



Sheetlines

The journal of
THE CHARLES CLOSE SOCIETY
for the Study of Ordnance Survey Maps

This edition of *Sheetlines* was published
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The Charles Close Society was founded in 1980 to bring together all those with an interest in the maps and history of the Ordnance Survey of Great Britain and its counterparts in the island of Ireland. The Society takes its name from Colonel Sir Charles Arden-Close, OS Director General from 1911 to 1922, and initiator of many of the maps now sought after by collectors.

The Society publishes a wide range of books and booklets on historic OS map series and its journal, *Sheetlines*, is recognised internationally for its specialist articles on Ordnance Survey-related topics.

Sheetlines

Number 87 - April 2010

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Number 87

April 2010

You will notice a new look to this edition of *Sheetlines*. Your committee recently approved increased expenditure for 2010 to make this possible. We'd like to hear your reaction to the changes and your suggestions for future enhancements.

We congratulate founder member Alan Godfrey on being awarded the MBE in the 2010 New Year honours list. An appreciation of Alan's work appears on page 2.

A long-awaited development is the welcome appearance of a provisional carto-bibliography for the half-inch series. This is being published as a draft version to enable members to add to and correct the information before it is published in a more permanent format. The provisional document may be downloaded from the website or purchased by post. See page 3 for more information.

A major OS event has been the publication of a consultation document on the policy options for the future of the organisation. The outcome will have a major impact on the role, funding and output of OS. Richard Oliver discusses this on page 3, with a comment by Anthony Cartmell on page 53. In a letter published in *Daily Telegraph* of 8 March our chairman, Dr Christopher Board, stressed the need for OS to continue to produce paper maps. You can read it at <http://tiny.cc/oM8ffj> (scroll down to *Threat to paper maps*).

The review of the new Hellyer & Oliver volume¹ in *Sheetlines* 86 provoked much controversy. David Archer offers an alternative view on page 7. Elsewhere, David suggests we should revive the practice of holding local, informal meetings to share ideas and information. This is an excellent suggestion which deserves to be taken up.

Recent developments on the website² include a bibliography by Richard Oliver, reproductions of the full collection of images from the CCS archive, on-line OS mapping and links to other national mapping agencies, many of which offer on-line maps.

The AGM takes place in Lincoln on Saturday, 8 May 2010. Full details are enclosed with this issue of *Sheetlines*.

The Defence Surveyors' Association is to run the fourth in its series of annual seminars at the Royal School of Military Survey, Hermitage, Newbury on Saturday, 19 June 2010. The day-long programme includes a talk by John W Donaldson, *Charles Close - His role in African boundary demarcations*. Cost is £15, including buffet lunch. Details from Mike Nolan, 01635 253167 maptnolan@gmail.com.

An error occurred on page 45 of *Sheetlines* 86 in which the wrong illustration appeared as figure 1, for which we apologise. The correct version can be viewed and downloaded at www.charlesclosesociety.org/files/Glasgow72.jpg or is available by post from the editors.

¹ Roger Hellyer and Richard Oliver, *One-inch engraved maps of the Ordnance Survey from 1847*, Charles Close Society, 2009

² www.charlesclosesociety.org

Alan Godfrey MBE

Margaret Wilkes

It was at a cartographic event in London that Moira Courtman, then Geography & Geology Librarian in Senate House, University of London, made me aware of Alan Godfrey and his reduced-size OS 1:2500 reproductions. I remember she was surprised I hadn't come across him, since his Tyneside base was far nearer geographically to the National Library of Scotland Map Library than to London. I saw immediately all sorts of cartographic possibilities here professionally for the National Library of Scotland so Moira gave me his address, and I wrote to him to make contact. That must have been around 1977-78.

What excited me in that virtually non-electronic era, when such things as A1 and A0 size photocopiers were beyond the National Library of Scotland's purse or scope, was the possibility of cheap, readily obtainable, sensible-sized copies of early, out of copyright OS 1:2500 maps showing urban areas, being available for purchase by members of the general public, and with an accompanying interpretive text written by Alan or by one of



his growing band of eager archivists, librarians, local historians and others. The Godfrey Edition was clearly something to be greatly encouraged by those of us concerned about wear and tear on original maps in our collections. Alan's MBE demonstrates the impact of this public service perfectly.

Local studies in schools and among the general public had led to a thirst for early historical map information, but the constant demand for photocopies gave us considerable preservation and conservation problems, given these maps were so important historically and that the National Library of Scotland was one of the few national repositories in the UK to hold a complete set for Scotland and a very good but incomplete set for England & Wales. Something had to be done to protect these important maps from over-use, particularly of urban areas where demand for photocopies was higher, and Alan's solution was so simple and purse-happy.

Thus began frequent professional contact, with Alan using the National Library of Scotland's then Map Room to supply him with some of the necessary maps to pursue his dream. He was often to be seen entering mid-morning through the doors of our Map Room – and later the new Map Library in Causewayside – having travelled up by rail

from Tyneside or Durham, and a member of staff would be at the ready to retrieve the maps he wished to look at for potential additions to his series. Our Geography improved greatly too as we retrieved perhaps Wigan, Stirling, Malvern Wells, Perth, Hartlepool, Falkirk, Meole Brace – and goodness knows where else – all in one sitting! Always there was a chance for a chat, even for lunch with other local curators, where we listened as Alan outlined his latest plans and travels. He became our friend.

His 50th title, produced in 1984, was OS 1:2500 Stirlingshire, 2nd Edition, Sheet XVII.7, 1897, backed with OS 1:10560 Stirlingshire, Sheet XVII NE, 1899, featuring Stirling (parish of St Ninians) including part of the Battle of Bannockburn site. On my copy, Alan has written by hand in ink, outside the neatline of the 1:10560 map, ‘My 50th map, which I would like to dedicate to Barbara Morris, Judith Knight & Margaret Wilkes, without whose help and encouragement I would never have succeeded – Alan Godfrey 16 June 1984’. I treasure this map.

Half-inch cartobibliography

The committee recently discussed the progress of the half-inch project, which will become another in the sequence of the society’s cartobibliographical monographs. This will be a more complex volume than any that has preceded it, which you will readily understand when you consider the large number of countries, styles and editions, to be included. There are different series for England and Wales, Scotland, Ireland before and after independence, Great Britain and Northern Ireland. Maps have been published with hill shading, with layers (at first coupled with hill shading), in outline, for military training purposes, as a Ministry of Transport map, there are military series on both sides of the Irish Sea, and in addition there are many district maps, both for civilian and military use.

A provisional cartobibliography has been prepared, but there remain many unanswered questions, either because of a number of anticipated though unrecorded states, or in many cases a dependence on incomplete copies resulting in an incomplete record. The provisional version is available on the website with a print-out available on request and we invite feedback on errors and omissions. This should allow us to produce in due course the definitive volume, with an introductory essay, illustrations and index diagrams.

Download the list at www.charlescloseociety.org/halfinchcarto or request by post from the Publications manager (address inside front cover), enclosing cheque payable to Charles Close Society for £5 (including postage). Details of how to notify us of additions and corrections are contained within the document.

Sheetlines 88

Contributions are invited for *Sheetlines* 88, to be published in August, again with full colour pages. We invite authors to contact the editors early to let us know your intentions, to ensure availability of space and balance of contents.

The consultation of the future of Ordnance Survey

Richard Oliver

By the time this appears in print, many readers will be aware that on 23 December 2009 the Department for Communities and Local Government, which has ministerial responsibility for OS, issued a consultation document, *Public options for geographic information from Ordnance Survey*.¹ Responses were to be submitted by 17 March 2010, and so the exercise has been badly timed from the point of view of the publishing schedule of *Sheetlines*. However, the CCS committee met on 6 February and discussed the matter, and a response on their behalf has been sent by the chairman of the Society.² This did not preclude members from submitting their own responses.

The document offers three basic options for the future of OS: Option 1 is to continue fundamentally as at present, *i.e.* funded wholly from selling or licensing maps and data, but with some simplification of licensing arrangements. Option 2 is to move towards the whole of the data collection being funded by Government ('DataCo'), but with product development by a separate organisation ('ProductCo'), which might well be privatised. Option 3 is to release some data, including the 1:25,000 and 1:50,000 raster data, OS StreetView (1:10,000 raster data, but greatly simplified from standard 1:10,000 LandPlan data, *e.g.* by omitting field boundaries) and Boundary-Line data, effectively for free, but to continue to charge for the 'higher specification' data, notably MasterMap.

Given that the whole thrust of OS operations since the mid 1960s has been to recover more and more of its costs, with Full Cost Recovery finally attained in 2006-7, it might be thought that Option 1 has the advantage. In fact, this policy is now shown to contain within it the seeds of its own destruction, for there has been both increasing clamour to 'free our data', and various rivals have come forward offering cheaper alternatives. Although at present coverage is limited, these rivals have ambitious plans: for example, the Geo-Information Group published a detailed database for London in October 2009, and hopes to cover all urban areas similarly within five years. Thus Option 1 is both politically and financially unsustainable.

Consulting on Option 3 seems of itself somewhat hollow, as on 17 November 2009 the Prime Minister announced that certain OS data would be made available for free. (It is rumoured that the managing of this announcement was not a good example of 'joined-up government'.) The consultation document suggests that it might have some effect on the sales of paper mapping, which thus might have to be subsidised by Government. The imminence of a general election suggests that the implementation of Option 3 might be somewhat interesting. Even if such considerations are discounted, it is difficult to see how Option 3 could be sustained in the long term: releasing *some* data, and at disproportionate cost to OS revenue in relation to its sophistication, is more likely to

¹ London: HMSO, 2009. The document was also made available on the web, although its relatively ephemeral nature suggests that no point would be served by citing the link here. Paper still has certain long-term advantages.

² This included the conclusion that 'Option 3' was the only sensible one, and included a plea for the retention of paper mapping. The views expressed in this article are not necessarily those of the Committee, but they are not necessarily diametrically opposed either.

stimulate than to still the clamour to ‘free our data’.³

Option 2 is in effect rather similar to the position that OS was up to the mid-1960s, when pricing was designed to cover only the dissemination of the information, *i.e.* the printing and distribution of paper mapping. Making data available for others to process and elaborate was in effect what was contemplated when the 1:2500 scale was adopted in the mid-1850s, though the point was perhaps obscured by the dissemination being in paper form: the argument was that the cost to the Exchequer would be more than offset by savings to individuals, who would no longer need to commission *ad hoc* surveys. That argument was known when the Davidson Committee reported on the OS in 1935-8, but it seems to have been overlooked since. The adoption of the 1:2500, which made the OS what it is today, was the outcome of essentially political proceedings: returning the OS to substantially its later nineteenth century basis would be a political solution. History would repeat itself: once in paper form, once as digital data.⁴

In these circumstances, the wisest course to pursue would seem to be to treat Option 3 as a first stage on the way to implementing Option 2 within a timescale to be announced, say three to five years: that ought to give the various rivals time to reorientate their businesses. The report says that Option 2 would be ‘disruptive’ for such businesses, as well as for OS, but OS has been ‘disrupted’ for over forty years by the increasing push to Full Cost Recovery, and the change from analogue to digital production, and is difficult to see what defence of geographical functionality can be made for having more than one national mapping database. Though it would be a solution that many of us dislike, and have taken every opportunity to attack and ridicule, a monopoly financed wholly by customers would at least ensure a national standard and, given that part of the capital cost had been incurred when OS was still wholly or partly funded by Government, would ensure that a substantial national investment was put to best use. That, however, is not to be. It is perhaps telling that the report is silent on any gains from Corporation Tax from these rivals, to offset the national investment in OS not being put to fullest use. The financial case for competition in the *collection* of data, as opposed to its *exploitation*, would seem to be a weak one.

There remains the question of the continuing of paper mapping, on which the report has little to say, but which still presents the face of Ordnance Survey to the public at large, even though it is perhaps a misleading distraction from the real business of generating and selling large-scale data. It is difficult to assess quite how many sales might be lost from the availability of free 1:50,000 and 1:25,000 raster data, given that anything larger than an A4 size plotter is a rarity even in offices: on the one hand many outdoor uses of maps only call for a limited area, and an A4 printout does very well, but on the other the large-format sheet map – and the formats have gradually become larger over the

³ I have argued elsewhere (see the appendix in Richard Oliver, ‘Why the Ordnance Survey needs its history’, *Sheetlines* 80 (2007), 6-19, and Richard Oliver, ‘Accountancy and opacity: another Select Committee and the Ordnance Survey’, *Sheetlines* 81 (2008), 6-7) that it is more complicated than simply ‘our data’.

⁴ It might be useful to quote Marx correctly for once: ‘Hegel says somewhere that all great events and personalities in world history reappear in one fashion or another. He forgot to add: the first time as tragedy, the second time as farce.’ This was written in 1852, *apropos* of Louis Napoleon: *The Oxford dictionary of quotations*, third edition (1979), 333.

past century – has the advantage of displaying a large tract in a single view. It is the difference between *table d'hôte* and *a la carte* approaches. Whilst the supply of data to mobile phones, GPS devices and the like would no doubt cause a fall in paper map sales both for OS and for commercial organisations, even were Option 2 not proceeded with, it seems more likely that this will eventually result in a lower but still steady demand. A whole generation of secondary school children have now received their free 1:25,000 *Explorers*, and that is several million arguments for continuing national large-format sheet mapping. Information on such matters as access land and public rights of way, which are essentially matters of government, need to be communicated in an authoritative manner. The real question is how this is to be met, and it may be that the days of the bulk-printed paper map, to a standard specification on fixed sheet lines, are numbered, and that some form of print-on-demand will replace it.⁵ Indeed, this seems implicit in OS's deciding to contract out its printing once it moves to its new headquarters. It is true that the OS Select service has been available for the 1:50,000 *Landranger* since the spring of 2002 and for the 1:25,000 *Explorer* since the autumn of 2004, but these are frankly amateurish: for about twice the price (or more, considering how many *Explorer* sheets are double-sided) the image-quality is inferior, there is no control by the buyer over content or colour, and there is a poor ratio of paper size to map area.⁶

The replacement of the present system of bulk-printing by a customised print-on-demand service, available in bookshops in every town, would revolutionise the market for paper topographic mapping in Britain. It is surely not too visionary to suggest that, in such a system, the basic large-scale database would automatically generate at intervals, say annually, subsidiary databases at 1:10,000, 1:25,000, 1:50,000, 1:100,000 and 1:250,000. The customer would specify the area to be printed, and could increase it by asking for the legend to be omitted, and would also be able to specify variations in colouring (no more pallid yellow roads) and content (no more obtrusive tourist symbols or cycle routes).⁷ It might be that cartographically such mapping might be rather stark, perhaps in a style reminiscent of the 'Preliminary Edition' of the Ordnance Survey of Ireland's 1:50,000 series: but what is important is that function should win over form, survey over cartography, data over presentation, facts over opinions.⁸ A difficulty in the way of this is that the necessary automatic generalisation is not yet ready: but the potential gain is too great for faint-heartedness now.⁹

Stop press: see Afterword on page 56

⁵ It is understood that *ad hoc* printing is already much used by the Army in Afghanistan, as an alternative to using bulk-printing of stock in the UK, and this is perhaps an additional reason pointing to a continuation of paper mapping.

⁶ They have the air of a gimmick for a well-lubricated leaving party.

⁷ The writer hopes to return to this theme in a future issue of *Sheetlines*.

⁸ Having been a research assistant for the late J. Brian Harley, the writer knows all about the 'mimetic illusion' and the rest of it. What is important is to recognise that limitation and to do one's best to overcome it.

⁹ For (fairly) recent developments see Patrick Revell, Nicolas Regnauld and Stuart Thom, 'Generalising and symbolising Ordnance Survey base scale data to create a prototype 1:50,000 scale vector map', *Cartographic Journal*, 44 (2007), 251-7. A section of 1:25,000 mapping reputedly generated entirely by automated methods was produced in 2002 and displayed – or, anyway, a version thereof – at the Outdoors Exhibition at the National Exhibition Centre in 2003. This included the inadequately-worked out idea of replaced churches by indications of buildings with towers and spires.

Engraved maps

David Archer

I have always believed that a good review gives an outline of what a book is about, and then discusses what the reviewer thought was good or bad about the book, what they liked or disliked. In reviewing *One-inch engraved maps of the Ordnance Survey from 1847*¹ by Roger Hellyer and Richard Oliver, Chris Perkins² essentially fails to say anything good about the book, so perhaps I might also be permitted to write a one-sided piece, concentrating on some of the things I like.

I certainly like the size. Not so much the physical size, which one might liken to a hardback Yellow Pages, but the vast scope of the contents. There is just so much within the covers, giving convenience beyond belief; so much is in one place. Except for the Old Series south of the Hull-Preston line, all of the one-inch maps designed to be issued as black and white sheets are here. Eleven editions of the one-inch map are treated in depth in the cartobibliography, all in a consistent style of presentation.³ To have so much information within a 'handy' single volume is fantastic. Individual essays and cartobibliographies for Scotland, Ireland or England and Wales could all have been published as separate CCS monographs, but no, we have everything under one roof, hence the size. All of the Scottish First, Second, Third and Fourth edition maps, the Irish First, Second and Third editions, plus all of the maps for England and Wales based on the 360 sheet layout are here.⁴ Many of these editions were produced, in full or in part, in different styles: outline, outline with engraved hills on the same plate, outline with engraved hills on a separate plate, Advance Edition and so on. Many sheets⁵ were issued in several states, differing by major revision of detail or by something as slight as a price change. All are justifiably considered important and are recorded in the cartobibliography. Their recording is essential in understanding not only the individual sheets, but also the various map series, and the organisation that produced them.

This is the fourth offering from the society's 'A' team, with each member having excelled in their respective fields: Introductory essay, Index diagrams and Cartobibliography. Richard Oliver's text would stand as a Charles Close Society monograph in its own right, yet it is fitting that it sees the light of day as part of this publication.⁶ The text and cartobibliography complement each other and the whole is that much better for it. Synergy at its finest. Although Richard has frequently written on the subject matter of this book, the text is fresh and fast flowing, giving us a excellent run through the history of the one-inch map and its decline⁷ into the 1:50,000 scale. The 'essay', as before, sets the scene for the cartobibliography, placing the map editions and

¹ Roger Hellyer and Richard Oliver, *One-inch engraved maps of the Ordnance Survey from 1847*, Charles Close Society, 2009

² *Sheetlines* 86,50.

³ CCS cartobibliographies for the Ten Mile maps, Popular Edition, Seventh Series and Revised New Series in colour have a variety of styles.

⁴ All are engraved black and white maps, sometimes with brown hachures, plus some maps produced by zincography rather than engraving.

⁵ Those most often found are black and white without hachures.

⁶ I would urge consideration that the 'essay' also be issued as a monograph.

⁷ A considered word. Mine, not Richard's.

individual maps in context, indicating the significance of many of the elements in the map listings. There is a wealth of new information within the essay, probably more than in any other piece he has written since his *Ordnance Survey maps: a concise guide for historians*.⁸ I particularly like the extensive use of sub-headings within chapters,⁹ making it easy to see what is coming and subsequently, to find something that you read previously. Moving about within the text is very easy. Richard's piece is far more than an essay, and is essential reading for anyone with an interest in Ordnance Survey maps, exploring as it does, the period that links the Old Series and what one might call the modern larger coloured maps. In many places, even when covering old and familiar ground, Richard has clarified points on which I usually fudge an answer, and am sure that I am not alone. 'Printed from an Electrotpe', we all know the term, but here it is explained succinctly in three sentences, just as he has three paragraphs pinpointing exactly what revision is shown on the Old Series. Both topics are covered in other publications in far greater detail with less clarity.

There then follows a gem; a real treat. Fifteen pages of the finest diagrams yet produced in society publications, each reflecting the spirit of the cartobibliography: conciseness, clarity and originality. These diagrams are superb. For Scotland, Ireland and England and Wales, an opening diagram shows how the sheet lines are arranged, followed by smaller diagrams showing how these arrangements were used for the various map editions. Small icons identify different versions of an edition, often, I think, with humour and practicality. For example, thin pointed triangles alert us to the intricacies of the hills versions; one triangle for hills on the same plate, two for hills on a separate plate, with a horizontal line through another triangle for sheets showing zones of altitude. So clear and well thought out. Once seen, remembered for ever.

Having set the scene with the 'essay' and diagrams, we come to the cartobibliography. Just as most of our members admit to being able to pick up a map of an unknown area and spend ages studying it, so I defy any to open this book and fail to do the same. Within each geographical area, the entries are arranged by sheet number, edition, version, and then by state, so all issues of a sheet are basically in chronological order, making it exceedingly easy to find the sheet and edition you are interested in. As with modern computer programmes or mobile phones, very few users of the cartobibliography will ever demand all that it has to offer, with most readers using only the more accessible and relevant aspects. But the whole is there for those who seek help with more searching problems. One has little need of the detail concerning headings and marginalia if one has a sheet number. However, such detail is needed in order to identify each sheet, to put each state in context, and is only given once so as not to obscure the more varied detail.¹⁰

With so many map states being almost identical except for very minor changes, repetition of recorded detail must be avoided wherever possible. This will save space, whilst preventing boredom and confusion from full text repetition, yet still display detail

⁸ A book that has always attracted praise from those who buy it, which has consistently been the society's best seller, and towards which Chris Perkins was less than lukewarm in his review in the *Cartographic Journal*, 31 (1994) 79-80. *Ordnance Survey maps: a concise guide for historians*, Charles Close Society, 1993. Second edition, 2005.

⁹ 59 headings for 73 pages of text.

¹⁰ And to avoid needing a multi-volume work of repeated detail.

essential for identifying all states of a map. This has certainly been achieved in this book. Previous CCS cartobibliographies have usually been set out in columns, often with only a few character spaces available for recording complex information. Infrequent use means that one often has to refer to the introductory notes. The present work is not set out in columns and is far more accessible, using abbreviations instead of single letter codes, 'ARRR' is used rather than 'A' for 'All rights of reproduction reserved', with nothing along the lines of '4BooX4' or 'acf' appearing anywhere. But it still needs the user to study and understand the simple abbreviations used.¹¹ In addition to the abbreviations, many entries contain symbols for railways and contours. I know that after a long series of emails, no satisfactory terms could be found for the black and white and ladder style railway depiction on the maps. So, Chris Higley created small versions of what one sees on the map and these are used instead of words. A brilliant solution, without giving rise to endless discussions on terminology. A bewitching number of symbols and abbreviations are used to great advantage throughout the cartobibliography, with the list repeated inside the rear cover for convenience.

Once one has studied the abbreviations and symbols, using the cartobibliography is very pleasant, and one romps along. Within each sheet, each edition starts with the information found in the lower right corner of the first state (Engraved at the) and then the marginalia for State 1 is given : that found above, below and around the map, in that order. Having established a 'base', all subsequent states are identified by how they differ from the first state, with differences appearing as numbered items. Such differences are usually found by moving across the lower margin from the left, and then by differences on the map itself. Thus, for Sheet 168, *Birmingham*, Third Edition, OUTLINE, State 4, we have a print code 238 bottom left, Price 2/- net and marginal notes for railways and minor corrections, all of which are absent from State 1. No problems here.

Readers will approach the cartobibliography with varied interests, so many in fact, that it would be impossible to show each the merits of the cartobibliography for their particular orientation. I have had enquiries for these maps from people wanting to study Post Offices, railways and rifle ranges. All know what they are looking for from maps, and once they are *au fait* with the cartobibliography, off they will go. This is certainly a reference work that will be much appreciated by railway historians, who will use the cartobibliography to identify which sheets they need to consult for a particular development, or whether the development is in fact shown on the OS map. A tremendous amount of railway information is presented in the cartobibliography. Because it helps identify states, because railways, especially new lines, stand out on these maps and because the Ordnance Survey appears to have responded to new lines by very quickly adding them to the maps, and noting the dates of additions in the margins.

For me, the most significant result of publishing this book is that what I call *marbly jobs*¹² will no longer be seen by many collectors as a 'no-go area', and can be appreciated by a much wider audience, as it is now so easy to identify which edition a map belongs to. A real joy. In *Sheetlines* 62 I had a moan about the difficulty of identifying which edition an

¹¹ Just as we use Tel., FAQ, Mr and Ms, which are not too hard to fathom out and remember.

¹² Engraved maps, dissected and lacking margins, usually found in marbled covers.

engraved map belonged to when its margins had been trimmed. In *Sheetlines* 65, Richard published a quick diagnostic guide, based on looking at two sets of maps in the British Library, which was only intended as a temporary measure. Over the years, this has been a good rough and ready aid, but one kept finding things which were not quite right, and led to the conclusion that all of these editions were far more complicated than previously thought. The main problem is identifying which sheets are from the Revised New Series and which are from the Third Edition, Small Sheet Series when margins are not present. Roger has acknowledged this problem, and for each sheet, where applicable, gives a diagnostic to identify maps without margins.

Consider the following example: a dissected map of the Birmingham area, lacking margins, in marbled covers with a Stanford label for Sheet 168.¹³

We want to know which edition it is from, and if possible which state of that edition. So,

1. Is it a New Series map, most easily recognised by having churches shown as a small cross?
2. No, churches have a cross above a circle, so it must be later, Revised New Series or Third Edition.
3. Turn to page 275, find the heading 'Sheet 168 *Birmingham*' and look at the Revised New Series, OUTLINE, State 1, section.
4. Point 2 reads : '[2/3] Darlaston (NW), Handsworth, Oldbury all in upright l.c.' This notes a difference between the Revised New Series and Third Edition (the 2nd and 3rd editions of the New Series, hence 2/3) where on the RNS the three named locations are all written in standard lower case lettering after the capital, thus 'Darlaston' in the NW of the sheet.
5. If this is not the case, the sheet must be a Third Edition, and if we turn the page, under Third Edition, OUTLINE, State 1, point 2 we read : '[2/3] Darlaston (NW), Handsworth, Oldbury all in italic u.c.' (upper case).

What can be simpler than looking for the [2/3] entry? To me, this is worth the price of the book.

Assuming our example is a Revised New Series map, we see that in State 2, Hazelwell Station was added, and in State 4, Tyseley Station was added, which helps to give some indication of which state the map is. And having found a map, one can identify it explicitly as Sheet 168 *Birmingham*, Revised New Series, OUTLINE, State 4, EMHO.¹⁴

Scottish and Irish maps have never proved problematic in this way. Indeed, I cannot remember having ever seen an Irish map dissected with margins trimmed in marbled covers. For maps with margins, a second major use of the cartobibliography will be to identify which state they are and to see where a particular map fits into the sequence of issues; again, easily undertaken.

In no way is this book definitive, except maybe for the Index diagrams. What Roger has done in effect is to start re-creating the job files for each sheet in the eleven editions. At 574 pages, this is still only skeletal; scope still exists for much more research on these

¹³ So not one of the seven sheets of the Fourth Edition.

¹⁴ *Engraved maps*, Hellyer and Oliver.

maps, with other large works needed to identify and discuss name and boundary changes on each sheet, changes to other detail such as buildings and roads and so on. Which leaves vast areas needing contributions from society members, by way of research or through their own map collecting. Indeed, there is much for the map collector in this volume. The usefulness of [2/3] has already been noted, and to a degree, the locations of examples and reprints, give an indication of scarcity. A lot of maps have not been found, but must exist. Sheet 168, *Birmingham*, OUTLINE, State 5 has a small square¹⁵ before the state number, indicating a box in the map heading with 'This map is supplied for use in Schools under the Birmingham Education Committee'. So limited was the distribution of such maps that there must be several hundred not in the cartobibliography, waiting to be recorded. Similarly, a lot of states with late print codes have not been found ('Possible state 4, with print code 50/34. Not found'.) and are there for collectors to discover and report, whilst one library appears to have had unique copies of many maps, which have been lost since recording ('Now lost.'). But they have been recorded and with luck will be found elsewhere.

I have one nagging reservation concerning this book, that Chris Higley is not credited on the title page for the tremendous amount of fine work put into the diagrams, symbols and design of the book. The authors have polished their work, but Chris has given the whole book a shine. Anyone who is familiar with Ordnance Survey maps of this era, and has not seen the book, will love it when they do see it. I promise. It is as strong on Scotland and Ireland as on England and Wales. It is a magnificent tome, scholarly yet accessible beyond belief, and will never be bettered, certainly as an example of Ordnance Survey cartobibliography. With the publication of this volume, I feel that those who contributed to it can bask in the sunshine of a job exceedingly well done, and the society can sit back and say to the world "Follow that".

Arnhem 1944 – were the maps good enough?

Rob Wheeler

Operation Market Garden was a bold attempt to gain a bridgehead across the Rhine in September 1944. If it worked, it offered the potential to skirt the northern end of the Siegfried Line, giving a quick route to the Ruhr and ultimately Berlin. It was expected to make it easier to open up Antwerp, easing the Allies' huge logistic problems, and, conveniently, it would cut off the last V2 launch sites within reach of London. On Sunday 17 September the Allied front line stood at the Belgian-Dutch frontier, more precisely at the canal joining the Maas to the Scheldt. The plan was to push XXX Corps up the road through Eindhoven, Veghel, Grave, and Nijmegen to Arnhem. Some sixty miles would take them beyond the last natural obstacle, with no obvious defensive line remaining between them and the Ruhr. There were a number of rivers that needed to be crossed, notably the Maas at Grave, the Waal at Nijmegen, and the Lower Rhine or Lek at Arnhem. All the key crossings would be seized by 1st Airborne Army, who would, they were assured, be relieved by XXX Corps within 48 hours.

¹⁵ Another very well chosen symbol.

As we all know, it didn't work. The 2nd Para Battalion under Lt Col John Frost valiantly held the Arnhem bridge until the evening of Wednesday 20 September, with isolated pockets of resistance holding out until the Thursday, but XXX Corps never arrived. Afterwards, there was a very distasteful search for a scapegoat. Sosabowski and the Polish paras were shamefully blamed without a shred of justification other than political convenience. More recently the RAF has been blamed for not having done things it was never asked to do.

I do not want to set up GSGS or the US Army Map Service as a scapegoat. I don't even intend to argue that, had the maps been better, the outcome *would* have been different. I do intend to argue that the maps ought to have been better and that, with better maps available for one key decision, the outcome *might* have been different.

That key decision took place on the afternoon of Wednesday 20 September. Leading elements of XXX Corps had reached Nijmegen some 36 hours earlier. That afternoon, the US 504 Parachute Infantry Regiment paddled across the Waal under heavy fire. They took significant casualties but pressed on and stormed the north end of the Waal bridge, just as XXX Corps and the US paras managed to fight their way through the town to reach the south end. The German defenders broke and ran, and the first tanks from XXX Corps crossed the bridge. The key decision was whether they should press on to Arnhem. It was not an easy decision. Night was starting to close in and British armour at that date was unaccustomed to fighting at night. They would need supporting infantry; few were available and those who *were* available were not from formations the armour were accustomed to working with – those were stuck in the massive traffic jam snaking back to Belgium. There was a significant risk that the armour might run into a German ambush. So they decided to wait until morning, or, as the US paras who had taken heavy losses in order to capture the bridge viewed it, 'the Brits crossed the Waal and stopped for tea'.

With the advantage of hindsight, we know there were no German blocking positions between Nijmegen and Arnhem that evening. Whether a small number of tanks arriving at the south end of the Arnhem bridge might have been sufficient to enable 2 Para to hold on longer, we do not know. By the following morning the Germans had established a blocking position at Elst, and in any case the Arnhem bridge was effectively under German control again. This decision – whether to press on – was not, or at least should not have been, taken in haste. The Waal crossing had originally been intended to go ahead at dawn, so General Horrocks, commanding XXX Corps, had presumably been considering exploitation plans for some time. What were the topographic issues?

The outstanding one was: how does one get from Nijmegen to Arnhem? The small-scale maps showed a new motorway supplementing, indeed replacing, the old road. However, the standard map for army tactical use in the Netherlands was the 1:25,000, namely GSGS 4427, actually produced by the US Army Map Service as their M831 series. This showed the new autoroute as incomplete (figure 1); the armour would be forced to take the old route through Elst. This village offered excellent potential for a blocking position: a water obstacle to the east preventing outflanking there; to the west a moderately built-up area, well suited for holding by infantry with anti-tank weapons. A mile to the north, the road runs along the top of a dike, the sort of situation the armour particularly hated: completely exposed, no space to get round destroyed vehicles, and with

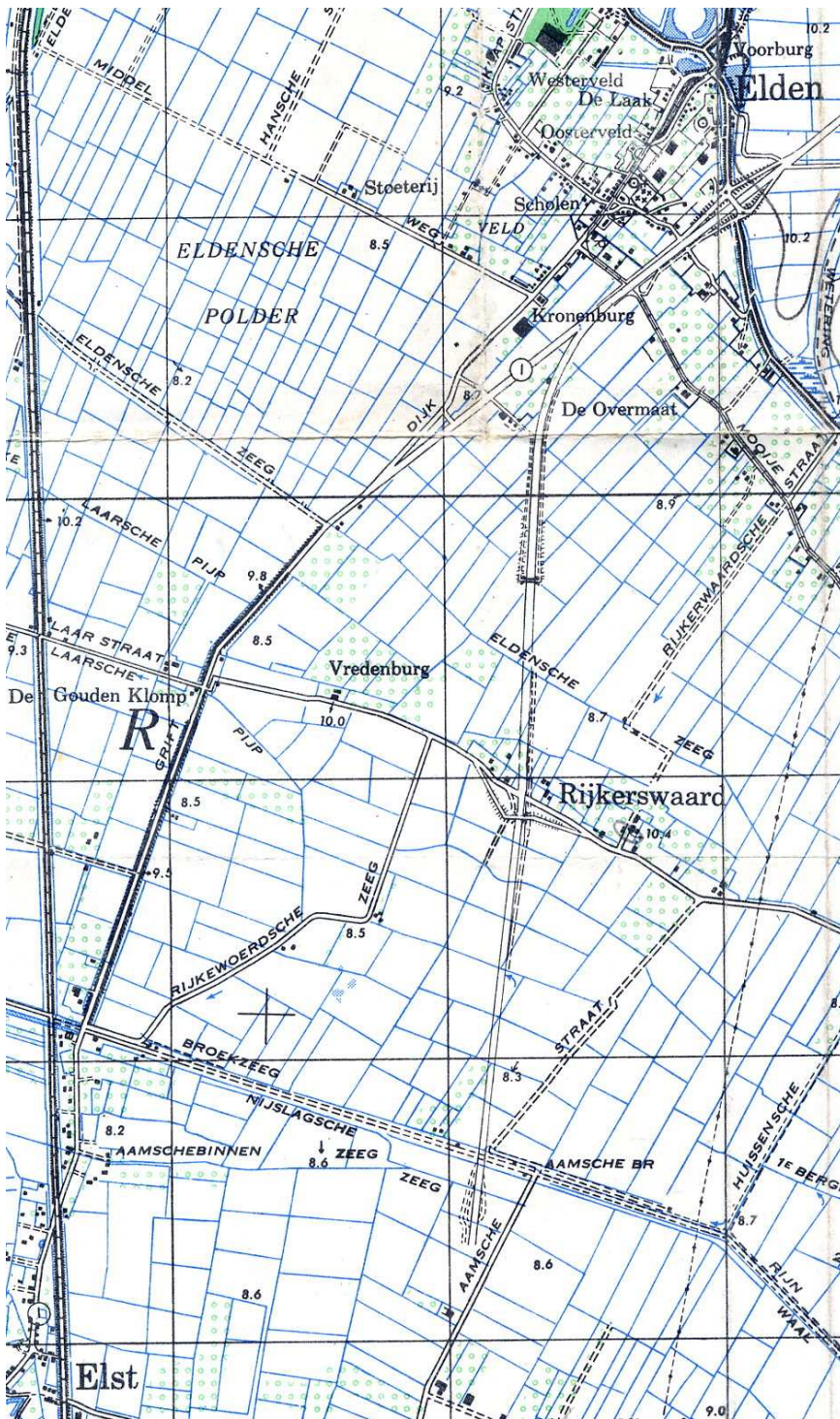


Figure 1 GSGS 4427 1:25,000

is placed against the old road crossing by the pontoon bridge. The Nijmegen sheet shows the new Waal bridge and the start of the motorway, but 'To Arnhem' marks the connection to the old road not far beyond the bridge.

banks too steep even for tanks. The maps also presented differing views about what bridges there were at Arnhem (figure 2). The traditional crossing had been by a pontoon bridge slightly to the west of the centre of the old town; the motorway led at its northern end to a new crossing slightly east of the town centre and leading to the boulevards built on the site of the early-modern town defences. However, the cartographers presented differing views about whether the new bridge (the one that Lt Col Frost was so valiantly holding) was actually passable. The message varied according to the map series

Town plans at 1:7000. This was a product of the Dutch Military Intelligence Department that had been photolithographed by the War Office in May/June 1944 and provided with a key in English to major buildings. It seems to have been used for the planning for Market Garden. The Arnhem sheet shows both bridges, but 'To Nijmegen'

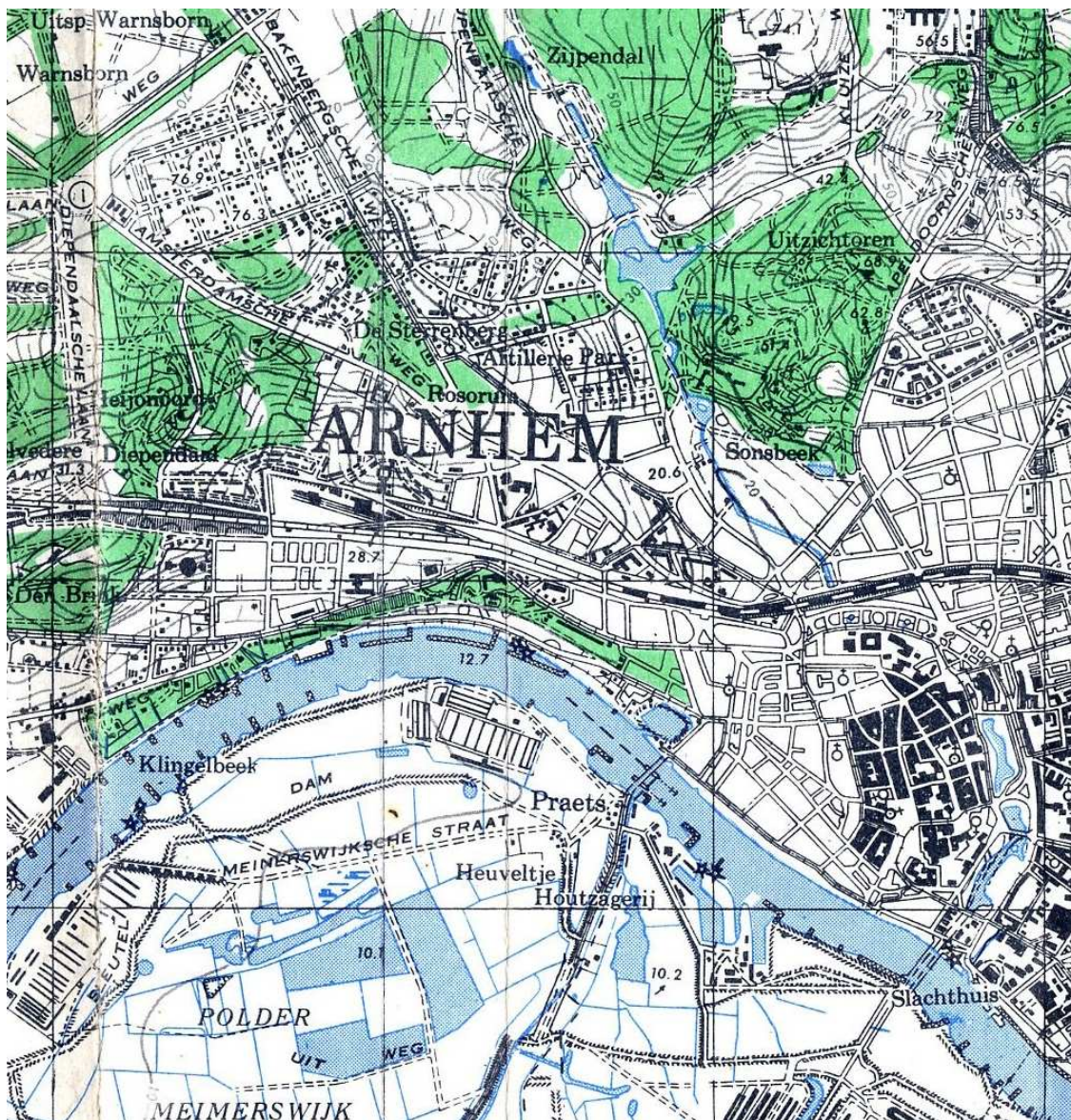


Figure 2 AMS M831: Arnhem

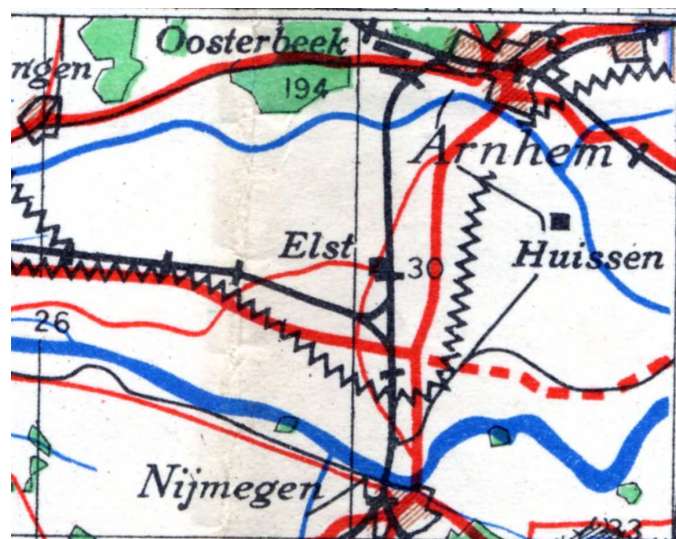


Figure 3 GSGS 4369, Sh 8, 5th edn with motorway complete

1:25,000. This shows the northern part of the motorway, but it is not complete. The First Edition (Jan 44 printing¹) does not show the new Rhine bridge: the motorway just stops at the river; the old road is clearly the route in use. The Nov 44 edition² shows the new bridge in place although the road across it is dashed, which should probably be interpreted as ‘under construction’. The old road now appears to be broken in a couple of places. Overall, the November edition appears to advise that the old road should be used as far as Elst, 3km south of Arnhem, and the new road and new bridge beyond. I have not been able to discover what edition was carried by troops engaged in Market Garden and whether it was closer to the January or the November edition.³

1:100,000. The RGS has a sheet that, from its annotations, appears to have been used by a member of the Glider Pilot Regiment who landed at Arnhem. It shows the motorway complete, with bridges.

1:500,000. GSGS 4369 was the RAF’s standard planning map. The 1944 edition⁴ (figure 3) shows the motorway complete, with bridges.

In defence of the US Army Map Service it must be admitted that, until September 1944 the Gelderland was a strategically unimportant part of Europe whose maps ought not to have been accorded a high priority in the competition for resources. (Indeed, if the US had had its way, it would have remained so.) However, by November, Arnhem was the German front line and had been so for a couple of months, so one might suppose that the November edition of M831 might have justified a somewhat higher priority. It is worth comparing that map’s depiction of the various bridges at Arnhem with the situation on the ground.

<i>Bridge</i>	<i>Map</i>	<i>Ground truth</i>
Railway	Complete	Central span destroyed by Germans, Sep 44.
Pontoon	Complete	Centre portion removed by Germans before September.
New bridge	Road under construction	Scorched but passable.

‘What was going on?’ is the question one has to ask. This is a question that can actually be addressed at three levels. The first is to examine what was happening on the ground.

a. The Rhine bridge at Arnhem was built between 1932 and 1935. It was destroyed by the Dutch in 1940 and was only re-opened in August 1944. (It was destroyed by the Germans in 1945 and replaced by two successive Bailey bridges before the present John Frost Bridge was opened in 1948.)

b. The Waal bridge at Nijmegen was built 1931-36. It too was destroyed in 1940, being re-opened in 1943.

c. The motorway between them was included in the *Rijkswegenplan* of 1932.

¹ At NLS.

² M831 sheet 6(NW) (eastern half) [the field printed sheets were divided to for smaller presses], revised by air photographs to Nov 44. This sheet is the source of the illustrations here.

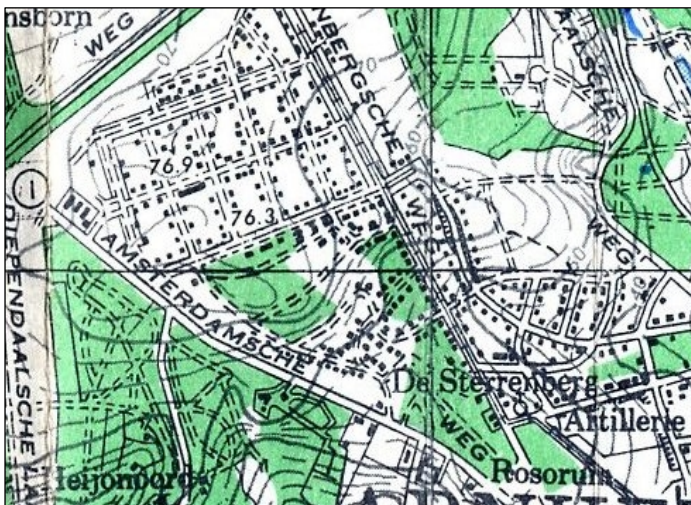
³ I showed a photocopy of the 1:25,000 to one veteran, whose response was that they did not have maps as detailed as that. Of course, the issue here is the maps available to the commanders.

⁴ GSGS 4369, sheet 8, fifth edition, print code 150,000/10/44 Wa.

Construction was certainly underway in 1941 but it was only opened (one carriageway only) in October 1946.⁵

The second level addresses the sources for the maps. Compilation statements do not always appear. For example the field-printed version of M831 dispenses with them. However, the Jan 44 full sheet (well, full quarter-sheet) states that it is derived from 1:25,000 Netherlands Topographische Dienst maps of 1921-30, updated by aerial photographs 1940-43. A diagram shows the year of the latest air photograph for each portion of the sheet: the Arnhem area was covered in 1943 but a large proportion of the map depended on earlier coverage. Clearly photographic coverage was fairly sparse. In contrast, the 1:100,000 was 'Partially revised from Dutch maps of 1936-9. Communications revised from GSGS 4183 and 2185 and Autokaart van Nederland. Intelligence reports to 1942'. Was this Autokaart van Nederland a commercial product? Commercial map makers are often tempted to insert roads that are merely projected, and they do not always resist temptation. That the military compilers believed their source is unsurprising. That their intelligence reports did not include the dropping of the Rhine and Waal bridges is a little more surprising. GSGS 4369 tells us that it was compiled from the Map of the Netherlands at 1:200 000, and updated by air photographs to 11/41. So the simple answer to 'what was going on' might be that the maps 'do what it says on the tin': the larger scales are based on 1920s Dutch maps, with patchy updating from air photographs; the smaller scales make use of a commercial map which had jumped the gun on new motorways.

Unfortunately, the position is more complicated than this. Compared to the Dutch original, AMS M831 has been redrawn. Instead of distinguishing tree-lined roads, it now distinguishes metalled roads. Quite unimportant tracks have been updated, even in woods, where air photography will have scarcely provided reliable evidence for the disappearance of a track.⁶ Suburban development west of Arnhem has been added; even individual houses being shown⁷ (figure 4a, 4b).⁸



Left: Figure 4a New housing on AMS M831
Above: Figure 4b Dutch original (as reproduced
by German forces)

⁵ *www.autosnelwegen.nl* as at 2009.

⁶ Note for example the deletion of tracks west of Boschveld (Nord de Guerre grid reference 713796).

⁷ Nord de Guerre 732789, 701790.

⁸ Thanks to Francis Herbert for permission to reproduce fig 4b from the map in his possession.

The additional detail is hardly characteristic of revision from air photographs. Nor can this detail have come from an unidentified later state of the Dutch 1:25,000: even when this was re-issued in 1951, detail of this nature was still as surveyed in 1927. In contrast, the Dutch 1:50,000 was revised more regularly and shows an increase in suburban development at each new revision. On the basis of these maps, it appears that M831 depicts a state of suburban development existing after 1932 and before 1940.⁹ In fact, an intermediate state of the 1:50,000, not yet seen, seems a possible source for the updating of housing development. The 1940 revision of the 1:50,000 includes the motorway from the new bridge up to where it joined the old road south of Elden. It is noticeable that this section as drawn on M831 does indeed look complete, with embankments on the approaches to the Elden overbridge. In contrast, the section running south is without earthworks and the associated link roads are dashed and sometimes end in the middle of nowhere. This seems consistent with this southern part having been drawn from an air photograph showing mere earthworks. The motorway peters out at the point where the Reliability Diagram on the Nov 44 edition notes detail as being less complete.¹⁰

The third level at which the question can be posed concerns policy on topographical intelligence. ‘The main object of a military map must be to enable a General to move his troops to desired points by the most direct or advantageous lines, and for this a good road map is essential’. That was Farquharson’s view in 1892.¹¹ It was also the view taken in the earliest German Mil-Geo publication I have encountered,¹² which devotes nearly a hundred pages to the potential of the roads into neighbouring states, a very short description of frontier fortifications, and 145 pages to descriptions of frontier bridges, with exact dimensions. But after the First World War, where (at least on the Western Front) the requirement for indirect fire by artillery was paramount, emphasis shifted to the provision of gridded maps and away from the collection of road information. This change is certainly apparent in the products of the German General Staff: the 1940 *Militär-geographische Angaben über England* is dominated by the portfolios of maps, the accompanying text being a mixture of generalities with statistical data selected more for its availability than for its immediate relevance to military decisions.¹³

Rather than the 145 pages of bridge descriptions seen as requisite in 1908, we have ‘The strength of English road bridges is high. There are load regulations for individual cases but they are very complicated and of little value when it comes to practical use’.

Likewise, in the UK the *Topographical Section of the General Staff* became the *Geographical Section of the General Staff* and concentrated on producing maps. Within that organisation, geodesy occupied an honoured place. The official history dwells at length on the business

⁹ Based on sheets with those revision dates (the later one being a German copy) at Bod Maps C29(23).

¹⁰ It happens that this point is also a sheet boundary on the *post-war* Dutch 1:25,000. Is this merely a coincidence? Some sheets had already been issued on the new sheet lines, but not, it would seem, 40A and 40C which abut at this point.

¹¹ Quoted in Roger Hellyer & Richard Oliver, *One-inch engraved maps*, CCS, 2009, 98

¹² *Militär-geographische Beschreibung von Nordost Frankreich, Luxemburg, Belgien, und dem südlichen Teil der Schweiz, bearbeitet vom Grossen Generalstabe*, Berlin, 1908. BL ML.bbb9.

¹³ For a modern translation of the most relevant parts, see *German invasion plans for the British Isles, 1940*, Bodleian Library, Oxford, 2007.

of accurately relating different grids (especially enemy grids) to enable indirect artillery fire across grid boundaries. And the 1:25,000 series of Europe were seen pre-eminently as artillery maps, to enable the accurate determination of the grid references of targets. In part this stems from the 1931 policy recorded in *Maps and survey*¹⁴ that the 1:50,000 scale should be used for the general tactical map, while the 1:25,000 should serve ‘for deliberate battle and especially for use by the Royal Artillery’. In the Netherlands, the 1:50,000 produced from the Dutch series was considered too cluttered for issue to troops, so the 1:25,000 served both purposes.

So the question can be summarised as: How did the view that ‘a good road map is essential’ drop out of sight? Perhaps the business of establishing which motorways were open was considered too trivial for an ambitious officer to give much attention to. And the customers were in no position to complain prior to the break-out in Normandy that summer.

By way of a postscript, it may be worth saying more about the redrawing of M831 noted above. This included re-lettering all the names. The fonts generally matched those used in the original, but names were made larger and hair-lines were eliminated; two new fonts were introduced for polder names and for road names. To avoid clutter, all administrative detail was removed together with many minor descriptive names, such as the *Steenfabriek* (brick works) on the south of the river from Arnhem and the two *Overlaatbruggen* on the old road south from there. These last appear to consist of a light bridge over flood channels for trams and light traffic, with a ford (normally dry) for heavy traffic.

Undoubtedly the redrawn map looks better. However, its military utility was actually reduced by the work. Those brickworks opposite Arnhem played an important tactical role in the land battle. The Germans, who were working with a straight copy of the 1927 Dutch map provided with German grids, knew what they were doing when they sent troops to that position; to the Allies they were merely nondescript industrial buildings. Again, those *Overlaatbruggen* appear to have confused the photo-interpreters and perhaps led to the Oct 44 edition of M831 showing the old road as broken. Were the photographs taken when the area was flooded? It would be difficult to work out what was going on, but the Dutch term, even if not understood, might have caused them to enquire further. Finally, some redrawn names have drifted, which can be dangerous. The AMS expended considerable labour in turning a Dutch original that was ‘difficult to read’ into an inferior Allied product, and declined to issue the Dutch 1:50,000.¹⁵ The Germans perhaps had better cameras: certainly they produced quite serviceable direct reproductions at both scales.

As a final postscript, I must acknowledge my debt to the map librarians at Cambridge, at Oxford and the NLS. Dutch maps of the 1930s cannot be much in demand, and various sheets were fetched from distant storage for me.

¹⁴ *Maps and survey*, War Office, London, 1952, 18.

¹⁵ *Maps and survey* p383. It must be admitted that the GSGS copy of the 1:50,000 sheet 40W in the BL is indeed horrible.

Ordnance Survey and cartographic style: keeping the good view (part 1)¹ Alexander J. Kent

This article is based on a lecture given at the CCS AGM held in Ludlow on 16th May 2009.



“And in all cases, the official topographic maps issued by any one nation express something about that nation’s ethos and character, as clearly do art (other forms of art that is!) and music.” Larsgaard (1993)

As members of the Charles Close Society, we are familiar with the look and feel of Ordnance Survey maps, especially familiar, perhaps, with those alluring covers inviting us to consume the rich vocabulary of symbols in the paper landscape beyond. The cartographic language of topographical mapping has evolved over thousands of years and Ordnance Survey’s peculiar dialect is instantly recognizable to us. Yet how often do we gaze at topographic maps produced by other national mapping organizations and wonder why they look so curiously different to our own? And what constitutes that difference; the use of colour, symbology, lineweight, font, toponymy, or all of these – and more?

There is, I would argue, something quite unique about the relationship between a state topographic map series and its subject – the national landscape – which is articulated through the way it is symbolized. The nationally-specific selection and representation of features gives state topographic maps a certain quality that, as Larsgaard suggests above, is capable of expressing something much more than the physical landscape.

Clearly, this is a vast topic and I cannot attempt to offer any more than a brief scamper here. What I aim to do in this article is therefore to demonstrate succinctly what makes Ordnance Survey’s cartographic style distinctive amongst its European counterparts and to explore what might influence its evolution. To achieve this, I will draw from a recent investigation to analyse the cartographic styles of official 1:50,000 topographic maps from 20 countries and from further research that compares the stylistic development of British and Irish mapping.²

Understanding cartographic style

Style is a term that enjoys widespread use among the arts; in music, painting, literature, sculpture, architecture, and fashion to name but a few. It is often regarded as meaning a certain way of doing something, but more specifically, I would say it is a certain manner

¹ Part 2 will appear in *Sheetlines* 88

² For a more detailed explanation of the theoretical framework, methodology, and results upon which this article is based, see Kent (2008a), Kent (2008b), Kent (2009), and Kent and Vujakovic (2009).

or expression arising from choices (whether these are made individually or institutionally) that are involved in the creative process. When we talk about something belonging to a particular style, we recognize certain shared characteristics which indicate membership of a group (whether they are associated with a period, location, school, individual, and so on). A strategy that aims to preserve these characteristics during origination or revision therefore serves to reinforce the identity of that group. Where style is comprised from greater numbers of distinct characteristics, these are often perceived as an ensemble, rather than as a series of isolated, disconnected elements. Borrowing an example from music, while different instruments have contrasting timbres, a composer's particular use of orchestration, melody, and harmonic structure (especially tonality), makes it possible to identify the sound, for example as a piece of European music belonging to a specific period (Classical), composer (Beethoven), phase (Early Period), and date (before 1802).³

The recognition of any style will obviously depend on the strength of association with its ingredients and whether this is successful depends to some extent on shared experience. One might agree when presented with a scene of the Place du Général de Gaulle in Lille (fig.1) that it appears to be French – or at least definitely not British – through the impression created by the design of its buildings. But we do not need such architectural splendour (or even pronounced clues) to recognize such an authentic sense of difference. An inconspicuous street scene in Calais (fig.2), for example, still seems 'French' to me; the proportions of the windows, the angles of the roofs, the colours of the pavements, the textures of the façades, are successful in communicating this impression because, quite simply, these ordinary things look different.



Figure 1 Place du Général de Gaulle, Lille, France Figure 2 Rue de Varsovie, Calais

In cartography, style is introduced through the process of symbolization: the deliberate and specific ordering of graphical form to present the character of a feature in an abstract way. As the degree of abstraction – and hence generalization – is suggested by scale, cartographic style, especially that of topographic maps, is primarily derived from choices concerning *what to show* (including the amount of detail in which features should be shown), e.g. roads and classes of roads; buildings and types of buildings; vegetation and types of vegetation, and *how to show it* (generally through graphical variables such as size, shape, colour, texture, orientation, and so on). These fundamental choices are very rarely

³ With any stylistic evolution, many characteristics are common to adjacent phases and their divisions are therefore arbitrary to some extent and while it lies among the least material of the arts, music provides no exception.

made by individuals in the realm of institutional map-making, though there are some exceptions. Eduard Imhof (1895–1986), for example, influenced the design of the Swiss topographic map series through his own style of mountain relief cartography. Nevertheless, the successive preservation of these choices by individual or institution whenever new maps are created or earlier editions revised strengthens the parameters of stylistic membership and their power of association.

A homogenous style is one of the defining features of a national series of topographic maps, where the national landscape (as a state-supported good view⁴) is symbolized through a standardized range of cartographic symbols. This range forms the state cartographic ‘vocabulary’ with which users become familiar. As topographic symbology is learned and accepted, its characteristics – which result from choices over what to show and how to show it – become naturalized, constructing a sense of what the cartographic portrayal of the national landscape should look like. (This is reiterated by Ordnance Survey’s scheme to issue free maps to 11 year olds, which has been running annually since March 2002.) Depending on the user’s degree of familiarity with the state symbology, it seems plausible that even slight variations would create an altogether different impression because the ‘ordinary things’ will look different. It is tempting to borrow the metaphor of orchestral music to suggest how the interplay of topographic symbols on a map creates an ensemble effect which facilitates stylistic association. More significantly, however, this ensemble effect has the capacity to communicate a more holistic characteristic – the national landscape – and with it, an impression of its sense of place. The power of expression that lies in the symbology of topographic maps perhaps explains something of the rationale behind Larsgaard’s (1993) assertion above.

Comparing European styles of state topographic mapping

Before attempting to understand where Ordnance Survey’s cartographic style fits within the broader context of European state topographical mapping, it is important to question why there should be any stylistic diversity at all. Modern state topographic maps continue a cartographic heritage that was galvanized by a tradition of scientific survey during the Age of Enlightenment; they are produced under its hegemony of positivism that champions accuracy and objectivity. If their role is to faithfully record the landscape (Sylvester, 1952), where variations in their appearance simply correspond to variations in the surface of the Earth, why should contemporary examples be stylistically different from one another?

It is not difficult, however, to observe that topographic maps of the same geographical area which are covered by the national series of more than one mapping organization *do* vary in appearance and content (compare two topographic map sheets covering the same part of the Alps, for example, or just the territory surrounding an international border). Europe has wide variation in terrain, climate, and vegetation but it

⁴ A landscape is a selective, ‘good’ view of the land, which serves the interests (both aesthetic and ethic) of the patron. In state topographical mapping, features tend to be chosen (and those choices preserved) according to their relevance as perceived by the national mapping organization. Their portrayal is subsequently aesthetically conditioned through institutional cartographic praxis. Of course, the exact circumstances of production vary (e.g. political, technological, and financial constraints), but ultimately the cartographic success of any map depends on its aesthetic and functional resonance with the user.

is also culturally diverse. Some features have more importance within certain cultures, so they may be classified differently, meaning that they exhibit higher detail (e.g. number of symbols per feature) or certain features may be symbolized differently, meaning that they are emphasized (e.g., through shape, colour, size, or texture), exhibit greater abstraction, or are even designed to have more aesthetic appeal.

On the level of individual symbols, while each is designed – however mimetically – to denote a certain type of feature, this will vary with time and culture. A black ‘point’ symbol comprising a cross on top of a filled square on an OS map denotes a church with a tower in Great Britain, and, depending on their particular experience of British churches with towers, the user will have some understanding of what is being symbolized without having seen the feature itself. But OS is not the only national mapping organization to utilize such a symbol, as figure 3 illustrates, and the feature denoted by another nation’s use of this symbol may vary to some extent (compare figures 4 and 5).

Fig 3(left) Symbols used generically to denote a church on various European 1:50,000 topographic maps

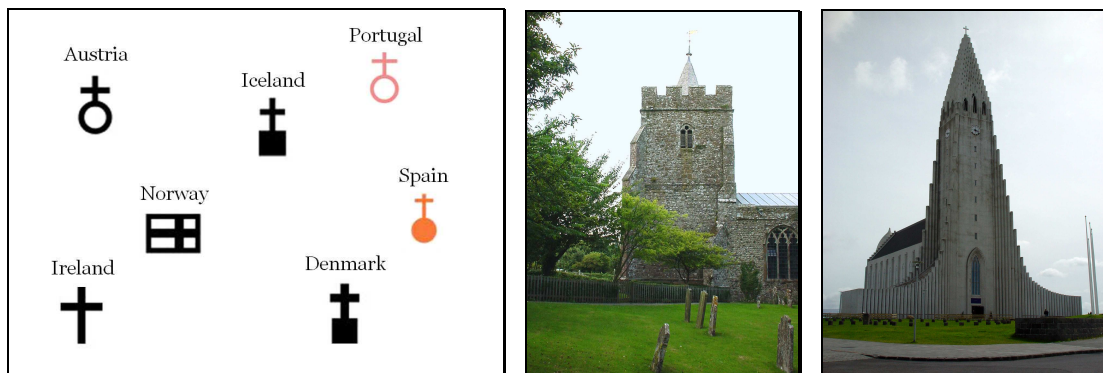


Fig 4(centre) A British church with tower (Lyminge, Kent) Fig 5(right) An Icelandic church (Reykjavik)

Moreover, while each symbol might denote the existence of a particular feature (e.g., a zoo, a nature reserve, an air museum) by using a particular object (an elephant, a duck, and an aircraft propeller, respectively), it is possible for each symbol to suggest different *connotations*, which may vary culturally and personally. In Great Britain, for example, an elephant has the exotic connotations we might associate with a zoo, the duck might connote local wildlife, and the propeller an older aircraft or an event such as the Battle of Britain. Our personal connotations may involve these and/or other associations, derived from the imaginative use of memory and experience.

Similar cartographic symbols can therefore give rise to different connotative associations when employed within different cultures, as users draw from their personal experience, memory, and imagination in reading maps; the realms of which are of course in turn also influenced by culture.⁵ To be successful, therefore, topographic map symbols also have to induce connotations which are customary, i.e. generally agreed, within the culture for which they are determined for use.

⁵ These connotations help to construct our biographical associations with maps. As symbols, maps are open texts which invite free play of the imagination and the creative manipulation of experience; aerial photographs and satellite images are closed texts that do not leave as much scope for this. As Ernst Gombrich (1995) put it, the painter must leave the beholder something to guess.

As cartographic symbolization therefore involves the selective omission of detail and preservation of character, it provides a means for discriminating between styles. The initial stage of this process relates to the classification of landscape, i.e., which features are selected from the land and the amount of detail in which they are classified. When comparing these classifications, it is crucial to ensure as much consistency as possible and consult the maps themselves. The scale of the samples therefore needs to be identical, as scale has a huge influence over the choices that are made regarding cartographic generalization and representation. Although derived from larger scale material, 1:50,000 is both versatile and widespread as a topographic map scale across Europe. Furthermore, different scales serve different purposes and this scale offers something of an equilibrium between abstraction and mimesis – and with it the intention to serve the general as opposed to the specific user. In terms of the medium of production, as paper maps preserve the choices made by the map-makers and limit the user's control over visualization (e.g. turning layers of information on or off), they are more suitable for such a comparison. Moreover, there is widespread variation in the availability of digital topographic data across Europe.

The investigation includes maps from 20 European countries (Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Iceland, Ireland, Italy, Latvia, The Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden, and Switzerland), which were acquired either by written request or personal visit. Only current, official, state topographic maps accessible to the public and designed for general use (i.e. not special versions) were selected, with a view to ensuring consistency and facilitating further study.

In order to explore and measure stylistic diversity, the method involves analysing the legend symbologies of state topographic maps as presented to the user. This vocabulary is independent of the area covered by the map sheet and represents the mapping organization's classification of the national landscape. A typology is constructed in order to compare the various classifications of national landscapes and to generate quantitative and qualitative data. In compiling the typology, every discrete and complete graphical symbol is sorted into mutually exclusive classes. The number of classes evolves as the symbologies are classified in an attempt to establish the lowest level of commonality at the highest level of detail between symbologies (figure 6). The resulting 19 classes are then aggregated hierarchically into a further two levels (figure 7), allowing additional analyses to be performed.

While there are of course limitations with any classification, this method aims for a consistent approach that allows the proportions of symbols constructing each national symbology to be compared. In addition, the classification of symbologies is complemented by a comparison of the use of colour, lettering, visual hierarchy, and 'white' space to offer a comparison that encompasses both content and appearance. The typology is therefore designed to engage with the most fundamental ingredients of cartographic style and to make the identification of supranational groupings possible.

After classifying 2,388 symbols from legends appearing in 17 different languages, the extent of the stylistic diversity of European topographic mapping starts to emerge. Slovenia, with a vocabulary of 218 symbols has the greatest number, while Ireland, with

Figure 6 The initial level of classification with examples of features represented by symbols in each class
(© The British Cartographic Society)

Level Three Class	Examples of Features Symbolized
Road	Motorways, roads, tracks, bus stations, parking, junctions, tree-lined roads, and road tunnels/bridges
Rail	Railways, railway stations, cargo railways, and railway tunnels/bridges
Paths	Footpaths, bridleways, passes, ski-tracks, and footbridges
Canals	Canals, locks, canal beacons, trafficable dykes and aqueducts, and canal water level gauges
Cycle Tracks	Cycle tracks, cycle routes, and cycle bridges
Other Transport	Trams, ferries, ports, docks, airports, and helipads
General Built-Up Features	Residential buildings, schools, hospitals, post-offices, police stations, town halls, farms, towers, fences, walls, and sheepfolds
Administrative Boundaries	International, national, district, province, canton, and county boundaries
Religious Features	Cathedrals, monasteries, churches, chapels, and shrines
Industry, Communications, and Power	Quarries, peat-cuttings and huts, factories, fish farms, oil/gas stores, radio masts, windmills, watermills, pylons, and power stations
Water Management and Utilization	Reservoirs, fountains, dams, dykes, levees, irrigation canals, weirs, water towers, groynes, sluices, and sewage treatment facilities
Navigation and Military Features	Triangulation pillars, cairns, isolated objects as reference points, beacons, lighthouses, shipwrecks, and military camps
Tourist and Sport Facilities	Hotels, campsites, golf courses, ski-lifts, cable-cars, sports centres, and football pitches
Historical Features	Castles, ruins, ancient earthworks, burial mounds, and monuments
Managed Land	National parks, nature reserves, cemeteries, gardens, and parkland
Hydrology	Bodies of water, submerged rocks, rivers, streams, springs, currents, and bathymetric depths
Terrain and Relief	Contours, spot heights, escarpments, natural escarpments, rocks, scree, sand, cliffs, caves, glaciers, and snowfields
Vegetation	Woods, forests, grassland, open land, shrubland, heathland, meadows, hedges, orchards, vineyards, and arable land
Non-Landscape Features	Graticule intersections

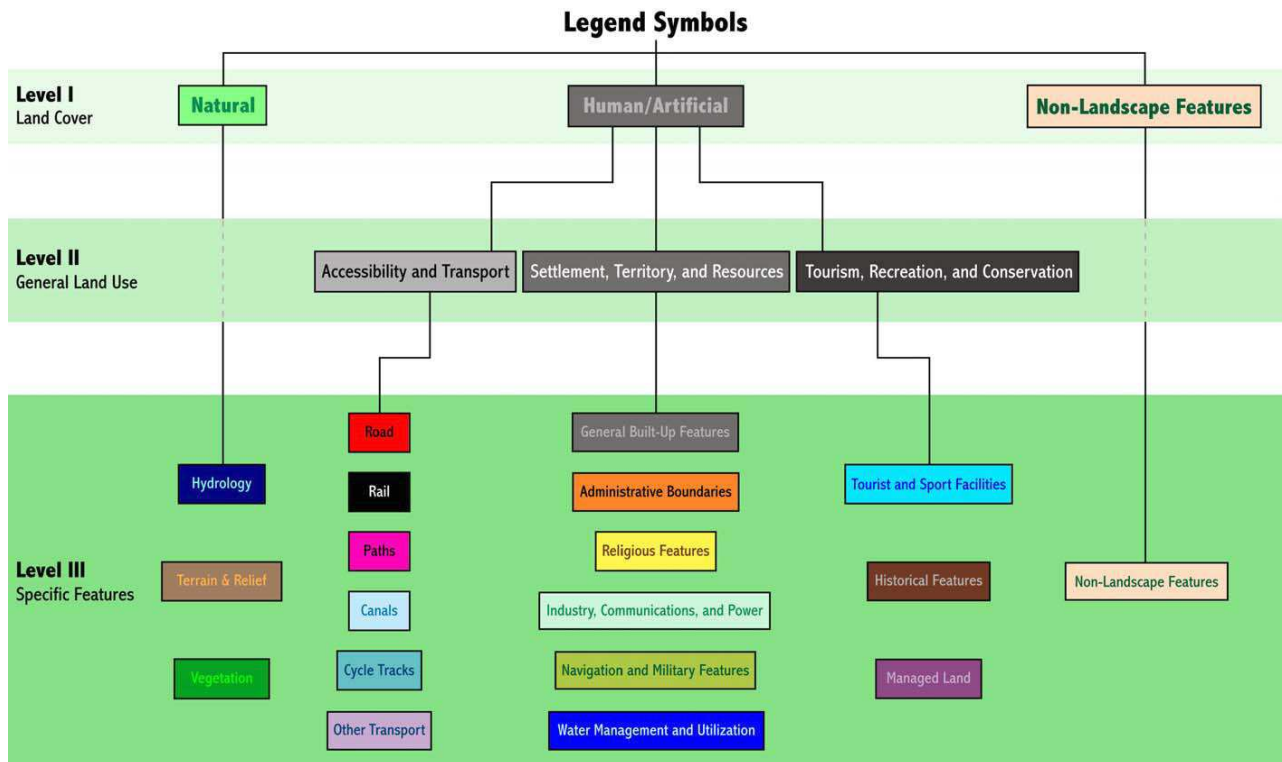


Figure 7 The hierarchical structure of the classification of legend symbologies (© The British Cartographic Society)

73, has the fewest. Figure 8 illustrates the range of symbols across the 20 countries, from which it is possible to speculate about a geographical core-periphery arrangement, where, very generally, countries employing a total number of distinct cartographic symbols tend to be located towards the geographical fringes of the sample.

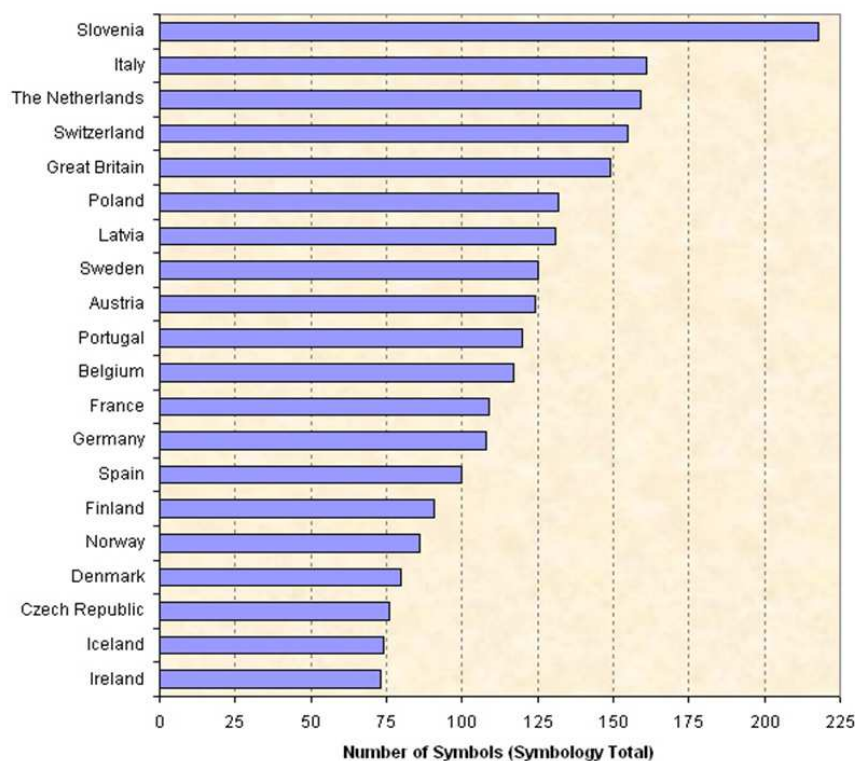


Figure 8
A ranked bar chart showing the comparative total numbers of symbols employed by the national mapping organization in each country (© The British Cartographic Society)

As the quintessential process of topographic mapping is deciding what to show, it is plausible to examine the classifications of landscape, and, in particular, the relative proportions of symbols used to describe various features, to identify stylistic groupings. Pie charts are a useful medium for the visual comparison of these differences as they capture a sense of the relative proportions that make up the whole (fig 9). A better way to make visual comparisons between these data, however, is the star plot (fig 10), as it has the ability to capture something of the distinctive character of their subject by its shape.

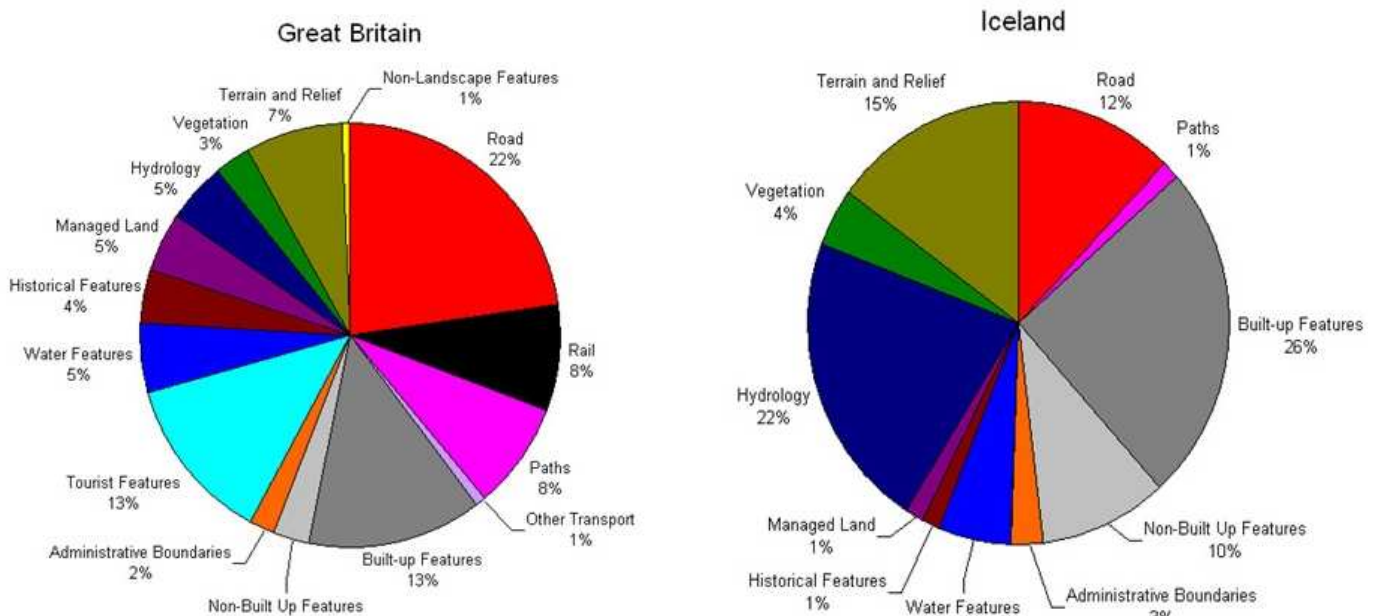


Figure 9 Pie charts showing differences between the British and Icelandic maps in the proportions of their symbologies used to represent different types of feature (© The British Cartographic Society)

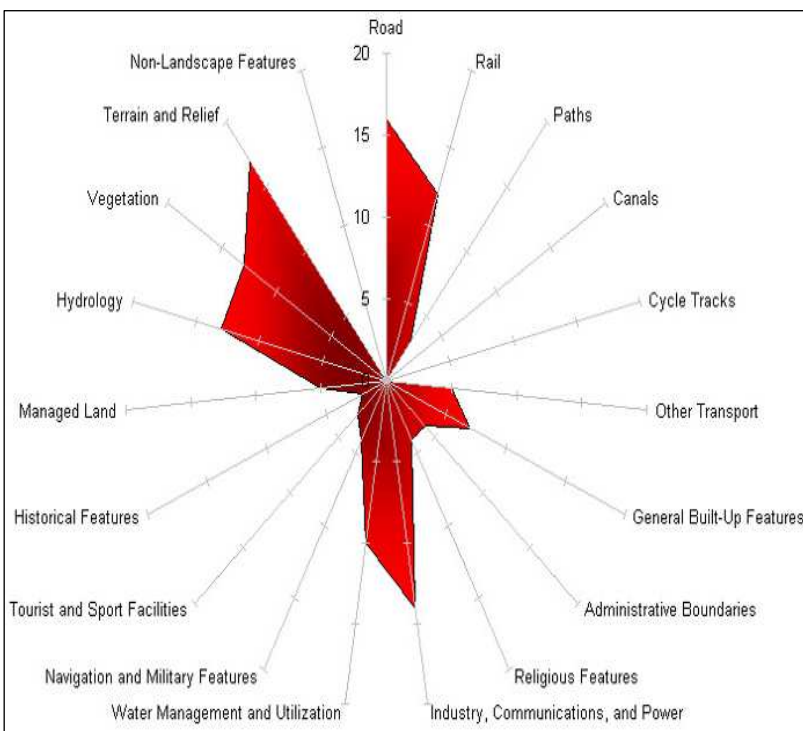


Figure 10 Star plot of Polish symbology, where the numbers on the axes represent the number of symbols per class (© The British Cartographic Society)

Although visually effective, the more rigorous method of cluster analysis was introduced to identify stylistic groupings, whereby the relative proportions of symbols are analysed in terms of their numeric difference. I will not explain the technique in any detail here, but essentially the process starts with the maximum number of clusters (symbologies representing countries in this case) and proceeds to mathematically 'fuse' clusters together based on their similarity (percentages of the total symbology devoted to each type of symbol).

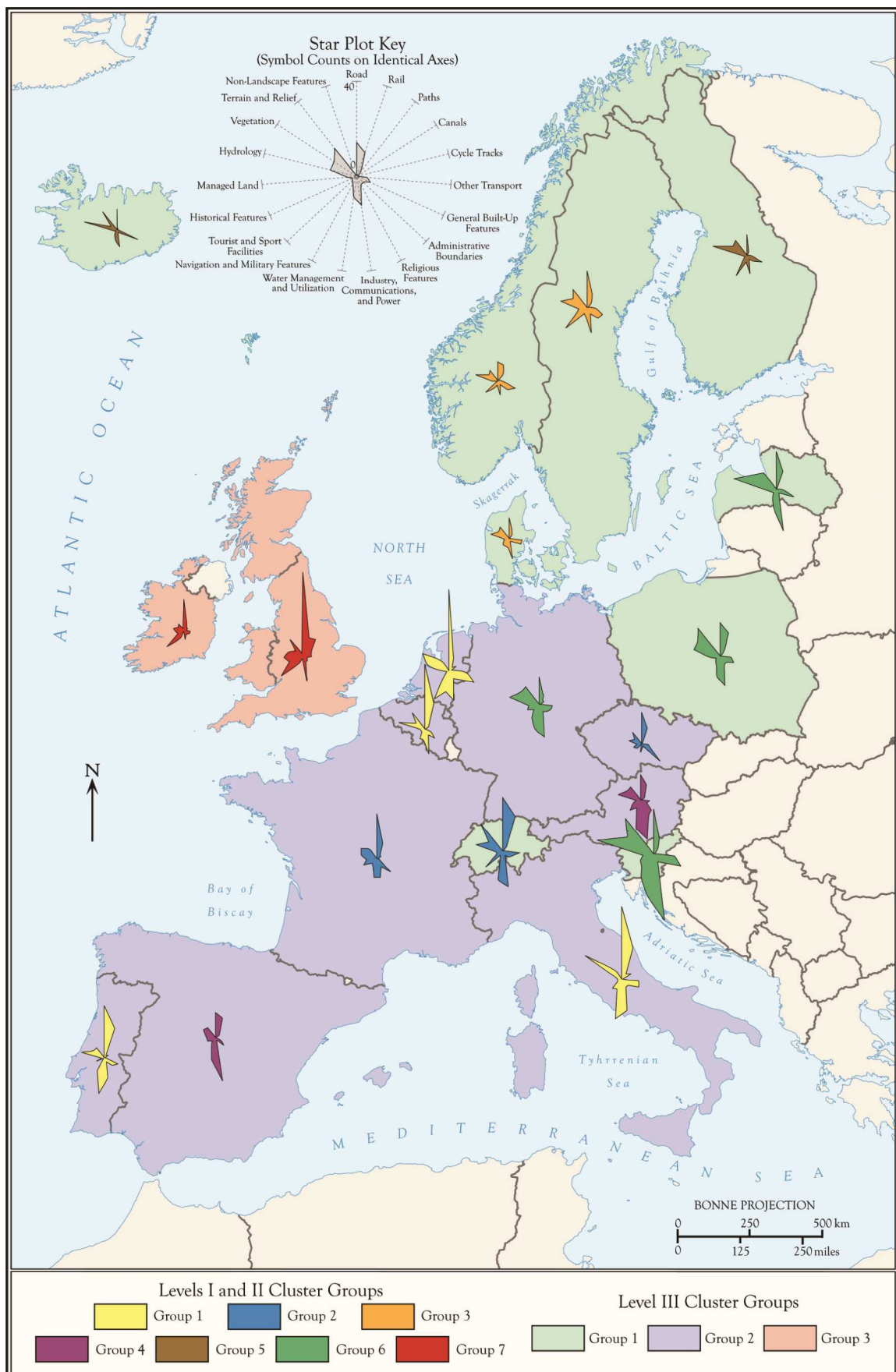


Figure 11 Map summarizing the results of the quantitative star plots with identical axes based on national symbologies and coloured according to cluster grouping (© The British Cartographic Society)

It was possible to establish supranational groupings using this technique, whether applied to the broader or more detailed levels (see figure 7), but the clusters pertaining to the latter were harder to fuse together. Indeed, it was clear that national mapping organizations show considerable differences in their topographic classifications, suggesting that they choose to define their subject in their own way. The map in figure 11 illustrates the results of the stylistic groupings arising from the cluster analysis, also incorporating the star plots.

Each of the groupings warrants further research, but some findings seem to make immediate sense. One of these is the consistent ease with which the clusters representing the British and Irish maps fused together (and yet did not show very much inclination to join the rest of Europe!). Ordnance Survey conducted the topographical mapping of Ireland as proposed by the Spring-Rice report of 1824. After Ordnance Survey's methods of survey, landscape description, and portrayal were established in Ireland, it is therefore likely that some of its legacy remains in the design of current Irish topographic maps.

In terms of the qualitative comparisons between national symbologies, some interesting observations were made. Most countries use black for built-up features and utilize several colours for roads, which also tend to be the most visually dominant type of feature (suggesting fairly convincingly that the 1:50,000 scale is perceived by the national mapping organizations as being useful to road users). Moreover, Britain and Ireland are again distinctive in this respect, in that they continue to use colours which reflect road signage to some extent (e.g. cyan for motorways). As would be expected, most countries depict vegetation using green (although Finland uses orange and white!), blue for hydrology, and brown for contours, leaving white to be used for 'white' space (symbolizing what the user is left to assume). Alpine countries tend to be more conservative in their state topographic map design, utilizing fewer colours but a greater proportion of serif fonts (which arguably carry connotations of tradition and heritage).

To summarise, stylistic similarities were identified in terms of the maps' content (classification) and appearance (colour, lettering, and so on), but there were no strong cases which clearly possessed both. While the British and Irish examples were consistently classified in similar ways, their appearance did not share the same level of consistency. European state 1:50,000 topographic maps are therefore stylistically diverse, with conventions over the portrayal of landscape features extending little further than basic cartographic 'grammar', i.e. using a point, line, or area symbol for certain features (e.g. a linear road symbol), and the persistent use of certain colours for various features, e.g. black, blue, green, and brown. A scale as large as 1:50,000 would seem to require enough detail to classify the landscape in a distinctive, authentic way, and to command enough abstraction to entertain a creativity that national institutions are proud to preserve.

It has regrettably been necessary to reduce the size of some images in this article. The original versions may be seen in The Cartographic Journal, volume 46, number 3, August 2009.

Part 2 'What makes Ordnance Survey's cartographic style so distinctive', together with references will appear in Sheetlines 88.

*A persistent error**John Cole*

Thanks to book tokens I indulged recently in the luxury of Explorers 219 (A2 'Revised' 1999, selected change 2005, 2008), 220 (similar) and 244 (B1 'Revised' 2000, selected change 2005, minor reprint 2008). Amongst other delights this gave me complete coverage of all 1:1250 and 1:2500 work I did in Birmingham, Sutton Coldfield and more particularly the Black Country during my residence in 1952-64.

Explorer 219 was reviewed in *Sheetlines* 57 some ten years ago by David Kimber so it was interesting to see what notice OS had taken of some of his suggestions or indeed criticisms. From my own point of view I was surprised to find that almost a third of the areas I surveyed/revised had undergone little or no alteration (perceptible at 1:25,000) on maps comprising massive changes. Three Sutton Coldfield 1:1250 maps appeared to have altered not a jot (back garden and housing extension detail excepted). And similar applied to older originally council estates at Walsall and West Bromwich. But it is a different story where the M5, M6 and M54 plus other major new roads are routed, industrial complexes completely altered and railways and canals obliterated.

Which brings me to the point of this article. By and large the naming of canals on all three maps seems clear and complete. But given the complexity of the original West Midland system it is not surprising that a degree of inconsistency (in my opinion!) has crept in, whilst I feel obliged to expose a mistake as it falls within 1:2500 maps SJ9804 and SJ9805 revised by me in March 1960. These grid squares appear on both Explorer 219 and 244.

Initially I was most aggrieved because the mistake seemed to have arisen from a local OS procedure I took exception to at the time, but closer investigation revealed that the error was to be found on both the Seventh Series and New Popular versions of the one-inch sheet 119 and Popular sheet 62.¹

The reason appears to be as follows. The Wyrley and Essington Canal winds its course from Wolverhampton to the east of Lichfield and a junction with the Coventry Canal, itself joining the Trent & Mersey Canal a few miles to the north. Along the way it, like many other canals in the area, throws off various branches which in the majority of cases had their own name. At grid square 9801 having turned north, it very sharply swings south-east towards Walsall, whilst what was known as the Wyrley Bank Branch continued north to a terminus at Cheslyn Hay. In County Series mapping days this figured on the large scale map as 'BCN (Birmingham Canal Navigations) Wyrley Bank Branch'. BCN having been superseded by British Waterways in the 1950s or before, there was some argument about OS treatment but what was eventually adopted seemed to me to be both cumbersome and wrong: 'Wyrley and Essington Canal (Wyrley Bank Branch) (disused)'. Thus 'Wyrley and Essington Canal (disused)' eventually on the Explorers, although this does not explain its appearance on the one-inch maps.

There may have been some kind of logic in quoting the parent canal but this tended to fall down in instances such as the Bentley Canal terminating at its east end on the

¹ But not the D1 of Landranger 127 and C5 of Landranger 139.

Anson Branch (of the Walsall Canal), and the Daw End Branch (also of the Wyrley and Essington) which had an end-on junction with the Rushall Canal at the village of that name. Incidentally whilst it is not annotated on Explorer 244, it is shown as 'Daw End Branch' on 220.

The Churchbridge Branch (9509 on 244) is shown simply as Canal (disused) and this may not be the best form for branches which have been legally closed but still exist and might still be used for fishing or boating. The Wyrley and Essington is quite properly shown as disused north-east of Brownhills as here it is simply a dry channel, obliterated in places.

Whilst the rest of 244 and indeed the whole of 220 look satisfactory to me as far as canal names are concerned, there are some problems in the Black Country area of Explorer 219. Just one branch is named. This is the Gower Branch (Canal added) joining apparently two Birmingham canals. But that named at 9791 should read 'Birmingham Canal Birmingham Level' the other at 9591, 'Birmingham Canal Wolverhampton Level'. There are of course detail congestion difficulties in writing these names in full. And there is indeed another existing section of the Wolverhampton Level from 9495 to 9595 (also known as the Wednesbury Oak Loop) which was by-passed as a through route when the Coseley tunnel was constructed in the 1820s by Telford, who was also responsible for the much more straight Birmingham Level.

Sections of other branches in order of length are: Balls Hill Branch (9891, 9992), Anson Branch (9898) and Lower Ocker Hill Branch (9894). Others are the approach canal to Brades locks (now gone) (9795), Toll End locks (also gone) (9895), the Titford Canal (9988) and the approaches to the north and south ends (and indeed the canal through it) of the Netherton Tunnel Branch. It would be difficult to add some or all of these names at 1:25,000 scale and for the sake of consistency it would probably be better

to remove the Gower Branch name.

The canal tunnels at Coseley (368 yards) and Gosty Hill (557 yards) are depicted by pecks and the long Netherton (3027 yards) and Dudley (3154 yards) are both named on the maps. But of the disused Lapal (3795 yards) centred approx 0083 there is not a trace.



*Wyrley & Essington Canal (disused) at SJ983048 on
1:25,000 Explorer219 © Crown Copyright NC/00/1340*

Khrushchev preferred Bartholomew's maps

John L Cruickshank

The Ordnance Survey is often considered (not least by itself) to be the exclusive producer of official maps of Britain. Nevertheless, to the irritation of the OS, maps produced by Bartholomew in Edinburgh have on many occasions been used by Britain's armed forces and by civilian government bodies. Thus, at the beginning of the twentieth century the commissioning of a military edition of Bartholomew's half-inch maps of southern England was to lead to the creation by the Ordnance Survey of its own half-inch maps of all three kingdoms. And during the Second World War the fabric maps issued to servicemen for escape and evasion were initially all Bartholomew maps, not British official ones.

The OS claim, asserted in 1997, to the copyright of all Soviet mapping of Britain was very much based on the opening proposition of this paper. John Davies and others have however shown that the Soviet large-scale plans of British cities include material derived from many non-OS sources, and where OS material was used it was generally well over fifty years old.¹ The sources used for the small-scale Warsaw-pact mapping of Britain have not hitherto been considered in detail. An examination of some of these maps now indicates that the OS claim to their copyright is also open to question.

It is worth reviewing the historical development of the Soviet and Warsaw-pact mapping of this country. This has been sequential, and has depended on the evolving military and political priorities of the times. Latterly it was also linked to the development of remote sensing technology. In addition a complex interaction between organisations in different Warsaw-pact countries was involved, and because of this the actual originator of a particular sheet may not always be apparent from its imprint.²

The initial stage began shortly before the Second World War. Amongst the many brakes on the forced industrial and economic development of the USSR, which was being driven by the successive Five-Year Plans, was a lack of any complete mapping of the country. Underlying this was a lack of large-scale surveys, but strenuous efforts were made to compile complete coverage of the country at 1:1,000,000, using whatever material was available, and using the projection and sheet lines of the International Map of the World (IMW) and similar drawing specifications.³ At the same time maps were also compiled at that scale of other countries, including those of Western Europe and Asia Minor, using a variety of published sources including existing IMW sheets. Because of the range of sources, these sheets were not always fully compatible with each other. The Second World War⁴ added impetus to this programme, and by the end of the war western Europe and North Africa were covered not only by 1:1M sheets on the IMW projection, but also by two rectangular-sheet series, one at 1:1M and another at 1:2.5M. All these

¹ John Davies, 'Uncle Joe knew where you lived', *Sheetlines* 72, 26, *Sheetlines* 73, 6; David Watt, 'Soviet military mapping', *Sheetlines* 74, 9; John Davies, 'Soviet military mapping study day', *Sheetlines* 74, 13.

² JL Cruickshank, 'Mapping for a multi-lingual military alliance; the case of East Germany', *The Ranger* 2(20), 33.

³ The standard account of these developments is AM Komkov, 'Razvitie i sovershenstvovanie sovetskikh topograficheskikh kart', *50 Let Sovetskoy Geodezii i Kartografii*, Moscow, Nedra, 1967, 254-267.

⁴ Generally known to Russians as 'The Great Patriotic War'.

early sheets are notable for the prominent italic Cyrillic scripts used for the names of water features and landforms.⁵

Almost immediately after the end of the Second World War the intense rivalry known as the Cold War began, while at the same time there was a fundamental rethinking and redesign of all Soviet mapping in the light of wartime experience and the new global political order. Much of the rivalry was expressed as one-upmanship; each side would claim to the other that they had achieved some impressive goal, even if the reality was often rather less impressive. Both sides expressed this one-upmanship cartographically, as in every other field. The production by the USSR of individual map-sheets covering western countries, which when revealed would suggest that many others that had not been revealed might also exist, was one quite simple way of ‘magnifying’ Soviet achievements. Thus in 1947 an isolated Soviet 1:500,000 sheet (M-30-B) was produced covering London, and three sheets of the west of Scotland were produced in the 1950s. It seems however that completion of the coverage of Britain at this scale had to wait until the 1960s.

By the 1960s the Warsaw-pact system had matured. Each of the Warsaw-pact nations had established its own Soviet-pattern mapping services, and each of these acted as a sub-contractor to the Soviet Union, producing defined mapping tasks within an overall plan for the alliance as a whole. Maps would be produced to the standard Soviet specification, with names and marginal information in the language and alphabet of the originating country, but separated in the reproduction material so that a duplicate Russian-language version could be produced. A limited system of exchange of reproduction material between the Warsaw-pact nations was also implemented, although only the Soviet Union had access to all the available material.⁶

Nikita Khrushchev led the Soviet Union for a decade (1954-1964). Particularly during the later part of this period there was significant decentralisation and some encouragement of local initiative, and it was at this time that the completing and updating of the 1:500,000 coverage of Europe was initiated and substantially carried out. Much of this work was thus delegated to the East German military-cartographic service. Those East-German sheets covering Britain, France and the Low Countries carry very specific compilation notes which identify the precise sources used for the sheet.

These East-German sheets fall into two groups. One group was directly derived from an existing Russian-language map of a specified date. Such sheets give no information about the ultimate source material. The other group were compiled, or (for some sheets) revised, from specified non-Russian material. For Britain this source-material was not produced by the OS. The maps of almost all of Britain were derived from Bartholomew’s half-inch maps dating from the 1950s. One sheet, that of Glasgow (N-30-A), was derived from a 1956 Russian sheet and revised from Bartholomew’s sixth-inch series. The London sheet (M-30-B) was based on the Russian map of 1947, with revision from

⁵ Part of one of these early IMW-projection sheets is illustrated in *Sheetlines* 72, 32.

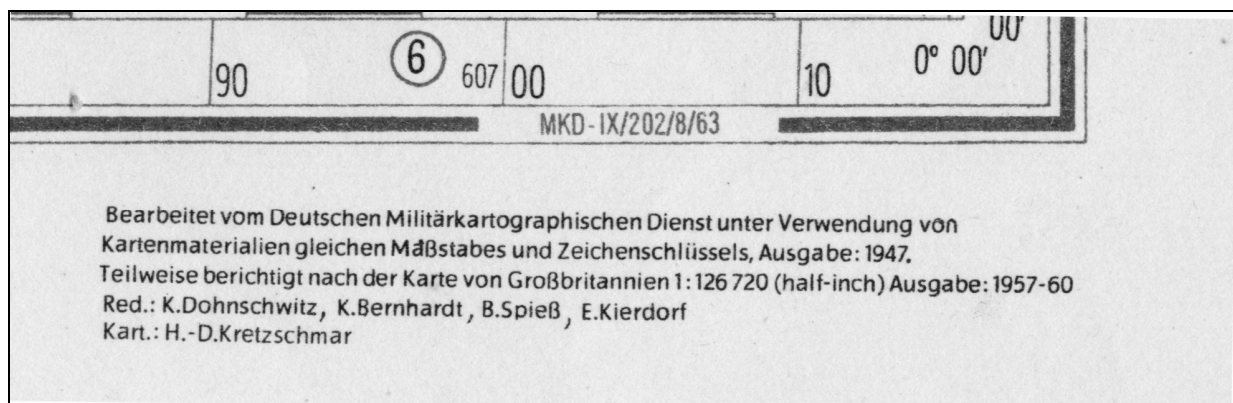
⁶ See Gerhardt Fasching (ed.), *Militärisches Geowesen der DDR von den Anfängen bis zur Wiedervereinigung*, Wien: Bundesministerium für Landesverteidigung, 2006, for details of how this applied to East Germany in the later stages of the Cold War. For some Hungarian aspects of this see Hegedüs Ábel, ‘Hidegháború a Térképek 1’, *Tájéko* (2008/3), 30-31 (I am grateful to Peter Collier for bringing this short but interesting paper to my attention).

Bartholomew's half-inch maps of 1956-1960. Only two British sheets were not stated to incorporate Bartholomew material: those of Stornoway and Tobermory (O-28-B, O-29-D). These are stated to derive from second edition Russian maps dated 1956 and 1955, of unknown ultimate source. A curious sub-group of five sheets cover no land, but only parts of the North Sea. All of these are stated to derive from East-German sea-charts of unspecified date or provenance. Of the known sheets covering Britain, only one, Kirkcaldy (O-30-C), was not available for examination.⁷ The details of the individual sheets are given in the table.

While the sources used for the East-German 1:500,000 sheets outside Britain are not the focus of this article, it is worth mentioning that the sheets of Ireland all derived from Russian mapping without specified further sources. Those of France were generally derived from Russian mapping with revisions from Michelin 1:200,000 maps of specified post-war date-ranges, although the French part of the Brest sheet was directly compiled from French 1:200,000 mapping dated 1937, as was the French part of the Southend sheet.

The subsequent use made of these compilations within the Warsaw pact in general, and the USSR in particular, remains uncertain. By the time of issue of the corresponding Russian-language 1:500,000 editions of the United Kingdom, later in the 1960s, the preparation of larger-scale Warsaw-pact mapping of Britain was already well under way. And when the time came to revise and reissue all the 1:500,000 maps of Western Europe in the 1980s the policies on sub-contracting had changed and the new East German editions of these maps were all secondary versions of sheets prepared by the Russians. Even the sheets covering their own country could not then be prepared by the GDR organisations directly from their own surveys and mapping. It is not clear whether these later Russian sheets (or the German versions) made any use of the older mapping at that scale, or whether they were entirely fresh generalisations from subsequent larger-scale Warsaw-pact mapping.

Nevertheless the existence of some Warsaw-pact mapping explicitly derived from Bartholomew's maps must be taken as casting further doubt on the OS blanket claim to copyright on all Warsaw-pact mapping of the UK. The sources used were clearly much wider and more complex than might at first be assumed.



Compilation note from sheet M-30-B London

⁷ I am uncertain whether the Lerwick sheet (P-30-C/D) was produced in this edition.

Zusammengestellt 1965 nach Bartholomew's
"Sixth Inch" motoring map 1: 380159,
Top. Übers.-Karte 1: 500000, 2. Ausgabe 1956
und Zusatzmaterial
Redaktioneller Stand : Mai 1964

Redaktion und Kartographie:
VEB Kartographischer Dienst Potsdam
Redakteur: E. Engel

Zusammengestellt 1965 nach der Bartholomew's
revised "Half-Inch" 1: 126720 contoured maps,
Ausgabe 1954 und Zusatzmaterial
Redaktioneller Stand : Februar 1964

Redaktion und Kartographie:
VEB Kartographischer Dienst Potsdam
Redakteur: E. Engel

Compilation note from sheet N-30-A Glasgow

Compilation note from sheet N-30-B Newcastle

East-German 1:500,000 sheets covering the British Isles and North Sea (1962-67 editions):

<i>Number</i>	<i>Name</i>	<i>Issue date</i>	<i>Source material</i>
M-29-A	Bantry	1967	2nd edition (1956) of the Russian 1:500,000 map
M-29-B	Cork	1967	2nd edition (1956) of the Russian 1:500,000 map
M-30-A	Cardiff	1965	Bartholomew's half-inch (1958)
M-30-B	London	1962	Russian map (1947) revised from half-inch of 1957-60
M-30-C	Brest	1965	French 1:200,000 (1937) + Bart's half-inch (1959)
M-30-D	Rennes	1962	Russian map (1954) revised from Michelin (1955-1958)
M-31-A	Southend	1965	French 1:200,000 (1937) + Bart's half-inch (1959)
N-29-A	Ballina	1965	2nd edition (1956) of the Russian 1:500,000 map
N-29-B	Londonderry	1967	2nd edition (1956) of the Russian 1:500,000 map
N-29-C	Galway	1966	1st edition (1961) of the Russian 1:500,000 map
N-29-D	Dublin	1966	1st edition (1961) of the Russian 1:500,000 map
N-30-A	Glasgow	1966	2nd edition (1956) of the Russian map + Bart's sixth-inch
N-30-B	Newcastle	1965	Bartholomew's half-inch (1954)
N-30-C	Birkenhead	1965	Bartholomew's half-inch (1958)
N-30-D	Birmingham	1965	Bartholomew's half-inch (1959)
N-31-A	Doggerbank	1963	Seekarten der DDR
N-31-B	S. Schlickbank	1963	Seekarten der DDR
N-31-C	Norwich	1965	Bartholomew's half-inch (1959)
N-31-D	's-Gravenhage	1965	Netherlands 1:200,000 (1950)
O-29-B	Stornoway	1966	2nd edition (1956) of the Russian 1:500,000 map
O-29-D	Tobermory	1965	2nd edition (1955) of the Russian 1:500,000 map
O-30-A	Wick	1966	Bartholomew's half-inch (1955)
O-30-B	Kirkwall	1966	Bartholomew's half-inch (1954)
O-30-D	Aberdeen	1966	Bartholomew's half-inch (1954)
O-31-A	Lingbank	1965	Seekarten der DDR
O-31-B	Stavanger	1965	1st edition (1954) of the Russian 1:500,000 map
O-31-C	Long Forties	1965	Seekarten der DDR
O-31-D	N. Schlickbank	1965	Seekarten der DDR

Feeling blue – Landranger and Explorer cover spines

Ed Fielden

A curious and barely noticeable design error befell the covers of a few sheets of OS Landranger and Explorer series during the early part of 2009.

My suspicions were first aroused in April 2009 when I bought a copy of the new edition of Explorer 170 *Abingdon, Wantage & Vale of White Horse* (edition A2). On the cover spine of the map the Ordnance Survey logo carried blue lettering, rather than the usual white. The following month I came across a copy of Landranger 174 *Newbury & Wantage* (edition D1) which also had blue lettering on the cover spine – evidently a cover reprint as I already had a copy with white lettering. At this time I wondered if the blue logo lettering was a deliberate new style but did not investigate further.

Some months later – in October 2009 – the new edition of Landranger 151 *Stratford-upon-Avon* (edition C3) carried the standard white lettering on the cover spine. It was at this point I realised the blue lettering must have been either a temporary design change or a mistake. During the month of October I made a study of which sheets seemed to have been affected by checking stocks ‘in the wild’ in several shops in London, Bristol and my home town of Cirencester. I then contacted OS to ask how the blue logo came about.

Their response was based only on those sheets with the blue logo which I had come across on sale, as they held no record of exactly which sheets were affected by the error. The following details come mostly from their responses to me in late 2009.

According to the design template the Ordnance Survey logo on the spine of the Landranger and Explorer covers should have white text. A design error meant that an alteration intended for the Travel Map range (to change logo lettering from white to OS blue) was applied to the cover template for a small number of Landranger and Explorer sheets.



A total of 29,429 Explorer and 46,028 Landranger cover copies are known to have been printed with the incorrect colour on the cover spine logo between January and May 2009. This includes those covers subsequently used to make the ‘Active Map’ variant. Once the error was realised OS decided not to scrap the affected covers, instead letting the stock sell through; the cost of reprinting could not have been justified for such a small error. Stocks of certain of the affected maps can still be found on sale in shops even as this is written in February 2010.

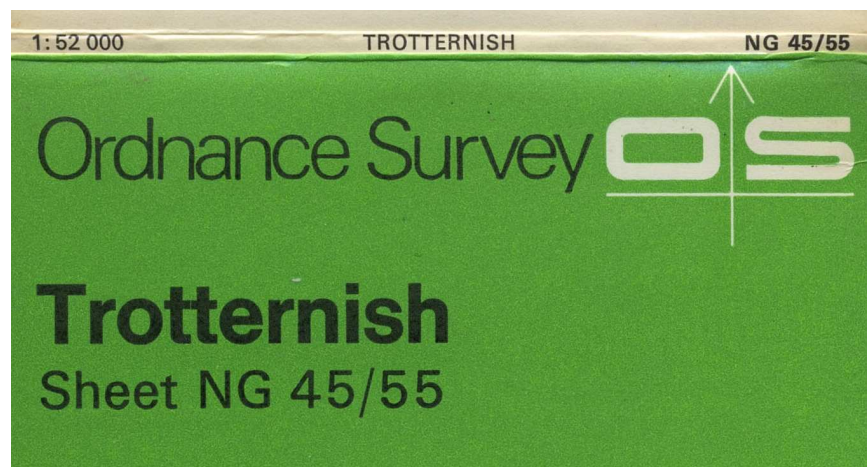
The table below, taken from OS data obtained under the FoI act, details the sheets I have discovered as being involved and the number of affected covers printed for each:

<i>No.</i>	<i>Sheet Title</i>	<i>Edn</i>	<i>Pub. date</i>	<i>Date of cover printing</i>	<i>Covers printed</i>
<i>Explorer</i>					
170	Abingdon, Wantage & Vale...	A2	06/04/2009	04/03/2009	5783
175	Southend-on-Sea & Basildon	A2	02/03/2009	28/01/2009	11506
208	Bedford & St Neots	A2	02/03/2009	05/02/2009	5240
214	Llanidloes & Newtown	A2	17/10/2005	24/03/2009	1870
215	Newtown & Machynlleth	A1/	28/04/2009	27/03/2009	1280
304	Darlington & Richmond	A2	02/03/2009	05/02/2009	3750
<i>Landranger</i>					
16	Lairg & Loch Shin	B2	28/04/2008	17/02/2009	1540
19	Gairloch & Ullapool	C1	14/04/2008	18/02/2009	2070
56	Loch Lomond & Inveraray	C2	23/07/2007	20/02/2009	4550
84	Dumfries & Castle Douglas	B3	19/03/2007	19/02/2009	5067
114	Anglesey	B4//	16/05/2008	20/04/2009	3029
	Stoke-on-Trent &				
118	Macclesfield	C4	30/01/2006	16/02/2009	2550
135	Aberystwyth & Machynlleth	C1	05/09/2005	19/05/2009	2069
137	Church Stretton & Ludlow	B2	19/12/2005	08/04/2009	3100
142	Peterborough	D1	24/07/2006	19/02/2009	1962
150	Worcester & The Malverns	D/	17/04/2007	24/02/2009	2564
	Aylesbury & Leighton				
165	Buzzard	D1/	01/07/2008	18/02/2009	3165
166	Luton & Hertford	C3	23/05/2006	05/02/2009	2074
174	Newbury & Wantage	D1	26/04/2005	25/03/2009	2495
177	East London	E3	29/09/2006	24/02/2009	2100
178	Thames Estuary	D3	11/05/2007	19/02/2009	925
179	Canterbury & East Kent	D2/	09/07/2008	19/02/2009	4082
182	Weston-super-Mare	C2	06/04/2005	17/03/2009	2686

The scope for collectability of this unintentional variant is perhaps minimal given the number of copies involved, but this is surely one for completists!

...and for another unintentional variant...

With thanks to Ed Fielden



Map collecting – the endgame

Aidan de la Mare

Our activity of collecting maps has been discussed by David Archer in several of those informative, always entertaining and sometimes inspirational *Kerry musings* that appear in *Sheetlines*. He has looked at the differences between ‘a map collection’, ‘a collection of maps’ and ‘an accumulation of maps’,¹ but inevitably things seldom fit neatly and discretely into categories, so I am still trying to fit the result of ten years of acquiring maps into one or more of these that he has mentioned.

I have written about *Was there life before maps*² and finished by stating that I had discovered The Charles Close Society and that maps had become an obsession. That was something of an exaggeration, as I don’t have obsessions. But, once started, the process of acquiring maps did move rapidly from buying anything that I hadn’t got, to defining what I actually wanted. At that time I was fortunate that the CCS had published those excellent booklets on the various map series, and David Archer was sending out his lists of maps for sale. These between them brought on the collection at a hothouse rate; but whether this meant a loss of excitement in the chase compared to the long search for knowledge that had been necessary a few years earlier – I don’t know. But having come to map collecting rather late in life, at least I have been able to enjoy what I have bought for a reasonable number of years. I have also been fortunate to have almost finished collecting what I want while the prices have remained modest - although not as modest as when David Archer started his accumulation.³

As I have always lived in the south of England it was natural that I should concentrate on maps of that area, even though they are arguably of less interest than those of the north of England, particularly as I always begin my scan of a newly acquired map by looking over the canal and railway routes before moving on to the landform, habitations and roads. With the south-centred collection taking shape, it soon fell into place that I was aiming to gather complete coverage of the country south of a line from Pembrokeshire to Essex in one-inch Third, Popular, Fifth and New Popular Editions, as well as Seventh Series in ten-colour and final printings. Thus far the object had been to have a series of views of southern England in the twentieth-century, illustrating the growth of the towns and the road system, and latterly the contraction of the canals and railways. They also gave hours of entertainment at home rambling across the land without having to stay on public footpaths or out of private property and upsetting bad tempered or reclusive landowners.

From that beginning I extended the New Popular and Seventh Series to cover all England and Wales, and later the Seventh Series ten-colour to include lowland Scotland. This extended coverage was encouraged by reasonable availability of the maps at good prices, and they showed the railway network at just about its greatest extent as well as giving me a view of that part of the country that I did not know on the ground. At the

¹ *Sheetlines* 81, 54.

² *Sheetlines* 64, 44.

³ *Sheetlines* 81, 55.

same time the collection branched sideways into the OS half-inch that was initiated by the acquisition of a very expensive Stanford's 1910 motoring set of England and Wales complete with leather case. This led to buying further OS half-inch maps in their different styles, concentrating on the hill-shaded versions. Then came the quarter-inch in Second Edition, Fourth Edition in yard grid and metric grid versions, then Fifth Series in the first printing.

Meanwhile, on the periphery of the collection, I acquired almost all of the District and Tourist Maps of the Popular, Fifth Relief, and Seventh Series with their various pictorial covers. Also several one-inch geological and land utilization maps, half-inch MOT and ten-mile road maps and a variety of aviation and military maps. Thus far they had all been obsolete maps, so when all this was nearing completion, I thought it was time I brought the picture up to date. The last printing of the Seventh Series, a year or two either side of 1970, was then so out-of-date that confusion began to arise when using them on the ground. So I started my 'millennium collection' of Landranger maps of 1990-2000 printings, now nearing completion. I have also added a number of Explorers for areas where they are likely to be used on the ground – very good for walking, but should be concealed in a large pocket if one wants to wander off public footpaths and claim to be 'lost' when met by an irate farmer.

So, at the beginning, I can feel justified in claiming to have collected maps for the 'message' with some interest in the 'medium'. But later the medium in the form of oddities and experiments in the maps themselves and in varieties of map covers came to overtake the message of the map content as the main attraction. But only very seldom does it descend (or is it ascend) to just ticking. (Perhaps ticking the possession of an object does actually transcend the value of the object itself, something like the philosophy or religion of Taoism).

So what happens when your chosen field of map collection is completed and almost all the accessible oddities and experiments are acquired? David Archer has suggested diversification, not only into different types of maps and ephemera,⁴ but related objects as well.⁵ Plenty of scope there to interest me? No. And space to keep them? No. And mental capacity to look at and enjoy them? No. I now have 43 feet (13 metres) of shelving filled with maps folded and in covers, about 1700 items of OS and 200 of non-OS, the complete *Sheetlines* and other CCS publications. Plenty to keep my mind well exercised into remaining old age. So the answer to what happens next is – nothing. That is, the collection is finished all but a handful of 'difficult' maps that are probably too expensive even if I do find them for sale, or any odd thing that turns up and looks interesting enough for the price. I don't for a moment regret the end of the chase, it has been great fun, very educational even at this stage of life, and they provide a rich source of entertainment and study that could lead to all sorts of oddities being identified, some of which could even be of interest to others, and should keep me well entertained as old age slowly curtails other activities.

⁴ *Sheetlines* 65, 56.

⁵ *Sheetlines* 80, 65.

Digital mapping

Anthony Cartmell

This article reviews the main computer mapping programs that work without needing an internet connection, together with a list of free web-based alternatives. Digital maps can be displayed and manipulated on computers. A major benefit of using digital maps is that you can mark routes, and use the computer to work out distances and other information. Routes can be transferred to and from GPS receivers and some mobile phones.

Advantages of digital mapping

Digital mapping provides continuous maps with no breaks: seamless maps. You can zoom in to see the detail of a location, perhaps at 1:25,000 scale, and out to see the same location in the context of a much larger area. All digital mapping software can display the maps superimposed on the landscape in a three-dimensional view. This shows where the hills and valleys are very clearly, a very useful aid to planning routes or visualising landscapes. Digital maps often include a searchable gazetteer of place names. You can plot routes and transfer them to a GPS device. As well as calculating the length of the route, mapping software can draw a height profile, so you can see where any hills are, and how steep they are. Using a formula that takes into account how your speed varies going up and down hills, the software can estimate how long the journey will take. Using a GPS device, you can record your movements, and later transfer this information to your PC to show where you've been. Even if you don't own a GPS, you can print out maps with planned routes superimposed. You can type in instructions, and print out a route sheet with accurate calculated distances. Printing large digital maps at home is generally more expensive than buying the same maps on paper, but you can print out the area you need which can be cheaper for small areas or linear routes. Digital maps tend to cost a similar amount to the equivalent paper maps, unless you buy large areas of mapping at the same time. You can obtain digital OS 1:50,000 Landranger mapping for the whole of GB for around £100, whereas the full set of paper maps would cost around £1400. An ability to define and buy custom maps means that you don't have to pay for unwanted map areas.

Disadvantages of digital mapping

Each program has its own way of drawing routes, and it can take time to learn how to use them, but the programs have documentation that describe what to do, and you can download tutorials from their web sites. The programs aren't complicated to use if you're generally happy using Windows programs. The maps you buy are tied to the program they were bought for: you can't use Quo maps in Tracklogs, for example. Unless you print your route maps onto paper you will need a GPS or suitable mobile phone to take the maps on trips. Some GPS units will only display routes, not the background maps.

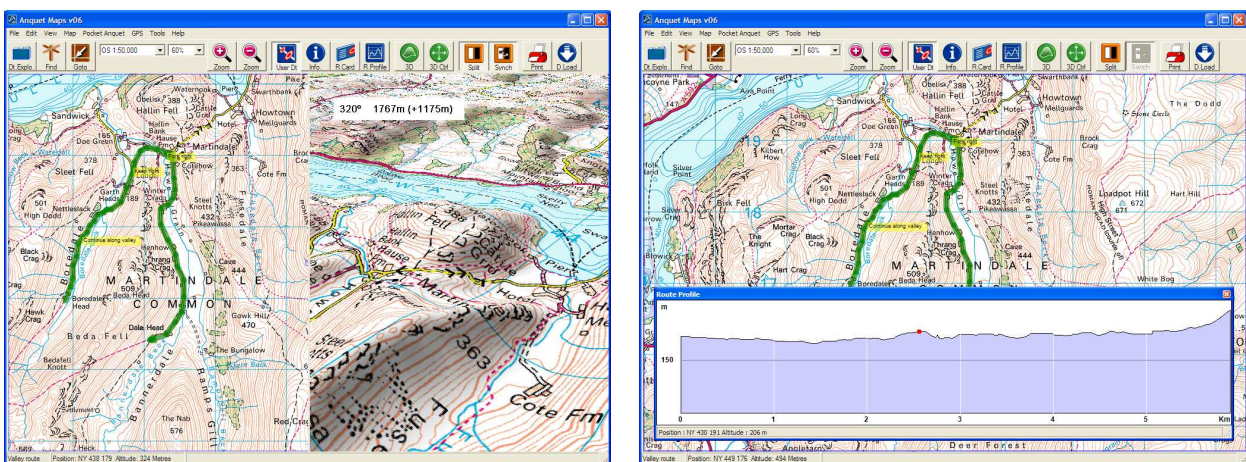
General Comments

All mapping programs are able to transfer route information directly to and from most common GPS receivers. They can all save, and read, information from universal GPX files. Some of the programs have mobile versions that can have the digital maps transferred to them. The mapping software runs under Microsoft Windows, needing 512MB of memory and up to 5GB of disk space. The complete GB set of Landranger

maps requires 3-4GB. Effectively any Windows PC bought in the last six years should be OK, although you might want to install some more memory if you have less than 512MB. Apple Mac and Linux users are much less well catered for. There are a few programs available, but you will have to find maps to use with them and they won't display OS maps. Fugawi produce software for Mac and iPhone, but only for marine charts.

There are two categories of software: UK-specific programs (Anquet, Tracklogs, Quo) that specialise in providing OS maps, and more general programs (MemoryMap, Fugawi) that can display maps from different countries, and marine and aviation charts. Map prices are difficult to compare, but as an indication this review gives prices for buying the whole GB as 1:50,000 Landranger maps and buying 10km by 10km squares of 1:25,000 Explorer maps. All digital mapping programs have some aerial photography available, so you can see what the landscape looks like. However these are pretty well superseded by the aerial views provided free in programs like Google Earth.

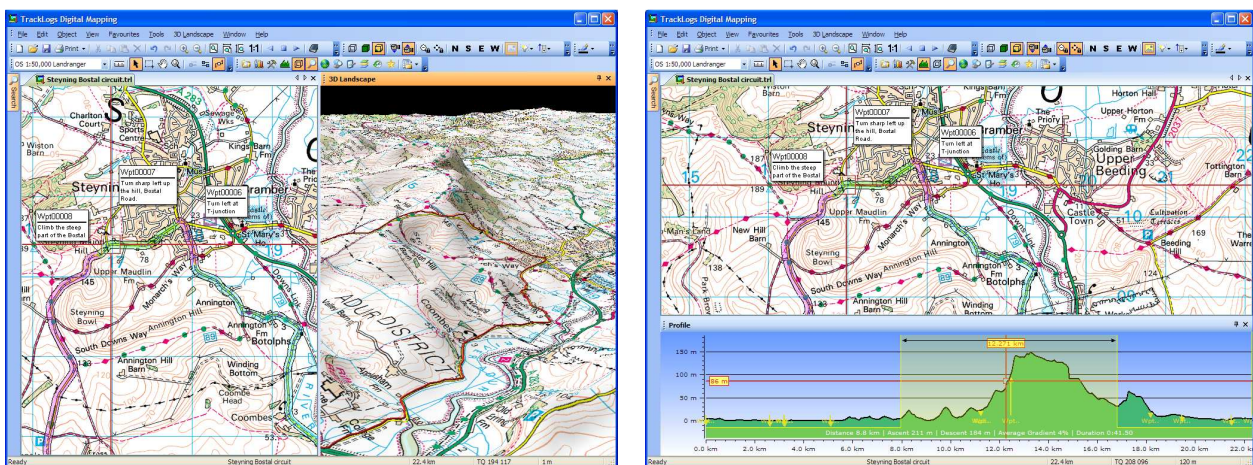
*Anquet*¹ has provided OS, Harvey and Philips maps since 2001. A-Z maps are available for the main urban areas. Harvey Superwalker 1:25,000 maps, available for the most popular walking areas, are significantly cheaper than the equivalent OS and are specifically designed for walkers and mountaineers. OS mapping is reasonably priced if you're defining custom areas, and you can define areas to the nearest 1km square for efficiency. Anquet is unique in its capability to join route sections together to produce route information and profiles for the combined route. The program provides basic height profiles and 3D views, although these aren't as refined as some others. You can print route maps on multiple pages and at different scales, and multiple-page map sections are automatically chosen to closely fit the route shape. It can be difficult to preview what will be printed before it appears on paper. The software includes Pocket Anquet to take maps with you, running on Windows Mobile devices. Landranger maps for the whole of GB cost £165. Custom area 1:25,000 maps cost between £2 and £4.80 per 10km by 10km square. Anquet is worth looking at if you are interested in A-Z mapping of urban areas, or the Harvey walking maps, and you aren't interested in planning routes abroad.



Anquet 3D view and profile

¹ www.anquet.co.uk

*Tracklogs*² has provided OS mapping for Great Britain since 2002. Pre-defined map packages for Tracklogs are similarly priced to Anquet, but buying custom areas for Tracklogs is at least three times more expensive for the same area. The Tracklogs custom maps are also limited to plain rectangular areas on a 10km grid. Tracklogs maps are only available on CD; you can't download your maps for instant use. Tracklogs strength is in its wide range of functionality, and it can produce sophisticated maps. You can add map inserts at a different scale to the main map, for example. Like the rest of the program, the 3D display is attractive, with a good long-distance view. Printing route maps is made easy with a preview of the printed result that updates as you change settings. Tracklogs will only print multi-page maps on a regular grid, which might mean printing surplus pages. Height profiles are very sophisticated. You can plot the profile against time, rather than distance, overlay recorded or estimated speed profiles, colour-code the profile line by route surface type, and more. Tracklogs doesn't have a mobile version, so you'll need to export your routes to a GPS receiver or in GPX format to use with other mobile software. Landranger maps for the whole of GB cost £165. Custom area 1:25,000 maps are relatively expensive at more than £6 per 10km by 10km square. Tracklogs is worth investigating if you are only interested in OS mapping, you don't need to transfer maps to a mobile device, and are looking for a sophisticated program.



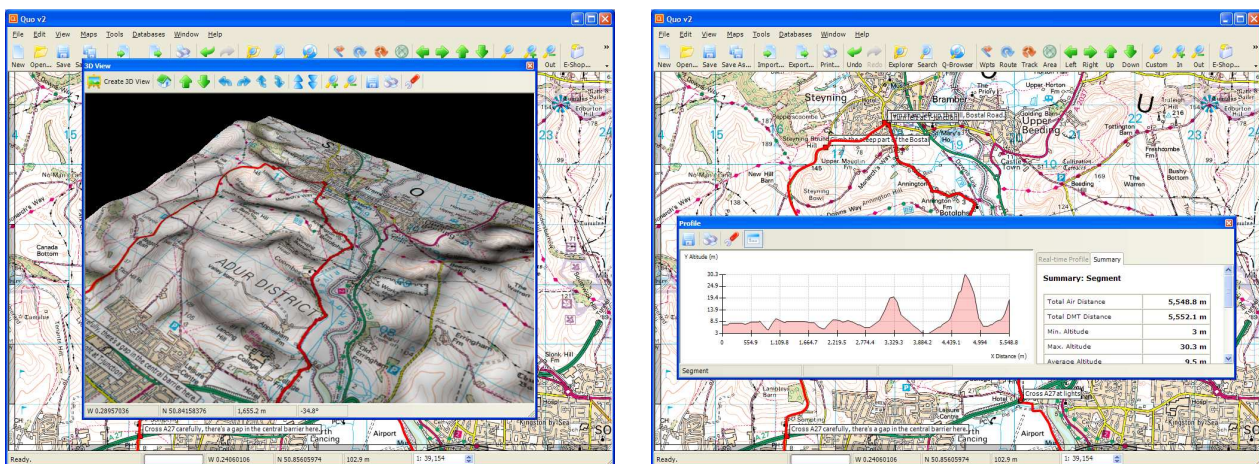
Tracklog 3D view and profile

*Quo*³ is the newest software, developed by Mapyx since 2006. It provides OS maps covering Great Britain and uniquely also Ireland. Quo has some unique features, such as being able to directly compare the height profiles of several routes. It can also join routes together, like Anquet. However other aspects, such as its recently-added 3D view, can feel very limited: if you want to move the 3D view across the map you have to keep pressing a button to update it. Unlike every other mapping program, Quo uses the right mouse button to drag the map around; this may take time to get used to. To print route maps, Quo displays a regular grid of pages to cover the route at the chosen scale, and you can easily add, delete and move the page outlines to print the route onto the optimum

² www.tracklogs.co.uk

³ www.mapyx.com

number of pages. Quo's main strength is in its map pricing, OS list prices being significantly cheaper than the other companies. If you require large custom areas then Anquet prices are comparable, but for smaller areas, or if you want to buy the complete GB 1:50,000 Landranger map package, Quo is cheaper. Mapyx offer a 25% discount if you decide to switch to Quo from another product and have to buy your maps again. Landranger for the whole of GB cost around £112, the cheapest list prices available. Quo can import and export around 100 different file types, covering just about every existing format for storing routes and locations. Quo will also import and export KML, the recent map-industry-standard file format originally made popular by Google Earth. Quo comes with a mobile companion, which runs on Windows Mobile devices. Quo may be a good choice if you are only interested in mapping of GB and Ireland and if price is important.



Quo 3D view and profile

*MemoryMap*⁴ is a well-known digital mapping package, founded in 2001. It caters for air and nautical charts as well as road maps, and isn't limited to GB. Both OS and A-Z maps are available, as well as maps for many other countries. Landranger maps for the whole of GB cost £200. MemoryMap allows several routes to share a route point, perhaps useful for a common starting point. It has all the usual features, including basic height profiles and a 3D view. MemoryMap has flexible printing options. It will calculate suitable page like a basic flight simulator, and has a small aeroplane symbol to mark your location on a small 2D map. Fugawi's map printing features are very limited, as it won't print maps onto multiple pages. Fugawi are developing an integrated 3D view using Google Earth, and Fugawi will import and export KML files so it already works well with Google Earth installed as a separate program. Fugawi is unique in having a mobile version that will run on Palm OS machines, as well as on Windows Mobile. Fugawi may be a good choice for mapping routes both in Great Britain and abroad, especially if you are interested in road name overlays for both town and countryside.

Summary

Before you make your final decision to buy a digital mapping package, download the free trial versions and try them out. For UK-only use and where map price is more

⁴ www.memory-map.co.uk

important than program features, nothing currently beats Quo. If you do a lot of walking, or want to buy custom map areas, Anquet is also worth investigating for its flexible custom areas and Harvey 1:25,000 maps. If you are looking for a more fully-featured program to produce sophisticated maps, Tracklogs probably has all the features you'll need. If you like knowing the names of roads, to help with navigation, Anquet and MemoryMap both have the option to buy A-Z mapping of urban areas. If you want to overseas maps UK, you are limited to MemoryMap and Fugawi, with MemoryMap being cheaper for OS maps but Fugawi's street name overlays being interesting.

Free OS-mapping alternatives

*OS Get-a-Map*⁵ now feels very dated with a cramped map display.

*Bing*⁶ is like a combination of Google Maps and Google Earth, but with OS mapping.

*Multimap*⁷ uses the same maps as Bing.

Streetmap.co.uk provides OS maps although with a lot of advertising surrounding them.

*OpenSpace*⁸ is a free-for-non-commercial-use mapping system from OS which has very restrictive licence conditions and lacks 1:25,000 mapping. An interesting example site using OpenSpace is *wheresthepath*.⁹

Free Non-OS alternatives

*OpenStreetMap*¹⁰ displays maps generated from a global database of geographical information that is being built by volunteers, with the aim of producing an alternative to commercial digital maps. An interesting feature of OSM is the ability to define personalised map rendering rules, to produce maps for different purposes.

*OpenCycleMap*¹¹ is a cycling-specific project based on the OSM database, and includes shaded contour maps.

*Google Earth*¹² runs as a dedicated mapping program for improved performance, but still requires an internet connection. It displays aerial and satellite photos covering the entire globe as a three-dimensional world. Roads are included, as well as many different categories of places of interest.

*Google Maps*¹³ is an alternative to Google Earth that runs in web pages. It can be used to plan routes and includes road names, useful for routes through towns and cities.

*People's Map*¹⁴ is a semi-free map being built by volunteers covering Great Britain. It currently lacks many roads, and isn't yet as complete as OpenStreetMap.

⁵ www.ordnancesurvey.co.uk/oswebsite/getamap

⁶ www.bing.com/maps

⁷ www.multimap.com

⁸ <http://openspace.ordnancesurvey.co.uk/openspace>

⁹ <http://wtp2.appspot.com/wheresthepath.htm>

¹⁰ <http://openstreetmap.org>

¹¹ <http://opencyclemap.org>

¹² <http://earth.google.com>

¹³ <http://maps.google.co.uk>

¹⁴ <http://peoplesmap.com>

The New Popular index damaged, mended and improved

K S Andrews and P S Welham

Introduction

Richard Evans recently reported to the Ordnance Maps discussion group a New Popular back cover index diagram with the erroneous sheet number 123 for Norwich.¹ Alan Bowring perceptively commented that the number looked like a hybrid between 123 and 126. Since this defect has been highlighted, it was decided that the full array of index diagram variables should be exposed. The differences reveal the improvements made to the index diagram and the chronology of printing the paper and dissected versions of the Ellis Martin covers.

Procedure

The changes to the index were identified and then a chart was prepared to correlate each index variable with the established KA cover variant scheme.² Over 1800 covers were examined, avoiding duplicates. The covers were all different with respect to at least one aspect of the following – sheet number, print code, KA cover variant, index variant, and format (paper, cloth or dissected). Minor changes attributed to variations of inking, card, etc were ignored.

Index differences

The back cover index versions differ as already noted in the KA classification, namely the red N beside Orkney and Shetland was added, the fictitious Scottish Popular sheet 89 was sometimes present, the sheet 86/92 overlap hatching could be missing, then the red grid was cleared, and lastly the New Popular index was replaced by an inaccurate Seventh Series index. We report the other differences of detail we have seen to four aspects of the index printed on the New Popular Edition covers. See below for comments on the Seventh Series index on the late covers.

1. Sheet numbering

The Norwich sheet 126 number is usually well printed but is occasionally defective though still recognisably a 6. Sometimes it appears to be 123. The 3 is unlike the other 3s used for the index and, in the opinion of the authors, is a damaged 6 (see figure 1). Heavy inking accentuates the deception, as in the illustration of variant 4.

The Norwich sheet number 126, usually vertically above 137, is sometimes shifted to the left. This variant, number 5, is scarce.

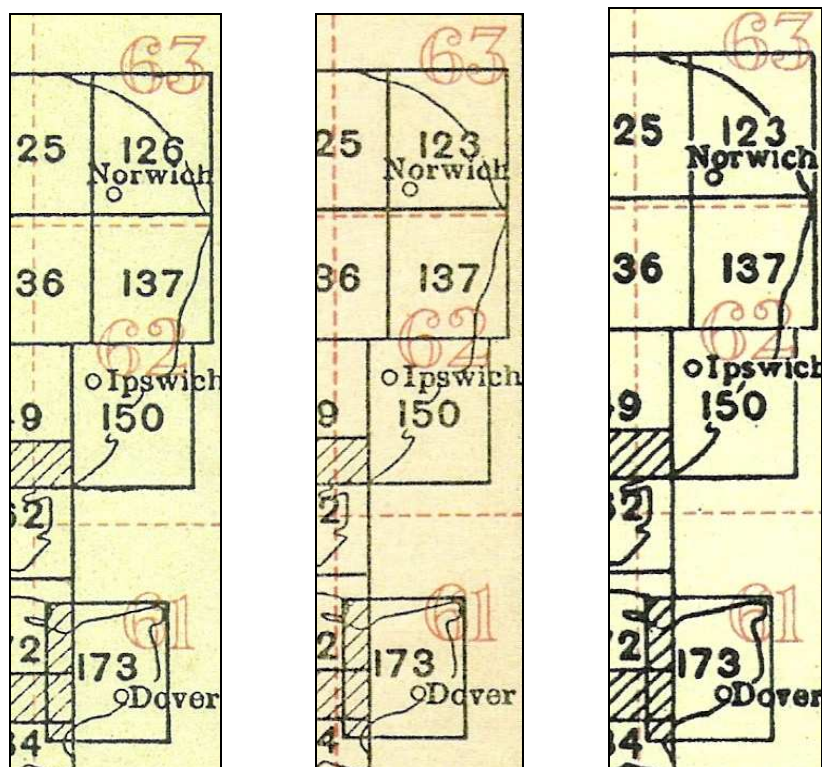
2. Sheet lines

At placenames, the sheet lines can be almost continuous or they can have breaks.³ (See section 4 for gaps at red grid numbers.) There are four versions of the grid that have sheet lines with added breaks at the placenames. The first has a short gap for the L of Leeds, a gap for the N of Norwich and no gap for Dover or Salisbury.

¹ <http://uk.groups.yahoo.com/group/ordnancemaps> reported in *Sheetlines* 86, 8.

² For the KA cover variant scheme see *Sheetlines* 76, 14-28.

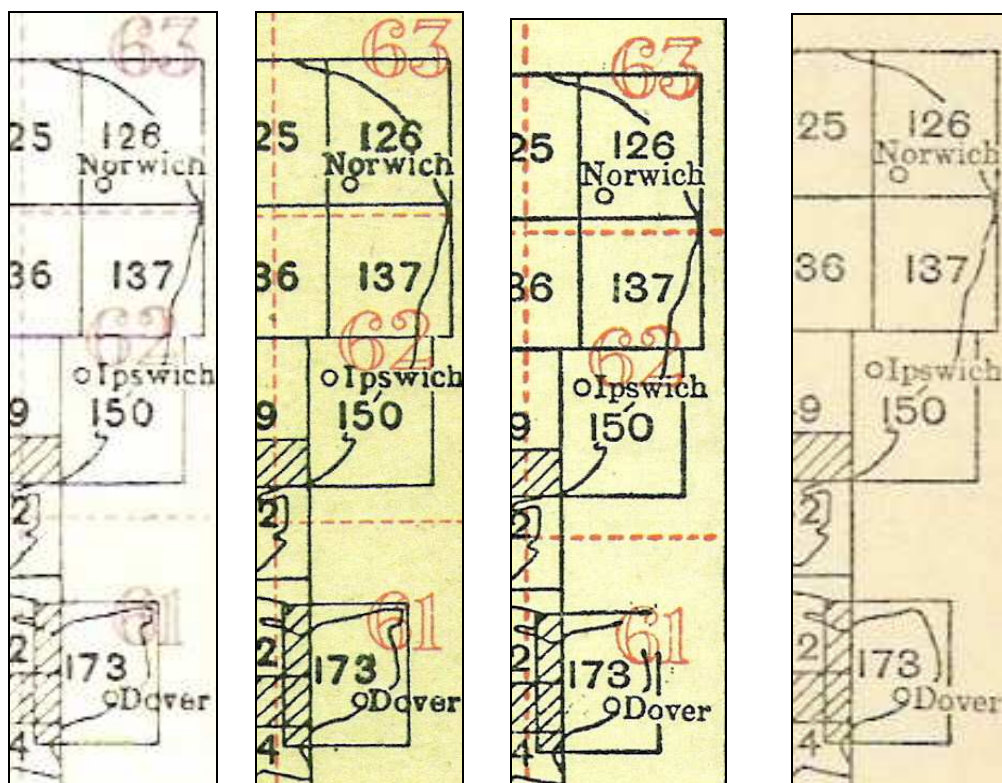
³ Sheet lines that are almost continuous have a break for the 'o' of Fort William, and also for a few other places including Sheffield, Dolgelley and Carmarthen but no break at Carlisle; they break for sheet numbers.



Variant 1 & 2
sheet lines continuous

Variant 3
Norwich 123

Variant 4
gap for N of Norwich



Variant 5
Norwich 126 left
gap for N

Variant 6
126 central
gap for N

Variant 7 & 8
gap for Dover
gaps for red 61

Variant 9
no Thanet

Figure 1 Index details to illustrate some of the changes

The next has a gap for the h of Norwich but not the N and there is a gap for Dover but not Salisbury. Then there is a gap for Salisbury also. The last is similar but with a larger break for Leeds.

3. *Placenames*

The o of Bristol can be small, suggesting repaired damage. The location ring for Alnwick can be a Q. There can be an unsightly black blob above Selkirk.⁴ There is a mark ~ beneath the F of Foula on a few covers with index variants 4 and 6.

4. *Great Britain coastline*

Three versions of the coastal outline have been seen. All have gaps in the coast for sheet numbers. The first version has no gaps in the coast for the red grid numbers and includes Thanet. The next has spaces in the coastline and some sheet lines for grid square numbers 16, 21, 23, 25, 34, and 61. The final version has no spaces for the grid numbers and Thanet has been rounded off.

Results and discussion

Fortunately, not all the potential combinations of differences appear in practice, so a relatively limited number of index detail variants was found. The nine indexes are shown in table 1 and the KA cover variants they are found on are indicated.⁵ The text below the index and the presence or absence of hatching for the overlap of sheet 86 with sheet 92, recorded previously, are included in the table since they too are changes to the black printing pass. Other changes reported previously are to the red print so are not listed.

The index variants are tabulated in the only order that gives the changes a logical progression. The hand-lettered Ellis Martin cloth covers have index variant 1 and variants 7, 8, and 9 show a satisfying correlation with the later cover variants.⁶

No order would give a smooth chronology to the cover variants with the intermediate index variants 2 to 6. Nevertheless, the overall picture is less of a scattergram than is initially apparent. Many KA2 and KA3 covers only have the sketch frames different so can be grouped as being concurrent. The early KA4 covers are akin to some covers in groups KA2 and 3. The two tan card variants likewise have plain card equivalents. A further consideration is that some variants have the red 89 on the index as the sole difference (we are discussing the black print). The remaining confusion in the relationship between cover variants and index variants displayed in table 1 can be attributed to large stocks of various batches of generically printed card being used out of chronological order.

The placenames Norwich and Ipswich move relative to the sheet lines and to each other when variants 6 and 7 are compared. This is the point at which there is a major step change; the gaps for Dover and the red square numbers appear, the o in Bristol changes from small to normal, the Alnwick Q becomes O and the 86/92 overlap hatching is overlooked. A general review of the index has evidently occurred.

⁴ This blob has been seen on a few copies of variant 6 on the related cover variants KA2.6 and 3.8. There can be a variable smudge at the intersection of the sheet lines below Selkirk with indexes 2 and 3.

⁵ Some of the cover variants of group KA3 have more than one index variant so the diligent cataloguer should add index variant suffixes to the KA scheme.

⁶ Note that cover KA5.6, which appears to be out of order, is actually cover 5.3 printed with a higher price.

Index detail	1	2	3	4	5	6	7	8	9
Norwich 126	✓	✓				✓	✓	✓	✓
Norwich 123			✓	✓					
Norwich 126 left					✓				
Sheet lines cont.	✓	✓	✓						
Gap N of Norwich				✓	✓	✓			
Gap Dover							✓		
Gap Salisbury								✓	
Large gap Leeds									✓
Small o Bristol				✓	✓	✓			
Q for Alnwick		✓	✓	✓	✓	✓			
With Thanet	✓	✓	✓	✓	✓	✓			
Gaps for red squares							✓	✓	
No Thanet									✓
Hatch 86/92	✓	✓	✓	✓	✓	✓	no	no	no
Text under index	1 or 2 lines	2 lines	2 lines	2 lines	2 lines	2 lines	2 lines	The open... 5 lines	NOTE:- Orders... 5 lines
Seen on KA covers	1.2 1.3 1.4	A	1.5 3.1 3.2 3.7 4.2	B	3.6 3.8	C	D	5.3 5.6	5.4 5.5 5.7 6.1

Table 1. Index diagram differences and the covers on which to find them

A is covers 1.4, 2.1, 2.2, 2.3, 2.4, 2.7, 3.2, 3.3, 3.4, 3.6, 3.9, 4.3

B is covers 2.3, 2.4, 2.5, 3.4, 3.5, 3.6, 3.7, 4.1

C is covers 2.4, 2.5, 2.6, 3.6, 3.7, 3.8

D is covers 3.10, 4.4, 4.5, 4.6, 5.1, 5.2

For index 8 there is another improvement besides the sheet line gap for Salisbury – ‘Anglesey’ moves away from its sheet line and, like other island names, is in clearer print.

Printing Ellis Martin covers

The hand-lettered Ellis Martin covers for cloth maps have pasted-on indexes. Clearly the first maps to be prepared, they have the pre-publication price of 2/6 on the front and the first version of the grid working text pasted inside, printed in heavy black type. The index, also pasted-on, is taken as the first version and this view is supported by the lack of

blemishes, the minimal sheet line breaks, and the coastline without breaks for the red grid numbers.⁷

The paper and dissected hand-lettered covers are uncommon, therefore few examples could be studied. The front covers have the pre-publication price, dating them before September 1945. The grid text, directly printed inside, is still the heavy black type version. The index diagram is also printed directly on the card. It is the one listed as version 3 – it has two separate developments, the Q at Alnwick and the 123 for Norwich. This same index is used on KA3.1 covers, which were the first of the letterpress covers to be printed (they also have the pre-publication prices). KA3.1 with index version 3 is the cover on, for example, cloth sheet 162, Southend-on-Sea, edition 10,045/Ch. published July-August 1945, the same date as the Ellis Martin cloth maps. Two conclusions can be drawn:

- With these significant index differences, the paper and dissected Ellis Martin covers were clearly printed some time later than the indexes that were pasted on the cloth covers.
- The presence of index version 3 on paper and dissected Ellis Martin covers does not imply that they were put on sale later than the cloth versions of those sheets.

Implications for the printing process

The changes from index versions 1 to 2 to 3 reveal that the printing plates were renewed even when no revision was intended.

As can be seen in figure 1, the coast at Great Yarmouth and Broadstairs is close to the sheet lines in variants 1, 2 and 3. The sheet lines move slightly east from variant 4 on, raising the possibility that the index was printed from an image composed by superimposing two or more separate images of the frame, coast, sheet lines, placenames, etc. The progressive clearance of sheet lines where they cross placenames suggests that they too were from separate images.

The omission of Thanet on variant 9 shows (a) the previous diagram was re-used by touching up and (b) it was done without reference to a map.

The Seventh Series index

Only very minor differences can be seen to the Seventh Series index on the New Popular covers. The dots can be faint or missing on the i of some placenames, e.g. Darlington, Ripon, Norwich, etc. No consistency was established, so these were attributed to printing variables. Therefore a single version of the Seventh Series index was judged to be present on the cover variants KA6.2 to 6.6.

The Scottish Popular cover index

Most of these index variants, and no new ones, have been seen on the back of Scottish Popular covers, including the accidental Norwich 123. Variant 5 with 126 displaced to the left has not been observed and variant 1, absent from Scottish Populars, seems to be restricted to the cloth version of the hand-lettered Ellis Martin map covers.

⁷ The pasted-on index has two versions, having one or two lines of text below the box. Both come with minor differences, (a) no sheet line breaks for the second l of Carlisle and the N of Norwich, (b) with just a break at Carlisle, and (c) with both breaks. Strangely, one copy of the pasted-on index out of the 43 seen is index variant 2 – it has the Q at Alnwick. As would be expected, it is on the last EM cloth cover, KA1.4, with two lines of text.

Conclusions

The New Popular index diagram was revised several times. It was subject to incremental improvements to add legibility to placenames where sheet lines crossed them. The clash of the coastline with the red grid square numbers was also addressed. When the red grid was removed from the diagram, sheet line and coastal gaps were filled.

This simple sequence of events is clouded over by the incidence of blemishes to the diagram including the Norwich 123 glitch, when the 126 was damaged, resembling 123, then replaced by a misaligned 126, which was soon realigned.

The distribution of many of the index variants among the cover variants shows a confused pattern, even after allowing for the simultaneous use of some covers from groups KA2, 3 and 4 for sheets of the series in different areas. This suggests a lack of proper chronological use of new and superseded versions of generically printed cards when printing the sheet-specific information on the cover fronts.

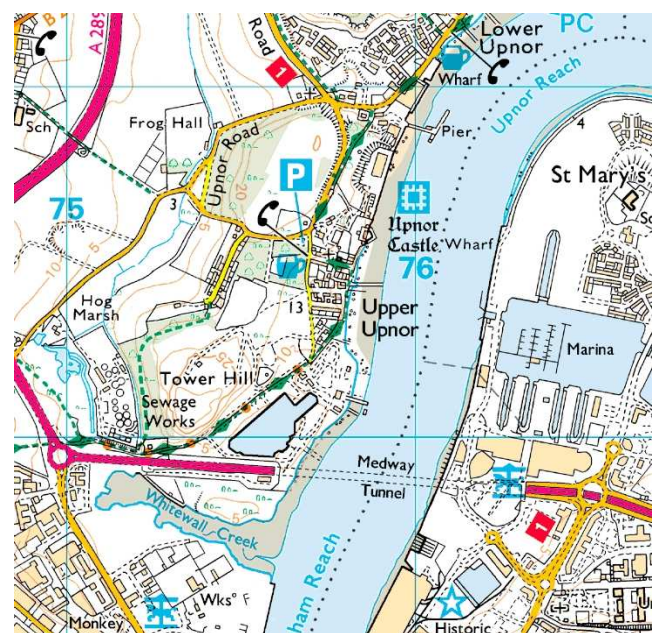
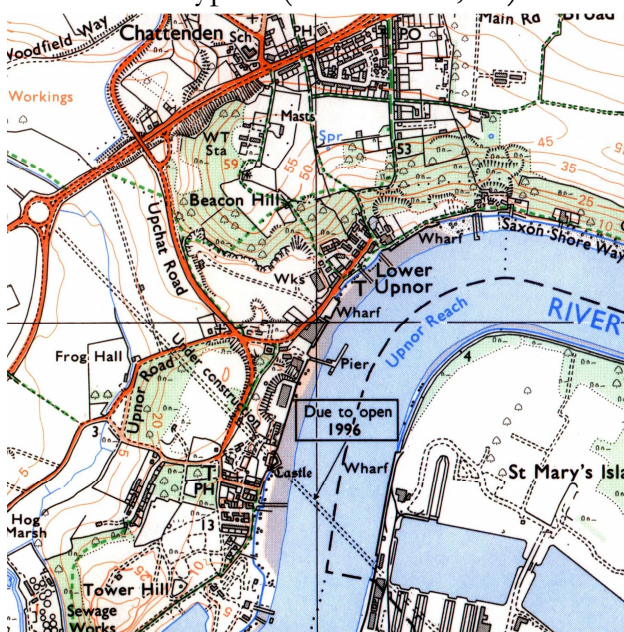
Acknowledgements

Thanks are due to Richard Oliver for helpful comments and to Peter Gibson for information about the index on an Ellis Martin cover for sheet 183 on paper.

A Different Medway Crossing

Rob Wheeler

The extract below shows the new Medway Crossing as depicted on a Pathfinder sheet of 1993. Those familiar with the area will observe that it is in the wrong place and on quite a different alignment from the tunnel actually built. One presumes that what is depicted here is intended as a tunnel; otherwise Upnor Castle (*see cover*) was about to be straddled by the abutments of a bridge. So what was actually ‘under construction’ at the time? Is anyone aware of an aborted tunnel? Or do we have another OS ‘fingerprint’ like the Redbourne bypass (*Sheetlines* 55, 40)?



1:25,000 Pathfinder 1177 of 1993 compared to current map (right) © Crown Copyright

OS efficiency review: two-dozen Travel Map sheets discontinued

Ed Fielden

Ordnance Survey's drive for cost efficiency has recently claimed several of the poorer-selling *Travel Map* products. A rapid decline in sales led to the decision being made last autumn that the range could no longer compete with similar products and satellite navigation devices offered by other companies, a large number of whom buy their data from OS anyway. As a result, three-quarters of the *Travel Map* sheets were withdrawn at the end of January 2010.

Travel Map – Route at 1:625,000 scale, covering the whole of Great Britain on a double-sided map, has been discontinued, as have the eight regional sheets in the 1:250,000 scale *Travel Map – Road* series.

The *Travel Map – Tour* series at varying scales has been reduced from 23 to eight:

No	Title	Status	No	Title	Status
1	Cornwall	~	13	Oxfordshire & Berkshire	×
2	North York Moors	×	14	Northumberland	×
3	Lake District	~	15	London including M25	×
4	Peak District	~	16	Beds, Bucks, Herts & NW London	×
5	Devon & Somerset West	~	17	Essex & NE London	×
6	Yorkshire Dales	×	18	Surrey, W & E Sussex, SW London	×
7	Hampshire & the Isle of Wight	×	19	Kent & SE London	×
8	The Cotswolds & Gloucestershire	~	20	Norfolk	×
9	Dorset, Somerset E, Bath & Bristol	×	21	Suffolk	×
10	North & Mid Wales	~	22	Wiltshire	×
11	South & Mid Wales	~	23	Herefordshire	×
12	Scotland	~			

×
= Discontinued
~
= Still in publication

The remaining *Tour* sheets will have their sheet numbers removed in due course.

All of this means that the Leisure Map range now comprises just the *Explorers*, the *Landrangers* and eight *Tour* sheets. The *Roman Britain* and *Ancient Britain* historical maps at 1:625,000 scale will continue to be available, as will the specialist Administrative Boundary Maps at 1:625,000 and 1:250,000 scale (from OS Mapping & Data Centres), but this brings to an end more than a century of publication of general OS paper mapping at or around quarter-inch and ten-mile scales.

Another result of the cost efficiency review was the decision that from March 2010 each new edition of a map will retain the existing edition's ISBN and cover photograph. Additionally new editions will no longer be released at fixed dates; rather they will be released when stocks of superseded editions are exhausted, to avoid superseded stock being scrapped. This also means that the 'Leisure Map Catalogue' of current and forthcoming editions, previously issued monthly to retailers, will now only be available online but will be updated more frequently to reflect the latest stock situation.

*Kerry musings**David Archer*

One Saturday in 1982, one of our members bought a particular map from a market stall. Another member bought a copy of the same map last Saturday. Both were very pleased with their purchase and thought the map might be rare. How were they to confirm this, one in the very early days of the Charles Close Society, and another nearly thirty years later and with a host of publications available? In both cases, for most maps, they would have to ask someone. They would have to conduct a conversation with another member, speak and listen, something I suggest is happening far less often these days than in the past. As I often mention, in the very early days of our society, there were virtually no publications on OS maps that members could refer to. In the first issue of *Sheetlines* we were promised monographs on various small scale map series, and in the meantime just had to keep our ears open and listen in order to pick up facts about maps. If you wanted to know whether a map was rare or not, you asked one of the few people who might have known.

In conversation, beside facts, if one can spot slight hesitations, enthusiasms and so on, one hears the verbal equivalent of reading between the lines. Positive and negative comments are all valid and worth noting. "The maps were in beautiful condition but were only" The word only implying common and not worth bothering about. "It would have been nice if they were" Suggesting that what they were not was far better than what they were. "I could not believe my luck and started shaking." "My wife had to go and ask the price as I felt faint even holding it." Definitely keep an eye open for these and buy at all costs. "A complete set, including sheet 4." Go home and work out why sheet 4 is so marvellous. But beware, even if someone knows their stuff, both map collectors and map sellers must decide whether their opinion on certain matters has commercial relevance. Meaning? Meaning that they might know a given map to be extremely rare and an item they have sought for years, but others just would not want it, even if offered free, gratis and for nothing.

When discussing maps, and hoping to hear something to one's advantage, caution is the word at the back of most minds, especially with a person or persons unknown. Mention a map being really unusual, and it might be withdrawn from sale, or it might be offered at a higher price than a minute ago. If we express an interest in something, we fear that the price will go up. We have all walked into a book shop, asked for Ordnance Survey maps, and immediately feared that we had alerted the shop owner to the fact that this was our special interest, and maybe he should re-consider his prices. But had we not mentioned it, the box of maps would not have been brought from the private back room. A no-win situation. The art is to ask whilst giving the impression that it really does not matter if no maps are forthcoming, but if any did appear, you would be very gracious and look through them. Not that you really want to buy any. Not that you would know a rarity if you saw one. No, you just have a fancy to look through a box of tatty old maps on the off-chance that one might appeal to you, goodness knows why.

Collectors listen primarily for indications of rarity, something I am extremely wary of. I have always felt uncomfortable when maps are said to be rare. I try not to use the term,

as I can only go on my own experience, and sometimes an item will not come my way, but frequently appears elsewhere. I prefer common, less common and scarce, as in "From my experience it is scarce." I am most reluctant to say "It is rare." When someone asks me whether a particular item is rare or not, my rule of thumb is that if the person has been collecting OS maps for three or more years and consistently searches for them, then if they have not seen one, they are not thick on the ground. Such individuals probably know most of what any map seller knows about rarity. Specialists of a given series will always know far more than any map seller. They live and sleep with their favourite series, whilst map sellers have to know a bit about all series.

So, almost thirty years on, new OS map enthusiasts can buy a good set of publications, and can look up a lot of what they would previously have had to listen out for. But our publications seldom give any indication as to which maps are scarce. True, some say, 'a copy exists with..' implying something unusual, or one could get an idea of the number of copies in existence from adding up print code details. The books do not set out to tell us which maps are scarce and which are really common. Look as long as you will at *Map cover art* or *Popular maps* and you will generally find only hints as to which maps mentioned are scarce. *Map cover art* has 199 small pictures of map covers, but no indication of which are the ten hardest to find. From experience or looking at *Popular maps*, one knows that Sheet 133 is the most common sheet, but which printing of Sheet 133 is quite hard to find? No help from the book.

Working alone, as the years go by, one can easily believe that the longer a map is elusive, the scarcer it is. True or false? The 1906 map of *Hyde Park & Kensington Gardens* is a truly beautiful map in a lovely small blue cover. So desirable; yet I would bet good money that less than twenty copies were ever sold to the public. Extremely Rare (there, I've used the word, and given it a capital as emphasis). Rare and desirable should equal a very high selling price, surely in the top five for folded maps. But no, it is not too hard to find, and most people who want one have a copy. In the 1980s, a box of maps in mint condition was discovered, and the maps trickled on to the market, making them fairly easy to find. Extremely Rare and probably unknown in 1960; well known and so-so scarce in 2010. One never knows what might come up, so I do not like to use the word rare with an air of certainty. All right you say, give us an example of what you consider a rare map that we might find in our collections; New Popular, sheet 160, *London N.W.*, in a cover, with a 1203 print code - an example where most readers will say "so what?"

People ask about rarity, yet seldom continue by discussing prices, obviously preferring to decide for themselves what price they are prepared to pay. On balance, I am pleased that so little has been written to identify the less common OS maps, mainly because it makes us talk to each other. A general guide would be useful, but not one with an emphasis on individual maps. Otherwise we would spend ages arguing about prices and rarity, spoiling the fun of collecting. If you want to be bored stiff by the joint subject of rarity and prices, listen to certain postcard dealers, or imagine having the equivalent of a Stanley Gibbons catalogue for OS maps; boring beyond belief, with no reason to talk to each other, and no resulting friendships.

We still have to listen as keenly as ever, but this is becoming more difficult. My feeling is that there is less contact between individual members than in the past, with email killing the art of telephone conversation. eBay is fostering collecting in isolation, something I consider a very bad thing, with members reluctant to talk about certain maps in case they give something away. This is a great shame, as most CCS members are extremely generous with information. The gap has been filled to some extent by *ordnancemaps*,¹ supplying answers to questions on a public email forum, but there are so many questions that one prefers not to ask under the gaze of others. And some people will not give answers for all to see. Might I suggest that, as a society, we try to have more day meetings where people can talk to each other, besides over lunch? My feeling is that the trend has been to have more and more visits rather than meetings. Put rather crudely, on a visit one stands around and is shown things, whilst at a meeting one sits and exchanges ideas and information, with plenty of time to *show things to people* and discuss them. There might need to be a minimum of structure, such as having a theme for the day, say Tourist and District maps with a brief half-hour introduction, and then it is open to anyone to ask questions, show maps or whatever. I know that we have meetings, but feel that more are desirable, keeping them scattered all over the place. All we need is someone to book a venue with food nearby and off we go. The sort of place Lionel Hooper found in Bath a few years ago, a city centre church hall with a meeting room, offering refreshments and lunch on Saturdays.

Letters

The future of OS and 'free data'

Some thoughts from my viewpoint:

- OS hasn't been involved much in the government's open data discussions. They are only now reluctantly having a consultation. Royal Mail is in a similar situation regarding postcode data.
- OS mapping is already free (as in beer, but not as in speech) to use on the internet. Get-a-Map, OpenSpace, Streetmap.co.uk, Multimap, and many others display seamless OS mapping online for no payment.
- The biggest hindrance to location-specific applications online, for UK locations isn't the lack of OS mapping, but the 'derived data' rules. These mean that almost all UK location data automatically belongs to OS, even points clicked from Google Maps.
- OS licence terms are hopelessly out-of-date, and are completely incompatible with modern online mapping needs.
- If OS doesn't make their data less restricted by licences, OpenStreetMap will continue to grow in popularity; longer-term this could replace OS altogether for many applications.
- Making OS raster map images free will seriously change the landscape for digital mapping products such as MemoryMap, Tracklogs, Quo, Anquet, etc. who currently

¹ <http://uk.groups.yahoo.com/group/ordnancemaps>.

give the software away for free and charge for the maps. For consumers this would be excellent news, as the software products would compete on price and functionality of the software, and not just map prices. You might also be able to use the same map data in all of them, instead of having to buy the same maps all over again just to change from one program to another: product lock-in would disappear.

Anthony Cartmell

Another town that never was

On reading *The town that never was* (*Sheetlines* 86, 52) my mind was drawn to the memory of surveying the real ‘town that never was’.

In the late 1960s I was a basic grade Ordnance Survey surveyor based at the Scarborough field office. We, having completed the 1:1250 scale resurvey of Scarborough town, were engaged upon the overhaul of the 1:2500 scale County Series mapping of the coastal areas of North and East Yorkshire, from Robin Hood’s Bay in the north, to Flamborough Head in the south, and as far west as Malton and Pickering.

One of the major challenges was the revision of the built up area of Robin Hood’s Bay with its many narrow and winding smugglers’ passageways, many dead ends and all on a steep sloping plot with a quickly eroding coastline. More of that another time!

Equally challenging, but in a different way, was the revision of Ravenscar, the story of which is told on www.coastaltourism.co.uk/local_history.htm.

‘At the beginning of the 20th century a Victorian entrepreneur decided that a town should be developed around the village then known as Peak. A railway line was being built to link the towns of Scarborough and Whitby, and Peak was the central point. Roads were built, sewers were laid and plots of land sold to city dwellers who liked the idea of living by the beach. The plan was badly researched as the route to the shore is precarious and the area, though beautiful, is very exposed. The building company folded in 1913 having built less than a dozen houses but it had altered the area for ever. Peak was re-named Ravenscar, the wide roads remained and the houses built for a new town look strangely out of place in the middle of open countryside.’

I leave you to imagine the headaches involved in finding and surveying the alignments of the old road kerbs, by then overgrown and eroded, and invisible on the aerial photography being used for the task. The resulting 1:2500 map (NZ9801) still shows the roadways, though attempting to drive along them can be a test of navigation and somewhat punishing on the suspension, as I found out when revisiting the area last summer; and the isolated Victorian/Edwardian villas look strangely out of place surrounded by open fields and scrubland.

David Andrews

On the other side

A letter from Philippa Currie in *Sheetlines* 57 asked about a copy of GSGS 4346, 1:250,000 sheet K52, *Dusseldorf*, printed by the War Office in 1944 on the back of a German 1941 1:50,000 reprint of OS one-inch Fifth Edition sheet 143, *Truro and St Austell*.

Ian Mumford’s reply (*Sheetlines* 58, 45) explained that the German maps were printed on high quality paper and, as the advancing Allies overran the map depots in Europe, valuable paper and could be saved by reusing stock for immediate printing needs.

A few years ago, Tim Nicholson sold me a copy of M831 (GSGS 4427), 1:25,000 sheet 6NW East, *Arnhem East*, printed in December 1944 by 3 Field Survey Company, Royal Canadian Engineers on the reverse of a German 1:50,000 reprint of one-inch Scottish Popular sheet 48, *Loch Ericht and Loch Laggan*.

I have now got hold of a copy of a 1944 edition of 1:1M Michelin sheet 162, *Allemagne - Ouest*, apparently produced by civilian printers in Paris on the reverse of a similar reprint of sheet 21, *Dornoch*. This leads me to ask what other map series are to found married to German reprints of OS maps in this way?

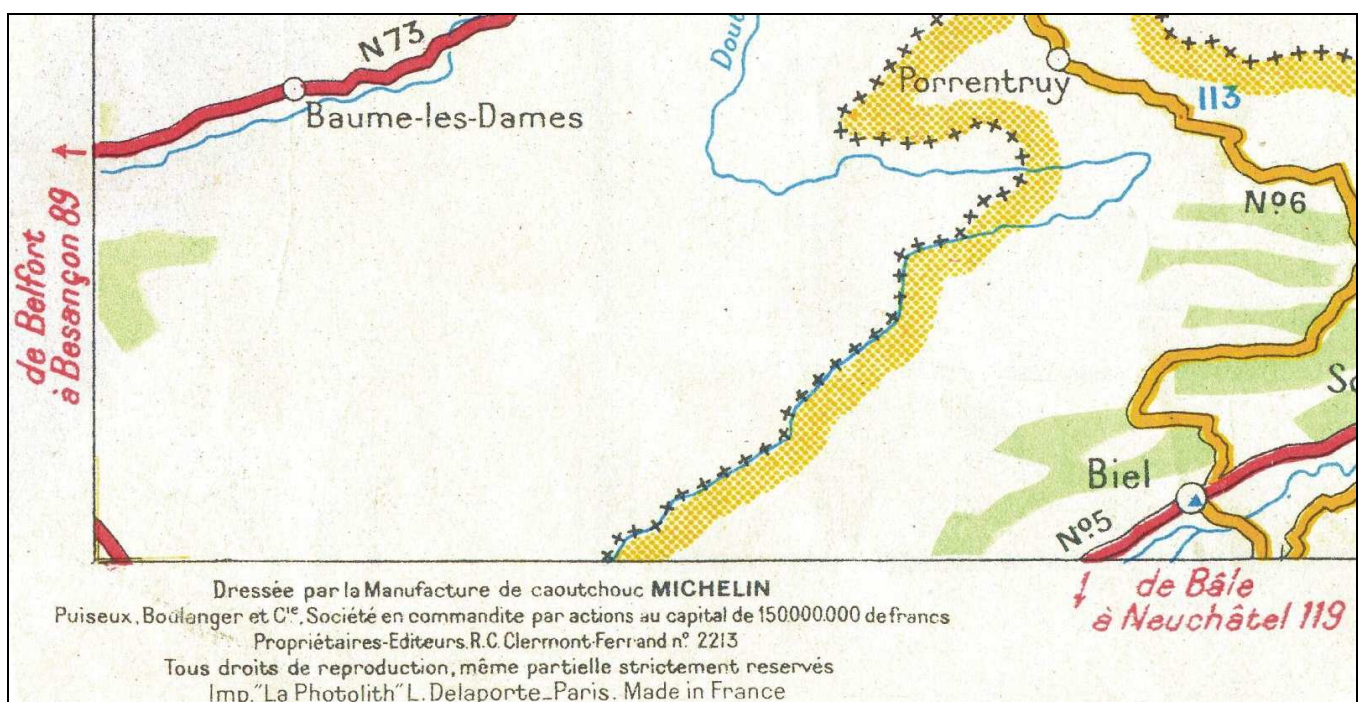
Incidentally, I was relieved to see that Nazi invasion forces using the reprinted Scottish Popular sheets would have received the stern warning, translated into German, that 'The representation on this map of a Road, Track, or Footpath, is no evidence of the existence of a right of way' – that would have stopped them in their tracks!

Chris Higley



Left: Acknowledgement to Herr Direktor General Jack, and rights of way note, from German reprint of one-inch Scottish Popular sheet 28. The map is cancelled with a bold cerise cross

Below: The printing details from Michelin sheet 162 on the reverse of the same map



Collecting by the Biggles rules

As a postscript to Aidan de la Mare's article on page 37, here is what novelist Hilary Mantel wrote¹ about her husband's Biggles collection: He has 85 of these titles, and rules about his collection. He has to happen upon the books, not hunt them down. He won't pay silly money, and he'll have nothing to do with catalogues, internet searches or specialist networks. A day which to others is merely a dull day in a strange town is to him a Biggles opportunity; but as the number of second-hand bookshops seems to dwindle, I don't know whether he'll be able to collect the stories he's missing unless he breaks his self-imposed rules

Puzzle corner

Test your mental map of the British Isles without referring to map, atlas or Google.

1. What's the Point?: North Devon coast nearest to Lundy, southernmost tip of Isle of Wight, northernmost tip of Isle of Man, northernmost tip of Norfolk.
2. Arrange north to south: Aire, Calder, Swale, Tees, Ure, Wharfe. One of these flows in a differently-named dale. Which river, which dale?
3. Largest to smallest isle: Anglesey, Arran, Dogs, Man, Mull, Wight.
4. Travel due north, south, east and west from Liverpool. Where do you hit the Scottish, English, Welsh and Irish coasts?
5. In which Province?: Athlone, Donegal, Dundalk, Limerick, Mullingar, Tipperary, Sligo.
6. Number the road: Leeds to Scarborough, Glasgow to Fort William, Oxford to Winchester, Warrington to Shrewsbury, Penzance to Exeter, Chester to Bangor.
7. Locate the intersection: 52N/0, 54N/2W, 56N/4W, 58N/5W, 60N/1W.
8. Length and breadth: Wales, mainland Scotland (at widest and narrowest), island of Ireland, St Helier(CI) to Muckle Flugga, diameter of M25.
9. Ford which river?: Bedford, Bideford, Grindleford, Lifford, Stamford, Stratford (not on Avon!), Waterford.
10. Where?: English Market, Scot's Gap, Welsh Harp, Ireland's Eye.

The answers to the cryptic gazetteer in Puzzle corner 86 are: Aberdeen, Ashby-de-la-Zouch, Darlington, Dover, Folkestone, Gloucester, Manchester, Newcastle, Plymouth, Turnham Green. Congratulations to Dave Vaughan and Margaret Wilkes for best submissions.

OS Consultation (page 4) –Afterword: As *Sheetlines* goes to press, the latest issue of *The Cartographic Journal* arrives, with a somewhat different commentary on 'free OS data': see Kenneth Field, 'Politics and geography collide: mapping the changing landscape of Ordnance Survey', *Cartographic Journal*, 47(1), March 2010, 7-11. This includes a useful description of how the prime minister's announcement on 17 November was communicated to delegates at the International Cartographic Association conference in Santiago, Chile, the following day

¹ *The Guardian* 12 December 2009