Map of China, the Sheldon tapestry map of Gloucestershire, a Marshall Islands stick chart, portolan charts and an Aztec map of Tenochtitlán. Tolkien's Middle-earth, C. S. Lewis's Narnia and Robert Louis Stevenson's Treasure Island are featured alongside the stunning *Red Carpet*, a tapestry map of Great Britain by the artist Grayson Perry meant to critique Brexit.

While there is something for everyone in *Talking Maps*, it is not just a breezy coffee-table tome. The accessible text and well-organised chapters invite the use of the book for introductory courses on the history of map and mapping as well. Millea and Brotton introduce current debates in the history of cartography with a light hand, while also highlighting the spectacular holdings of Oxford University. This book invites the reader to enter into 'conversations and discussion with and about maps' (9) and it shows what maps have done, how they speak and stay silent simultaneously, and what they could do in the future.

Katherine Parker, London

A Cartographic History of the Channel Islands, A perfect description of the islands of Guernsey & Jersey, Alderney, Herm, Sark, Jethou and Brechou, the Minquiers, Écréhous & Isles Chausey…Sands and Shoals in these Coasts

ed. by Martin Morgan. Guernsey: The Clear Vue Publishing Partnership Ltd, 2018. HB, slipcase, 194, 120 maps. £1,275 STG. Contact 44(0)20 72674547 or mm@extraordinaryeditions.com.



The Cartographic History of the Channel Islands is published as a limited edition of just 275 copies for a worldwide audience. The covers are specially commissioned marble papers based on an old map of the island and, being hand-made, have their own originality. The book is contained in a light blue slipcase to match the cover, so overall it measures 505 x 350 mm. As a quality product it is hand bound in navy blue half leather with raised bands to the spine. All the pages are heavy 275 gsm archival quality paper as befits the reproduction of historic images to a high standard using the latest digital technology.

The purpose of the book is to celebrate the islands and their history, and the maps chosen to illustrate this history include some which are exceedingly rare. It contains over 120 maps, mostly full-size, requiring the five largest to fold out, providing impressive displays of the originals. Whilst including the earliest surveys it is worth repeating the subtitle of the book to emphasise its comprehensive coverage: *A perfect description of the islands of Guernsey & Jersey, Alderney, Herm, Sark, Jethou and Brechou, the Minquiers,* Écréhous *& Isles Chausey, wherein it may plainly be seen The Courses, Heights, Distances, Depths and Surroundings, The Ebbing & Flowing of the Tides with the marks for entering and describing all the dangers, the Rocks, Sands and Shoals in these Coasts*. So there are maps and charts of even the smallest parts of these islands. As the author notes, the Channel Islands, in common with many others, are strategically placed on the route between larger communities and attract significant charting and mapping due to their convenience either as a port of call or because of the imminent dangers from their shores to passing strangers.

Generally, the maps appear in date order of production and feature some local mapmakers as well as the better known. Beside each map is a potted history of the cartographer/publisher or a short explanation of the content of the map/chart. Ambitiously, the book starts with a Ptolemy world map, the western part of the Peutinger Table and the Anglo-Saxon Mappa Mundi, all of which show islands that could represent the Channel Islands, followed by examples on which the islands are more easily identifiable such as Matthew Paris's map of Great Britain, a representative portolan chart and the Gough Map at the Bodleian. Throughout, there are included the maps and charts of well-known and loved publishers from Ortelius, Mercator, Waghenaer and Blaeu via all the seventeenth- and eighteenth-century Dutch, English and French atlases to Tallis in 1851. More interesting for a student of the Channel Islands there is the description by John Leland *c.*1540, plans attributed to Richard Popinjay *c.*1560/80, a diocese map by Mariette de la Pagerie in 1689, all the islands by Nicholas Dobrée 1746, and many others covering local detail.

The bulk of the material in the book comes from the Priaulx Library's extensive collection in Guernsey, and is supplemented by maps from the Clarke Collection held in The States of Jersey Archives. The UK Hydrographic Office's copy of De Sausmarez's famous and very beautiful 1727 map is reproduced in colour for the first time, as is the copy of A. Grey's map of 1816. The four examples of Thomas Phillips's maps taken from the Legge Report (The King's Survey of the Channel Islands 1680) have been included by kind permission of Guernsey's Royal Court.

This is not a book for the serious student requiring substantial written background detail. It is a book for someone who loves island maps, but at a price of £1,275 including slipcase also for someone with a big wallet. It would benefit from an index page listing the maps, but in every other respect it is a production fit for the audience room of an eighteenth-century king!

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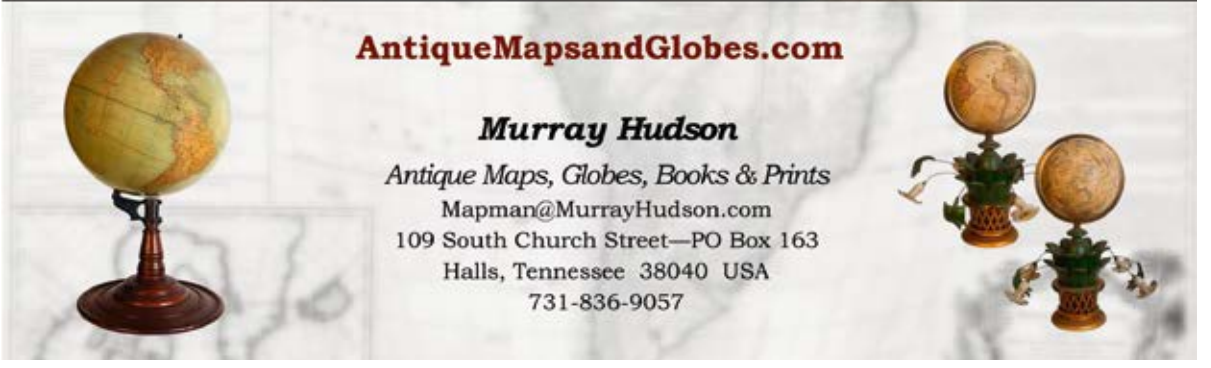
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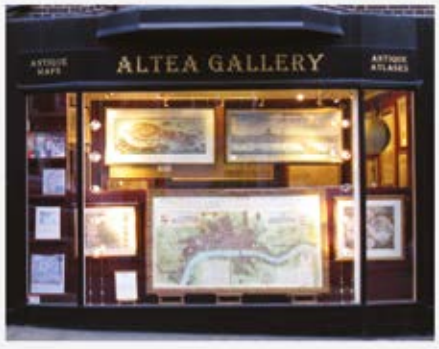


Robert Dudley. *The Earliest Printed Chart of the Northeast.* [1647 / 1661]



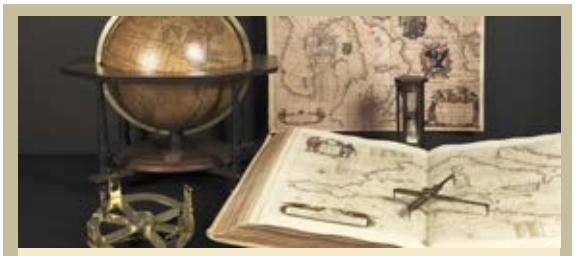


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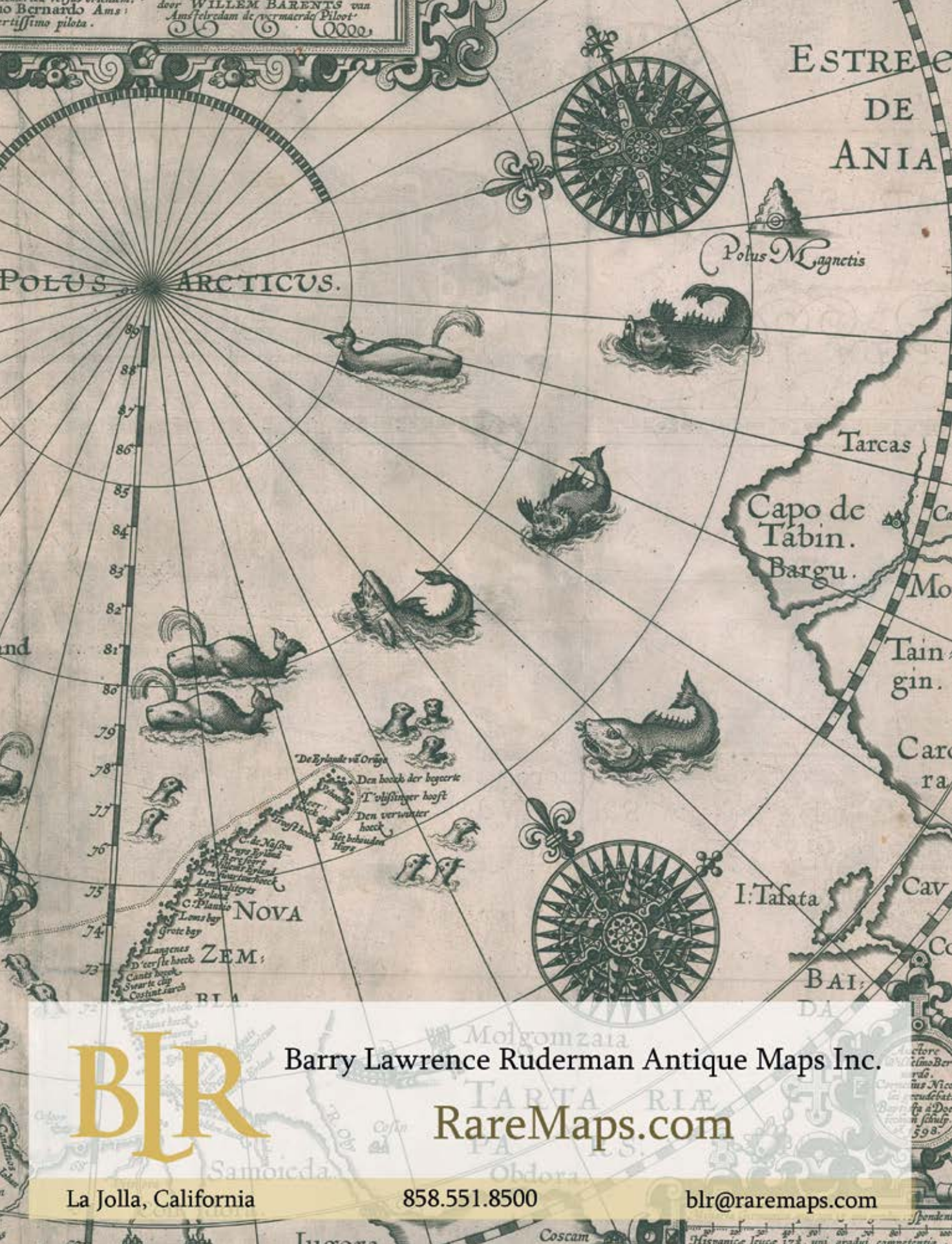
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