“Why the Ordnance Survey needs its history”
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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.
Why the Ordnance Survey needs its history

Richard Oliver

Harley and Winterbotham: a statement of principle

The title of this paper may be recognised by some as adapted from a ‘keynote address’, ‘Why cartography needs its history’, by the late J Brian Harley to the British Cartographic Society symposium in Exeter in 1983. Unfortunately the address was never published, and in drawing on it for the present paper I have had to use no doubt incomplete notes made at the time.  

There are two interpretations of J B Harley’s writings on map history. One is that up to the late 1970s he produced ‘empirical’ work with no obvious ‘theoretical’ basis, but then made a sharp change of direction and produced a series of theoretically-inspired papers. These introduced a number of concepts new to the study of cartography, one of the more potent being ‘silences’: ‘things maps don’t tell us’. The other, which has been cogently argued by Matthew Edney, is that Harley was throughout concerned with understanding maps. Though he unquestionably had an interest in theory, there was no one ‘Harley line’: his theoretical basis shifted from paper to paper. In a much earlier comment on Harley’s writings, Edney observed that Harley could only provide broad guidelines. 

Thus it might be concluded that a ‘Harleian basis’ is not really practicable: for is there a starting point? Another angle is to suggest that his theoretical interests were not so exclusive in his last decade as to exclude other approaches, and that ‘Why cartography needs its history’ is one such.

Given that theoretical approaches tend to be concerned with ‘deconstructing’ the subject, one might ‘deconstruct’ the 1983 address, on the basis that its audience was largely composed of practising cartographers, rather than academics, or historians. It might also be suggested that Harley’s theoretical interests were intensified by his move to Milwaukee in 1986, and by certain Anglo-American differences, which might make the United States a more fertile ground for cultivating a theoretical approach to history generally and the history of cartography in particular. After all, the United States has a written constitution, and a certain attitude towards the written word, neither of which find their counterpart in Britain, where a much less well-defined climate of precedent and opinion holds sway. One might also ‘deconstruct’, or analyse, by pointing to Harley’s left-wing background. And this, I think, is the key to one of Harley’s motivations: the map as a social artefact. (No doubt such an ‘empirical’ approach is very ‘British’, and very ‘conservative’.) The wider context of his BCS paper was the scheme for a large-scale history of cartography, at first in four volumes, and since grown to at least six, which he planned with David Woodward. Only one volume appeared before Harley’s death in 1991: three more have appeared since.

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1 The present paper derives from one with the same title which was given at the Charles Close Society’s annual general meeting, held at Ordnance Survey, Southampton, on 19 May 2007.
In ‘Why cartography needs its history’, Harley criticised the ‘after-dinner diversion’ attitude to the history of cartography, and castigated certain views on Ordnance Survey matters recently expressed in the *Daily Telegraph* and *Geographical Magazine* as ‘historically illiterate’. As now, in the early 1980s the OS and its pricing and publication policies were a contentious area. Harley’s point was that cartographic history had to be taken seriously: past experience could provide guidance for future decisions. One of the points that he made was that there was nothing new in digital mapping; it was anticipated in Ptolemaic co-ordinates.

This approach was not a novel one, had anyone cared to delve, though it is fair to say that Harley was arguing and inventing, rather than borrowing, what might be termed the use of history to explain the present predicament. Nearly half a century earlier Brigadier H S L Winterbotham had expressed rather similar views as a basis for what one might term his ‘history project’. The best-known part of this incomplete scheme is *The national plans*, published in 1934. The first section makes it clear that the audience for that book was primarily serving OS officers:

> It is time to take stock of where we are going, and to put the stocktaking in a form available for the officer in whose hands revision rests. A library at Southampton is of small use to him… . These few notes, then, are meant to act as a stop-gap in the hopes that the historian may be provided.

In his unpublished ‘Sidelights’ – handover notes to his successor, written on the heels of *The national plans* – Winterbotham observed of history: ‘It is curious how important it is here. So many questions come which refer to the date at which so and so happened, or the reason and authority for such and such.’ An OS officer’s ‘first duties do not postulate a knowledge of history and if he learns it at all it is later.’ Writing history would make permanent personal experience and knowledge. ‘Otherwise we shall go on chasing our own tails and committing the same old mistakes. For one of us Ordnance Survey history is as essential as military history.’ He went on to describe earlier histories of the OS as ‘outlines for the people’:

> They are no use at all if you want practical reasons for the facts and methods of yesterday and today… . We shall, perhaps, cease those frequent irrational changes of minor policy (I have seen so very many of them) which are dictated by ignorance of why existing method has been found desirable… . Such a record would not be cartographic criticism but cartographic history and would be extraordinarily useful to us all.

That last point, I think, is extremely important.

This straight talking (and selective quotation) from a senior military officer, driven half mad by frustration at ministerial apathy and chronic under-resourcing of his department, may seem to be a world as well as nearly half a century away from the concept of cartographic history which Brian Harley outlined in his address in September 1983. ‘Sidelights’ is subtitled ‘Notes on Ordnance Survey matters: some dictated in the cold reason of the office; some scribbled in the greater licence of an after dinner chair…’, and not just here does one almost see the wave of the cigar in one hand and the brandy in the other as the Brigadier holds forth. Harley criticised the attitude of ‘History as an after-dinner diversion’, but later in

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5 The present writer must admit to not having investigated these.
7 H S L Winterbotham, ‘Sidelights’ (unpublished MS in OS library, Southampton), pp 14, 18.
his paper he observed that understanding the past helps guide future actions, including practical steps at work. It is this, I think, that draws together these two otherwise very different men – the one a conventional, if energetic, thinking and flamboyant, military figure, the other a reluctant National Serviceman who probably moved to the Left at least partly as a result of the experience, and who indeed was briefly a member of the Communist Party.\footnote{I have not determined exactly when this was, though it would seem to have been around the early to middle 1960s, i.e. just at the time when Harley was apparently at his most ‘empirical’ in writing about later eighteenth century and earlier nineteenth century mapmakers.} One needs to distinguish show and substance: though he probably didn’t know it, Winterbotham had a ‘theoretical base’.

I therefore suggest that a very sound reason why OS needs its history – as do other surveying and mapping organisations – is so that the past can be understood, and provide guidance for the future. I venture further to suggest that this statement of principle provides quite as firm a ‘theoretical basis’ as anything derived from the writings of those who have sought to construct or deduce formal theoretical structures, which in turn may be influenced by the histories of the cultures in which they originate. Some examples follow of how history can shed light on various OS predicaments and practices.\footnote{And theoretically-minded readers can have fun ‘deconstructing’ it and looking for the ‘silences’.}

**Finance**

A fundamental problem for OS is whether it should be financed by the taxpayer or by the consumers of its products, or by a mix of the two. A critic might suggest that, very recently, this long-standing difficulty has been conclusively resolved: OS has achieved Full Cost Recovery, is self-funding, and indeed now makes a small but respectable surplus for the national exchequer. As a statement of how things stand in the autumn of 2007 this is beyond dispute: but one does not need to go far back into history – eighteen months into the spring of 2006 will do – to find that this was not always so, and that in the past there has been an element of support from the taxpayer. Indeed, up to the mid 1960s the financing of the OS was on the basis that the purchaser of OS mapping (digital data and direct input by surveyors had not yet come to confuse things) paid only for the cost of printing or otherwise producing the copy: the costs of survey and maintenance were borne by the national exchequer.

To explain how this came to be we need to know OS history in the middle third of the nineteenth century, and the transition from its being in 1820 a marginal organisation producing little more than a one-inch map, to one which by 1870 had the survey of 1:2500 mapping as its main occupation and justification, with a correspondingly considerable increase in manpower and resources. It would consume disproportionate space even to summarise the process: suffice it to say that the 1:2500 and its associated greater expense was adopted on the basis that there were indications that the extra cost to the exchequer would be more than offset by savings to individual taxpayers who would not need to commission \emph{ad hoc} surveys, but could use the OS 1:2500 instead.

It would also consume disproportionate space to explain how this unravelled, starting with the proceedings of the Select Committee on Estimates of 1962-3, which investigated OS in detail, by way of the Ordnance Survey Review Committee (‘Serpell Committee’) of 1978-79, and of first the creation in 1999, and then the abandoning at the end of 2006, of the National Interest Mapping Service Agreement (NIMSA). By the end of 2006 the last remnants of exchequer funding for the OS had gone. Suffice it to say that, as the long-
awaited and (by some) desired objective of full cost recovery came yet nearer, and as the supply of OS data metamorphised from being predominantly on paper to being predominantly in digital, electronic form, so also did criticism of the necessary associated pricing structures: prohibitively expensive for many potential users of OS data. What had been periodical complaints found a champion: the Guardian Free our data campaign. This is discussed further in the Appendix, but we may note that both attackers and defenders of the full cost recovery position might have profited from a careful study of history. Those seeking ‘free’ OS data need to take account both of the principles established in the 1850s and of the developments set in train by the Select Committee of 1962-3; apologists for the OS position need to recognise that the present financially felicitous state of things rests on a solid foundation of payments from the taxpayer stretching back into the mid nineteenth century, for which some understanding of OS technical history is necessary.

The 1:100,000 map question

A long-felt want of some of us has been for good 1:100,000 or 1:125,000 mapping suitable for cycling and also motoring on side-roads: such mapping would include good relief information – contours at 20 to 30 metres interval – and roads down to bridleway status. The OS abandoned its 1:126,720 Second Series in 1961, mainly because of a shortage of drawing staff, and to date there is no sign of a replacement, although there is certainly a market for such mapping. In recent years the only commercial maps published that are an adequate substitute have been three by Mike Harrison covering Herefordshire, Devon and Cornwall. Two national road atlases, from Philip and the AA, cover most of Britain at 1:100,000, but lack meaningful relief information, and are unsatisfactory in some other respects. Some may find this surprising: something suitable for longer-distance cycling or restrained motoring, characterised by adequate relief information, ought to be in line with a move towards ‘green thinking’, and also ought to complement the rise of the 1:25,000 Explorer series.

I have explained at length the case for such mapping in two articles, one published in Sheetlines in 1998 and the other in the Cartographic Journal four years later. The latter was commissioned by David Forrest, who enabled me to illustrate it with two versions of a 1:125,000 specimen (layered and non-layered), which was intended to make the point subtly that such a map need not differ in style much from what map users on four wheels instead of two are used to.

However, as well as setting forth what was desirable it was necessary to say why suitable mapping had been produced in the past but was no longer available. So as a preliminary I wrote ‘The rivals’, published in Sheetlines in December 1996, which endeavoured to provide short histories of the various intermediate-scale commercial topographic map series which had come and mostly gone between the 1860s and the 1990s, together with possible reasons for their failure. Here, cartographic history provides the answer to why there is a present want. It has to be said that so far these scribblings have not borne fruit.

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10 For reviews of Mike Harrison’s maps see Sheetlines 54 (1999), 5-6 and Sheetlines 74 (2005), 45; for review by Richard Oliver of Philips Navigator Britain and AA Close-up Britain road atlas see Sheetlines 78 (2007), 61-2; for review of the AA atlas by I Bryne see Cartographic Journal 44 (2007), 94-5.


History as an explanation of map-colouring

A knowledge of historical circumstance can also be used to explore the depiction of features on maps. That said, it is sometimes difficult, if not impossible, to discover why certain things are as they are. Some features seem obvious enough: roads on all OS maps, field boundaries on the 1:25,000 and larger scales. It might be thought that the ability to depict field boundaries meaningfully was a substantial part of the justification for the 1:25,000, but in 1955 the OS briefly flirted with their removal, in order to save 20 per cent of drawing costs. Had they gone ahead they would probably have been lucky to salvage 20 per cent of the series’ already poor sales. Something similar was to be seen some 46 years later, when some specimens were displayed at the Charles Close Society annual general meeting in Manchester of experimental versions of 1:50,000 Landranger mapping with public rights of way omitted. The object was apparently to reduce ‘clutter’, but it is difficult to believe that this particular measure was seriously intended, for surely 20 per cent of sales would have been lost.

The choice of colours on OS mapping is worthy of some study, as they can be interpreted as showing either comfortable continuity, or else fossilising circumstances which have long since passed. This is apparent on the 1:50,000 Landranger and the 1:25,000 Explorer series. Until the appearance of the modified colouring of the Landranger in March 2002 and the adding of Access Land to the Explorers in 2004-6 there was a good deal of design common to the two, and that was particularly marked in the road infills. The basics of this can be traced back to the redesign of one-inch mapping by Sir Charles Close in 1913-14: red and yellow were later supplemented by brown or orangey-brown, which has a certain hierarchical logic, but then later came blue for motorways, which to my eyes looks less hierarchical. Purple would surely be better, as stronger than red, but no doubt blue was chosen for two reasons: because it corresponded with motorway signing, and because it avoided another colour printing. I suspect that history was unknown when the tinkering with the Landranger colours was undertaken in 2001-2, and the green for primary routes, which to my eyes very ill-accords with the red for ordinary A-roads, was chosen because of the use of green for primary route signing. Incidentally, though I have described the red-brown-yellow progression as ‘logical’, the Gall and Inglis Graded Road Maps of the early twentieth century used a completely inverted four-colour scheme, with yellow for the best roads and blue for the worst, which for those of us who have become accustomed to modern OS practice is distinctly disconcerting.

A long-standing difference between the Landranger and the Explorer has been the colouring of public rights of way: red on the Landranger and its one-inch predecessor, and green on the Explorer and its Pathfinder predecessor. Both choices of colour can be readily explained by the limitations of printing technology in the past. Up to 1977-78 most OS small-scale maps were printed using ‘natural’ colours, and as each colour meant a separate pass through the press it was natural to restrict the colour-scheme. For this reason the 1:25,000 Second Series, as designed in the early 1960s, was a four-colour map, and used its green plate to colour woodland in a stipple, and show rights of way solid. The one-inch Seventh Series, redesigned as a quite separate operation, and emerging in its maturity as a six-colour map, used red, although green had been tried. The green used on the Seventh Series was

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much lighter than on the 1:25,000, and the woods were printed solid. Red stood out, and so red was adopted. The advent of the 1:50,000 scale a decade later gave an opportunity for redesign, and one of the changes considered for the enlarged scale was the colouring of the rights of way green. This would be facilitated by using stipple instead of solid for woodland, and the proposed effect can be judged from the 1:50,000 trial sheet produced for market research purposes in 1970, of which a number of copies are in private collections.15

Though they do not appear especially effective on the experimental sheet, green rights-of-way were nonetheless decided on for the 1:50,000. Printing technology was developing, and it appeared that it might be possible to print the new map series by four-colour process-printing. Six-colour process printing had been in use for a few years for a few non-standard OS maps, notably the Dartmoor and Exmoor one-inch tourist maps, and it appeared a logical step. The four-colour method was used for an experimental printing of sheet 196, but the synthetic green produced by the combination of yellow and cyan with screening meant that public rights of way running through woodland were almost invisible. Red was hurriedly substituted. Other difficulties then militated against the immediate adoption of four-colour printing, and all the initial printings of the 1:50,000, and the earlier reprints and republications, were in six colours, with red rights-of-way.16 In 1982 experiments in titivating the Pathfinder led to printing the 1:25,000 Outdoor Leisure series by four-colour printing: no difficulty was experienced with printing synthetic green public-rights-of-way crossing stippled synthetic green woodland. By then it was presumably too late to do anything about green rights-of-way on the Landranger.

So temporary problems with printing in 1972 have left their mark 35 years later, with no sign of a change. Perhaps we may hope that if and when the Explorer and Landranger start to be produced direct from the OS’s large-scale database, that they can be redesigned from first principles, with a common colour scheme and symbology as far as practicable. In that way the ‘lesson of history’, of former limited printing technology, might be learned, and the burden of history cast off.

Administrative boundaries for leisure purposes?

The 1:25,000 Explorer exhibits some further examples of oddities in the map which can be explained by history. Boundaries are a case in point. It is well known that the 1:25,000 Second Series was produced ‘on the cheap’ by reusing the linework of the then newly-drawn six-inch and 1:10,000 National Grid mapping. This led to a minuteness of building depiction which was perhaps more than was strictly justified at this scale (and which potentially might cause problems in revision later) and in an administrative boundary burden. There were times when the OS would rather have liked to be rid of the 1:25,000, but by the time that the problems attending the scale were apparent, enough had been published to create a public demand which would not be silenced, not least from the Ramblers Association and various educational interests.

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15 It would be useful to know that there was at least one set of the four 1970 market research experimental maps in a ‘safe’ public collection, which in view of the de-stocking tendencies of many libraries means either The National Archives or else the legal deposit libraries. I do not know of such, but I will be delighted if and when I am proved wrong.

16 An A4-sized section of the four-colour printing of sheet 196 is preserved, as ‘Annex G’, in ‘Report on the development of the 1:50,000 map series’, n.d. [1972]: copy in CCS archive in Cambridge University Library. Again, it would be useful to be able to report the existence of a complete copy of sheet 196 in this form.
Both the original 1:25,000 Provisional Edition designed around 1944-5 and the Regular Edition replacement, of which only eleven sheets appeared, in 1956, showed only national, county, and parish boundaries: the same as on the contemporary one-inch. The six-inch and 1:10,000 also showed Parliamentary and later also European constituency boundaries, and so these were automatically imported onto the 1:25,000 as well, notwithstanding that thereby there was an additional revision burden, as these boundaries are subject to frequent review and change. District boundaries of various sorts were also imported. Formerly sequestered squares of the map on draughty hilltops suddenly found themselves overwhelmed by invisible boundary information. The map production process seemed to be stalking across the landscape. How far the boundaries stalked is open to question: boundary stones, posts and other markers are shown on the maps, but often these have disappeared on the ground.\footnote{Boundary markers come within the remit of the Milestone Society, which is constructing a database of mile stones and other markers, for which I have undertaken a little work around Exeter. I hope to publish some remarks on the depiction on current OS mapping of mile and boundary markers in due course.}

What was formerly practically invisible is now nearly wholly invisible, except on the map, thanks to the burden of history. Given that the 1:25,000 is now what OS publicity is wont to call a ‘consumer map’ (‘run away and play, children’), this is all the more incongruous: or perhaps OS should modify its publicity.

In 2002 OS produced an experimental ‘regenerated’ Explorer generated directly from larger-scale digital data, which showed only national, county, unitary authority and district boundaries. One of the objections raised to the new mapping was to the omission of parish boundaries.\footnote{The Times, 9 May 2003, pp 1, 24.} So we still have the constituency boundaries. There’s no escaping politicians…

\textit{A collection of cartographic specimens}

Several experimental maps which have had a restricted circulation have been mentioned, and this suggests that it would be extremely useful were there a coherent collection of specimens readily available, of both OS and other mapping, both published and experimental. In principle, there is nothing new about this: one CCS member, Bill Batchelor, has produced a folder of specimens of OS mapping for his own district. A website might be the perfect vehicle. Here could be included superseded mapping, which may be troublesome otherwise to locate, and experiments, some of which may only survive in unique copies. Though the Charles Close Society is making digital copies of some extremely rare OS maps, of necessity this excludes the considerable range of standard series. Map designers could then consult the collection and see what had been tried in the past and was best avoided. There might be an index to certain features, for example colour-bands.

Vignetted colour-bands are something which are best approached with extreme care. Some of the unsatisfactory use of them in the past can be explained by the same sort of limitations of printing technology which led to the particular depiction of rights-of-way. Vignetted bands first appeared on the one-inch on the Fifth Edition, to indicate National Trust areas: the combination of dot-dash black with vignetted green made for ‘clutter’. This style of depiction was continued on the New Popular Edition, but was evidently unsatisfactory, as hatched red was tried. On the \textit{Lake District} tourist map of 1948 it looked as matter-of-fact as the rest of the map, whereas on the Seventh Edition pilot sheet a year later it was only saved from ruining an otherwise very nice map by the limited extent of National Trust land. In the event single lines were adopted: still in red, so as to avoid the expense of
another printing. On the 1:25,000 Second Series green banding was used, from the same plate as supplied the woodland and the public rights of way. Banding reappeared on the one-inch in the mid-1960s, now to show National Parks. As the yellow plate seemed to be under-employed, it was obliged to exert itself by showing the National Park boundaries. It continues at this labour today, a monument to six-colour non-synthetic printing. We need history to explain this sort of thing.

The coming of four-colour printing in the mid 1970s enabled purple to be tried for National Park banding on the experimental 1:250,000 Sixth Series sheet 11/12 of 1976. This was not pursued, but twenty years later purple banding for National Trust and other land accessible to the public (the ‘Purple Plague’) was introduced to the 1:50,000 Landranger and 1:25,000 Explorer. Although not everyone admires the purple, it does at least show a willingness to exploit the possibilities of additional colours offered by four-colour process printing, and the same applies to the orangey effect for access land on the Explorers, with its interesting two-tone effects in woodland.

Perusal of specimens and the experience which they embody might also inspire changes to design and solutions to current problems. I referred to the four-colour scheme of the 1:25,000 Second Series or Pathfinder. The extensive files on this in the Public Record Office show that the final design was arrived at by a prolonged and painful process. Nonetheless, there is a clear resemblance to the ‘utility’ four-colour design familiar from the Second War Revision of GSGS 3907. That particular solution was probably worked out gradually within the OS: its immediate ancestor seems to be the amalgamating of two road colours on the original New Popular Edition into one on GSGS 3907, and other series, but it is by no means an idea unique to Ordnance Survey, as examples of various dates from New Zealand, France and the Soviet Union affirm.¹⁹ This suggests a starting-point for an improved version of the ‘OS Select’ service, to produce a cartography which is ‘historically situated’, that is, one which takes account of present technology and the problems of producing satisfactorily synthetic colours for customised mapping. Generating small-scale OS mapping direct from the large-scale database ought to give the opportunity to introduce this. Past mapping ought to give an idea of how to set about it. History has its uses.

And reasons why

As well as specimens of map design we need a statement of reasons why particular features are shown. Again, the depiction of roads seems obvious enough (at any rate to British residents), but what about, say, woods? The distinction between coniferous and non-coniferous woodland was abandoned when the 1:50,000 was introduced, but had to be restored a few years later following public protest. One wonders to what extent this was due to the then very-outdated and inconveniently-formatted depiction on the 1:25,000 Provisional Edition or First Series, which still covered much of the country in the later 1970s, and which therefore disposed most people to patronise the 1:50,000 instead. The reasons for dropping the distinction were presumably the convenience of not maintaining the tree-symbols. Do the reasons that brought about their reinstatement still apply?

A like point applies to the style of text used: the sans-serif Univers on the Landrangers and Explorers was adopted for ease of maintenance in analogue map production, conditions

¹⁹ These were all displayed when the original version of this paper was delivered. The New Zealand specimen was from a one-inch of the 1940s, the French from a relatively recent 1:25,000 and the Soviet example from 1:100,000 mapping of Lincolnshire.
which have not obtained at OS since the mid-1990s. Indeed, the conversion of the Pathfinder to the Explorers was rendered practicable not least because of the adoption of digital techniques. However, one should not condemn Univers or some similar sans-serif face on grounds of superseded technology: sans-serif usually occupies less space than serifed, an important consideration in cartography where most text has to be squeezed in, rather than expanded to pad out spaces, and a mix of upright and italic, which is highly desirable for sake of superficial appearance, can bring with it considerable problems of hierarchy. What appears in upright, what in italic?

Antiquities

‘Antiquities’ or ‘Archaeological and historical information’ are usually indicated on OS mapping by distinctive lettering. ‘Gothic’ lettering for this is something of an OS speciality, and is less often encountered on non-OS mapping. Even Bartholomew on their half-inch map, the black plate detail of which mimicked OS practice in so many ways, used Hairline Roman for all antiquities, including Roman ones. Ordnance Survey of Ireland, on their admirable 1:50,000 series, use reddish-brown lettering, which produces a very good mixed effect of both integration and separateness. (It should be noted, incidentally, that in Ireland there are no Roman antiquities to complicate matters.)

The cut-off date for defining ‘historical’ has gradually been brought forward. The use of gothic lettering was systematised in the early days of large-scale survey in Britain, in the 1840s, and was used for buildings and other features dating from before 1688: up to the late 1950s subtly different styles were used for pre- and post-Roman features. Roman features were indicated in Egyptian lettering, presumably to indicate clear-cut classical civilisation in contrast to the barbarities of the Britons and of the earlier Middle Ages. This basic style is still used, though it might perhaps have been a good idea to substitute Times Roman when Univers was adopted for OS small-scale mapping in the early 1970s. The cut-off date for antiquities was advanced in the twentieth century to 1714, and more recently it seems to have been advanced to at least the third quarter of the nineteenth century. Some of the forts around Portsmouth, the planning of which was the occasion for some early OS 1:2500 mapping around 1860, are now shown in ‘antiquity’ lettering.

Whilst the use of ‘antiquity’ lettering thus seems to approach uncomfortably close to the present, its use is not wholly logical, except possibly in a historic sense. Some of us were brought up on the line that ‘the church’ is often the oldest building in a settlement, by which of course is meant the Anglican parish church. For those of us who lived in ‘parish’ England in our formative years, this is indeed the case: venturing into ‘township’ England it very often is not, and the Victorian churches in many northern English villages are often a couple of centuries later than many of the houses. As they are roughly contemporary with those forts around Portsmouth, they might, in a strictly logical sense, be classified as ‘antiquities’.

Perhaps a ‘logical’ solution would be to adopt a rigorously ‘physical’ approach, and use a distinctive style of lettering purely for ruinous or relict structures.

Churches

Churches, though often ‘antiquities’ in age, are treated as a class apart. Here again, one needs to understand the history. The OS started off by recording all places of worship on its large-scale maps, and Anglican churches and chapels on its small-scale ones: in this it closely reflected the practice of commercial mapmakers. In 1892 one-inch map-content came under
the scrutiny of a War Office committee, and two witnesses before the committee, Major Verner and Major Talbot, specifically asked for the depiction of churches as landmarks. It may be noted that neither specifically suggested the distinction of those with towers and spires, but nonetheless the committee recommended this, and the distinction has duly been made ever since.\textsuperscript{20} Churches, like windmills, were asked for as landmarks: their treatment on the two-and-a-half-inch mapping of eastern England, produced in 1911-14 (later designated GSGS 3036), suggest that the possibilities of using steeples as military observation posts was a later development. Or perhaps it was the revival of an old principle, as King Charles I watched the Battle of Edgehill from a windmill.

But it wasn’t quite as straightforward as that, and the process whereby the range of places of worship recorded on the one-inch maps was gradually extended is described by Yolande Hodson in \textit{Popular maps}, though the reasons remain obscure.\textsuperscript{21} The request to the 1892 committee seems to be the only statement of principle on the point. There are two possible explanations as to what happened over the next 25 years or so. One is that, as one-inch revision progressed, it was found that there were a good many non-Anglican churches which were landmarks and that it would be much more straightforward to include the lot. The other is a more subtle argument advanced in \textit{Popular maps}, of social inclusiveness. At any rate, the churches continued to be shown, though around 1991 there was a change of practice and they were redesignated ‘Places of Worship’: a phrase one may not care for, but which turns out to have a respectable ancestry, going back to the late seventeenth century in the \textit{Oxford English Dictionary}, and to at least the late eighteenth century on maps.\textsuperscript{22} Consequently some of the ‘church’ symbols on current 1:25,000 and 1:50,000 actually apply to mosques or synagogues. An interesting exception is the mosque at Woking, which was the first to be built in this country, in 1889.\textsuperscript{23} Until 1980 it was, on the one-inch and 1:50,000 anyway, a ‘cartographic silence’, but then it duly appeared, as ‘Mosque’ on the newly revised 1:50,000 Second Series. This is the only instance I know of, of explicit identification: later mosques have not been identified by text.

The depiction of churches is complicated by there not being a complete correlation between appearance and function. A particularly odd example is the windmill at Reigate Heath, which has been used as a chapel since 1880.\textsuperscript{24} The OS has continued to opt to show it as a windmill. Some denominations, notably but not only the Quakers, have ‘meeting houses’, and whilst some of these, as at Exeter, are ecclesiastical-looking, others, such as that at Grimsby, are former private houses wherein Quakers happen to meet. On current mapping (including the street atlases published by Philip) the Exeter meeting house is shown distinctively, but the Grimsby one is not.\textsuperscript{25} Interpretation as a ‘house’ may have conditioned the treatment of the former parish church at Orleton in Worcestershire, now converted domestically, which retains its tower, but is shown on recent 1:50,000 and 1:25,000 mapping as an ordinary building.\textsuperscript{26} A further complication is that of the ‘secular steeple’, of which

\textsuperscript{22} The earliest example that I know of is on John Tuke’s map of the parish of Leeds, published in 1782. It may be germane that Tuke was one of a notable Quaker family.
\textsuperscript{23} The Woking mosque is at TQ 01505915: it is conspicuous from the railway.
\textsuperscript{25} The Grimsby Quaker meeting house is at 15 Manor Avenue, TA 26710891.
\textsuperscript{26} Orleton church is at SO 699660.
there are something like a hundred examples in Scotland, and also a few in northern England; they look ‘ecclesiastical’, but are not, even though they are sometimes, as at Falkirk, more eye-catching that the town’s principal church.

Yet another complication affects chapels that are part of larger buildings, such as Oxbridge colleges, and cathedrals. Lichfield cathedral tries hard, with its three spires, but it remains in plan on all OS maps, and the spires are left to St Mary, to the south-east. One of the best-known ‘churches’ must surely be Kings College chapel in Cambridge, but, though the OS seems fond of using it on map covers, it is not shown distinctively on either 1:25,000 or 1:50,000. The principle appears to be that college chapels with steeples are shown, but not those without, for which reason many more college chapels are shown distinctively in Oxford than in Cambridge, depicted spires as much as dreaming spires.

With these complications it might be thought that it was time to return to first principles, and concentrate on landmarks. This OS duly did in 2002 when designing a new version of the 1:25,000 Explorer, to show access land, and to be generated direct from the large-scale database. On the experimental sheet, ‘Places of Worship’ disappeared, and in their place were ‘Building with Tower’ and ‘Building with Spire’. One suspects that this was done by replacing the existing church-steeple symbols, rather than by a reconnaissance on the ground, but then a certain latitude is permissible in experimental maps. One version of the map was produced for consultation purposes; another was displayed at the Outdoors Exhibition at the National Exhibition Centre in March 2003, and was no doubt seen by a great many people. Some of them noticed that in place of churches there were now vertical protrusions, and were outraged. That there were certain other maladroit aspects of the new mapping, such as the boxing of road numbers and the muted depiction of buildings, seem to passed unremarked. (This map would be a very good example to include in a collection of cartographic specimens, as an example of what to avoid.)

The Times struck on 9 May 2003. There was an article on the front page ‘Hundreds of churches to be wiped off the map’, and for survivors of this shock who reached page 24 there was a long piece by Sir Simon Jenkins, ‘A cross marks the spot: wiping churches off Britain’s Ordnance Survey maps would be an act of cultural and topographical vandalism’. Sir Simon did note that it was a proposal out for consultation; but by the time he had finished typing his piece, the proposal had effectively been finished off. And so crosses continue to mark churches and chapels of little interest save to their congregations; and numerous secular steeples rise heavenwards unremarked by Ordnance Survey. So much for ‘landmarks’.

Sir Simon’s piece did however draw attention to a complication unrecognised by Majors Verner and Talbot: as well as there being a disjunction between function and appearance, there is architectural or historical significance. The 1892 Committee was investigating military mapping of Britain, and the soldiers wanted a map that was clear and uncluttered. Some of it they did get quite quickly; some of it they have never got. Producing a completely separate military series, with radically different content, was not a practicable proposition, and so the British one-inch and its successors have been a compromise between civil and military inclinations. It is a curious compromise: after all, no reasonable person suggests

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27 The Times, 9 May 2003, pp 1, 24.
28 For a brief military view of the 1:50,000 Landranger see report of 1:50,000 study day at Derby in Sheetlines 52 (1998), 4. At a discussion on OS matters at the British Cartographic Society symposium in Liverpool on 15 September 2001, at which the writer was present, it seemed to be implied at one point by an OS representative that the military effectively had a veto on changes to the Landranger, at which point an audience member asked why the subject of
that troops on active service drive around in family saloons or that families have days out in armoured cars. The demands of clear mapping suggest a concentration on steeple: the demands of some users of the maps imply the showing of functioning churches or recognisable former churches which qualify as ‘antiquities’.

Conclusion

There are two points to be made. First, we need to know the reasons why current depiction of features on OS maps are as they are. A start might be to go through the legends of the 1:50,000 Landranger and 1:25,000 Explorer and list the known justifications for anything that does not appear immediately obvious. This information ought to appear on the OS website. Otherwise mapping is in danger of degeneration towards the meaningless. Second, we need a comprehensive collection of specimens, of both experimental and production OS mapping, supplemented by some examples of comparable commercial cartography, to serve as examples both to the merely curious and to those with responsibility for cartographic design. The Charles Close Society is in a good position to do something about both these ideas.

Appendix: The ‘Free our data’ campaign

The Guardian’s ‘Free our data’ (FOD) campaign has been running since early in 2006, and aims to open up access by citizens to data collected by the Government at taxpayers’ expense which at present is only available for a charge: Ordnance Survey and the United Kingdom Hydrographic Office are considered to be particular cases in point. The argument for making OS data freely available is that many potential users are debarred by the charges which are levied in order that OS can be self-funding: therefore these charges should be waived. It must be understood that the campaign is concerned with data in digital form rather than with maps in displayed form, whether as paper products or as on-screen displays, both of which involve processing and manipulation of the basic data. The FOD campaign contends that the extra cost to the taxpayer would be more than offset by the increased economic benefits. Tom Steinberg and Ed Mayo have recently written a review for the Government, ‘Power of Information’, in which they argue the case for greater accessibility, and in a letter to the Guardian on 9 October 2007 succinctly summarise it: ‘The key issue about charging is whether the UK would benefit more in net terms from the more open information market that more open information would bring than it would lose through having to find an additional £60m per year.’

The basic principle – increased cost to exchequer is offset by greater savings elsewhere – is of course that which determined the adoption of the 1:2500 as the standard scale of survey in the 1850s, but which has now been replaced by ‘commercial’ charging so as to be self-funding. The central premise of the FOD campaign is that the data has been collected at taxpayers’ expense; the OS case, put by Scott Sinclair, OS’s head of corporate communications, in the Guardian on 4 October 2007, is that OS is self-funding. This last is a point which the FOD campaign does not properly address. Neither side discusses the

Landranger design was being discussed at all. Somebody else suggested that modern technology ought to solve the problem of differences between civil and military needs. Ought!

See http://freeourdata.org.uk/blog/


problem of the Ordnance Survey Act of 1841: this gives OS powers to enter lands which are comparable with the decennial census, and confers a potential advantage enjoyed by no commercial surveyor, though the development of air survey has somewhat reduced the need to exercise these powers.\textsuperscript{32} It is understood that the problem of statutory access to land has been a long-standing impediment to OS privatisation.

The difficulty is that both sides are right and both are wrong. The increased cost-recovery policies pursued since the mid 1960s mean that a proportion of OS data has, in effect, been paid for ‘commercially’, and the current self-funding arrangements mean that as the database is maintained and updated, so every day the proportion which has been paid for by the taxpayer diminishes. Precisely what that proportion is would probably be very difficult and labour-intensive to calculate. One method would be to take each kilometre square of the National Grid, calculate the average age of the data within it – which for developing areas would be particularly complicated – calculate the cost to the exchequer in terms of the cost-recovery percentage for the year in which the data was collected (i.e. survey or revision, and bearing in mind that much rural mapping is based on ‘overhaul’ of fundamentally pre-1914 County Series mapping, and has been revised recently by air methods on a ‘cyclic’ basis), and adjust for inflation to 2007 prices. It follows from this that the extent to which ‘the taxpayer’ has paid for OS data would vary from one kilometre square to another: there must be very few which are wholly ‘self-funded’, and probably a great many in which the taxpayer has contributed more than fifty per cent of the cost. Another method, which would be a great deal more straightforward, would be to calculate the ‘replacement cost’ of the data in the OS database in the way that the rebuilding cost of a house is calculated for insurance purposes, taking into account present levels of technology and productivity which would no doubt reduce the cost considerably as compared with what has actually been expended, were the ‘historic cost’ to be converted into current prices. On the second, ‘current replacement cost’ basis, the value of the OS database might perhaps be £500m.

The advantages and disadvantages of full exchequer funding versus full cost recovery may be summarised as follows. Full exchequer funding is independent of annual sales income but may be vulnerable to wider Government spending reductions unless a special arrangement is in place guaranteeing steady funding, subject of course to periodical reviews to ensure value for money. Against this, it is ‘inclusive’ in that access to basic data is not barred by perceived excessive cost to potential users. Full cost recovery has the advantage of being independent of Government spending policies, but has the financial disadvantage of depending on a certain level of national economic activity, and the social disadvantage that not all potential users can pay for the data.

If the argument is accepted that supplying OS data ‘free’ would be more than offset by benefits elsewhere to the economy, the question remains how much this would cost the exchequer each year. The present cost of OS is about £110m per annum, which includes several activities irrelevant to FOD, such as the publication of ‘consumer’ paper maps, which account for about 7-8 per cent of OS activity, and such costs as computer software: for example, the ‘cartography’ of the OS MasterMap displays is supplied by Dotted Eyes Ltd.\textsuperscript{33}

\textsuperscript{32} There are comparable powers of entry under the Parochial Assessment Act of 1836, the Tithe Commutation Act of 1836 and the Geological Survey Act of 1845, but in all these instances the information is effectively being gathered for the purposes of the state, even though for the first two the work was almost wholly contracted to private individuals.

\textsuperscript{33} Figures for OS turnover have been derived from recent annual reports, which are available on the OS website; for Dotted Eyes see their report of recent activity in Cartographic Journal, 44 (2007), 158-9.
The cost to the exchequer would be that of revision and maintenance, including such things as periodical renewals of equipment as well as a proportion of OS senior management costs. A report of 1981 estimated that by 1982-3 revision and maintenance would account for some 65 per cent of OS resources: I know of no more recent reliable figure. Steinberg and Mayo quote a figure of £60m per annum. This is plausible, given total OS turnover and that national and local government consume a substantial proportion of OS data, and that if they did not get it from OS they would have to procure it from somewhere else: in either case, the taxpayer pays. The figures given by OS are more variable. In his defence of the status quo, Scott Sinclair quotes £110m, which Steinberg and Mayo dismiss as ‘wilfully misleading’. An enquiry to OS, sent before Mr Sinclair’s piece appeared, elicited the remarkable answer ‘The 2006/07 cost of Topographic data capture… was 6% of OS operating costs of £109,659K for that year’, though this excludes software and hardware costs. In the light of both the early 1980s figure and that of Messrs Steinberg and Mayo, the 6 per cent is a little difficult to believe. Assuming the £60m to be the most nearly correct, and on the assumption that the ‘wider benefits’ would include generating at least as much Corporation Tax for the Treasury, and assuming that tax to be at 20 per cent, it would be necessary for companies paying UK Corporation Tax at the full rate to generate at least £300m of extra business.

‘Free data’ would enable a restructuring of OS, dividing it into two or three parts. One, ‘survey’, part would be concerned with the maintenance of the database, and would cost perhaps £60m per annum, assuming that the Steinberg and Mayo figure is approximately correct. A second, ‘cartographic’, part would be concerned with processing the data: this might itself be divided, with one part supplying digital data to professional users, and the other supplying paper mapping and electronic navigation data for the mass market. The ‘survey’ division would necessarily remain in the public domain, though it might be that collection would largely or wholly be undertaken by contractors; the ‘cartographic’ division might be privatised, and indeed the problems of possibly unfair competition which dogged OS’s forays into ‘commercial’ publishing and ‘co-publishing’ in the 1980s and 1990s would be solved. (The argument that OS supplies military mapping, and for that reason ought not to be privatised, seems to be a weak one when so many defence suppliers are already in the private sector.) The ‘OS’ brand name might well be worth keeping for both data collection, and for data and map publication, but the example of the various Virgin companies suggests that that ought not to be a bar to divided ownership. The prospect of such a restructuring and privatisation could greatly help the argument for supplying ‘free’ data.

A possible complication might be that at present the 1:25,000 and 1:50,000 ‘data’ and ‘cartography’ are inextricably entangled as raster data, and this might prompt either the creation of separate vector databases for these scales, or else another attempt at direct derivation from larger-scale data, which was the intention in 2002 but seems to have been subsequently abandoned.

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34 ‘Summary report of the study of revision’, August 1981: OS information paper OS81/11: copy in writer’s collection.
35 A charitable view might be that Mr Sinclair would not appear to be an economist; and confusing data and maps does not seem a particularly good qualification for working in a national mapping agency.
36 E-mails from Customer Services to Richard Oliver, 23 October and 6 November 2007.
37 The writer wishes to make it clear that he is attempting to be realistic rather than idealistic: he has not shifted in his personal anti-privatisation stance.
38 I have been unable to obtain an authoritative statement from OS on this point: anecdotal information suggests that any attempt at direct derivation has been abandoned.