

A few notes on map lettering

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It has generally been held that serified lettering is easier to read than sans-serif, and this prompts the question as to why sans-serif lettering has come to be so widely adopted for use on maps. The purposes of the present article is to give a very brief history of Ordnance Survey usages, which explains the gradual standardisation of sans-serif lettering, and to present some alternative treatments of two pieces of mapping.¹

The Ordnance Survey of the United Kingdom: 1801-1914

The earliest printed maps, from the late fifteenth century, used styles of writing that tended to bear a marked resemblance to contemporary pen-writing, although all printed maps up to the early nineteenth century were produced by engraving processes, which involved incising the image, usually into copper. By the time that the first Ordnance Survey mapping came to be engraved, in the late eighteenth century, a distinctive style of map-lettering had evolved, designed explicitly for copperplate engraving. It was characterised by a contrast of thick up-strokes and thin ‘hairlines’, and it was used on all one-inch (1:63,360) mapping up to the Popular Edition (*figure 1*). ‘Old English’ and similar styles were used from the early 1830s for ‘antiquities’.



Figure 1.

Extract from one-inch Old Series sheet 46 NE (1834) showing Roman (village names), copperplate italic, Egyptian ('Ravesburgh Castle' misidentified as of Roman date), and Old English

Early Ordnance Survey mapping was all produced by engraving, but from the mid-1850s lithographic methods were adopted. These involved producing the published image by pen-drawing, but nonetheless the ‘engraved’ style of lettering continued to be used, characterised by hairlines. Both engraved and lithographic maps made limited use of sans-serif styles for certain special categories of name, for example ‘Egyptian’ (an admittedly strange name) for Roman ‘antiquities’. At first lithographic methods were confined to the largest scales, but from 1882 the six-inch map began to be produced by photo-lithographic methods. The lettering was produced by stamping, which by the 1890s had been adopted for all mapping not produced by engraving, and which had the advantage of uniformity

¹ Terminology for lettering styles has been taken from *Ordnance Survey alphabets*, Southampton: Ordnance Survey, n.d. [1934], and from three unpublished internal manuals: ‘Type specimens’ (January 1945), ‘Specimens of type’ (1947) and ‘Typefaces help in L.P. Printing’ (September 1975) (‘L.P.’: letterpress).

of result. To give a good effect, the stamping had to be even, calling for the cultivation of a careful touch. A drawback of stamping was that it was really only applicable to original drawings on paper: correction of names on printing plates or photographic materials had to be carried out by hand. The balance of serif and sans-serif continued much as before, presumably in order to give an element of general stylistic continuity and homogeneity.

Whereas pressure of economics ensured that by 1900 all Ordnance Survey mapping at larger than the one-inch scale was produced by photo-lithographic methods, a substantial investment coupled with the need for a clear image ensured that engraving still had its place. This applied also to commercial firms such as Bartholomew, Johnston and Bacon, where, indeed, engraving had a much higher profile than it did at the Ordnance Survey. The first departure from this was the half-inch (1:126,720) map, started in 1902, the early sheets of which were produced by photo-engraving. The original document was a pen-drawing with stamped lettering, reminiscent of contemporary six-inch mapping in process and appearance. This half-inch mapping was exceptional in that it was produced in response to an urgent demand from the War Office and accordingly was 'provisional' in nature: the mapping of Great Britain in this style was completed in 1910. Later half-inch sheets of Britain were produced by the less involved process of heliozincography.² The half-inch mapping of Ireland was less urgent, and this was produced by conventional engraving: the replacement of the 'provisional' half-inch of Great Britain by a conventional engraved map was started by 1914, but only one sheet is known to have been completed, and so far it has not been published.

The Ordnance Survey in Great Britain, 1914 onwards

In 1910 or 1911 the Ordnance Survey began another 'provisional' series for the War Office: a two-and-a-half-inch (1:25,344) map of eastern England, later designated GSGS 3036. This was produced by combining the linework and 'ornament' of the six-inch with fresh lettering: scale apart, the general effect was that of the six-inch, but some sans-serif lettering was used for supplementary military information. A similar style was employed from the autumn of 1914 onwards for mapping of the Western Front, but during 1915 a new style was adopted, characterised by the extensive use of stamped sans-serif 'Egyptian', though with serified 'Roman' lettering retained for some categories, such as woodland names. Presumably this mix of styles was determined by the need to balance lettering and linework. This style was in turn introduced to an extension of GSGS 3036, and to two training map series, GSGS 2742 and 2748. From 1918 GSGS 2748 was developed as a 1:20,000 series, replaced from 1931 by a 1:25,000 series, GSGS 3906, produced initially by direct reduction from GSGS 2748. None of these were placed on sale.

The Western Front was also covered by series at 1:100,000 (GSGS 2364) and 1:250,000 (GSGS 2738), started in the later 1900s. These were produced by pen-

² For a summary of this see Richard Oliver, 'Photo-zincography and helio-zincography', *Sheetlines* 90 (2011), 41-4.

drawing and photo-lithographic reproduction, but unlike the contemporary British half-inch the lettering was produced by penning rather than by stamping. The success of this method perhaps encouraged the Ordnance Survey to adopt it for a new version of its domestic quarter-inch (1:253,440) mapping (*figure 2*), which began to appear in 1919 as the Third Edition, and then for a new version of the ten-mile (1:633,600) mapping, published in 1925-6. A new one-inch of Scotland, the Popular Edition, of which publication began in 1924, used – at any rate on early sheets – a mixture of stamped and hand-lettering. This mapping was designed as a continuation of the Popular Edition of England and Wales, which was based on engraving, and although the lettering styles used on the new heliozincographed map of Scotland reflected the influence of engraving, they were unlikely to be mistaken for it. Commercial map-publishers were rather more venturesome in using sans-serif: Bartholomew used little else on its new quarter-inch maps, completed for Scotland in 1914 and for England and Wales in 1929.



Figure 2.
Extracts from quarter-inch Third
Edition sheet 12

upper:
1922. This sheet was unique in
this series in that the early issues
were based on engraving



lower:
1925. Following redrawing in
'engraved' style, for reproduction
by heliozincography

The hairlines in engraved styles were troublesome for photographic reproduction, as they entailed much touching-up, and in 1928 a completely different style, based on the lettering on Trajan's Column in Rome, was designed by JG Withycombe and Ellis Martin.³ The main use of this lettering was on the one-inch Fifth Edition, publication of which began in 1931 (*figure 3*). From 1925 onwards different styles were adopted for new 1:2500 sheets: Egyptian reigned

³ JG Withycombe, 'Lettering on Maps', *Geographical Journal* 73 (1929), 429-46.

for only a few months, but Roman and italic ‘old style No.5’ lasted longer, until replaced from 1932 by Caslon Old Style, which retained serifs, but in a much less pronounced form. ‘Caslon’ was not much used on small-scale mapping: its main use was on 1:500,000 aviation mapping (*figure 4*) (e.g. GSGS 4369), though it was also used on a one-inch traffic diagram of the London area of 1934.



Figure 3.
Extract from one-inch Fifth Edition sheet 95 (1935), showing hand-written Withycombe lettering



Figure 4.
Extract from 1:500,000 Aviation Map sheet NN 31 SW (1937). The lettering in black is in Caslon; that in red is in Egyptian. Both were probably applied by stamping

The Fifth Edition, first titled thus and then remodelled as a ‘New Popular Edition’, remained incomplete, and in 1947 a start was made on a completely restyled one-inch map, at first known as the ‘Seventh (Great Britain) Edition’, and familiarly as the Seventh Series. The first 38 sheets of this series, together with some contemporary half-inch mapping – not all published – and a small quarter-

inch experimental section were drawn in a style that closely resembled the Scotland Popular Edition, although with broader 'thin' strokes. This apparently retrograde step was taken because a study indicated that the lettering on the Scottish map stood out better than did the Withycombe style.⁴

Up to the late 1930s the only alternative to hand-lettering with a pen was stamping, by metal type in a holder, but around 1937 photo-typesetting became available: the first such equipment used by the Ordnance Survey was the Photonymograph. The basis of phototypesetting is the typing-in of the name on a keyboard, for outputting in the desired font for sticking down on the manuscript drawing. This had the advantage of obtaining an even effect without the need for controlled pressure necessary for good stamping. The adoption of phototypesetting by the Ordnance Survey has not been studied in detail: the writer's impression is that it was fairly general by the late 1940s, although some stamping of 'ornament', such as vegetation symbols, may have continued for a little longer.

Caslon and Egyptian were extensively used on military mapping during World War II, but around 1944 Times Roman was added to the repertoire, and this was adopted for the definitive form of the civil 1:25,000 map, of which publication began in 1945.⁵ It may be presumed that the use of Times Roman is an indicator of photo-typesetting. From 1948 redrawn mapping at 1:1250, 1:2500 and six-inch began to appear, all lettered using Times Roman and other 'mechanical' fonts, with serifs continuing to predominate.

In 1950 the substitution of photo-typesetting for hand-lettering on the new one-inch map was studied, and alternative versions of sheet 154 – already completed as a handwritten sheet – were produced, wholly in Times Roman and wholly in Gill Sans. Neither was satisfactory: on the Times Roman version the smaller names appeared disproportionately prominent, and the Gill Sans version appeared both stark and lacking in assertiveness. The solution was to use both styles, with most of the more prominent names in Times Roman, and the remainder in Gill Sans. A similar solution was adopted for other smaller-scale mapping put in hand in the 1950s. From about 1964 Gill Sans was used for the marginalia of 1:25,000 and smaller-scale mapping, though the lettering of the body of the maps was unchanged. Though the exclusive use of Times Roman had proved unsatisfactory on the one-inch, it was used very satisfactorily on the new 1:25,000 Second Series.

In 1969 a programme of metrication was announced, leading to the substitution of 1:10,000 and 1:50,000 for six-inch and one-inch respectively, and at the same time Univers was adopted, both for newly published mapping and, for the 1:2500 and 1:1250, for replacement names on revised editions of published sheets. Serifs could be troublesome in reproduction as they were prone to wear

⁴ Cheetham to Stevens, 3 February 1949: item 12A in The National Archives (Public Record Office) OS 1/785.

⁵ When work began, lettering was to be in Caslon, and then two blocks of sheets were drawn using Old Roman no.5: see essay by Richard Oliver in Roger Hellyer, *A guide to the Ordnance Survey 1:25,000 First Series*, London: Charles Close Society, 2003, 18-19.

and thus to need touching-up. The adoption of a style such as Univers therefore made for easier map maintenance. 'Lutheran' was used for 'antiquities': presumably the liability to touching-up could be accepted. The need for a distinct font for antiquities, rather than, say, a different colour, can be readily explained by the needs of monochrome map reproduction: the colour-printed smaller-scale series were all issued in alternative 'outline' editions. This basic 'sans-serif' style continued for as long as this mapping was produced by analogue means: it continues to be used on the 1:25,000 and 1:50,000 series, which are produced by raster means. In 1985 the 1:250,000 mapping first published in 1957-62 was relettered using Univers, and a similar style was retained when this mapping was digitised a few years later.

The Ordnance Surveys of Ireland ⁶

In 1922 separate Ordnance Surveys were created for the Free State and for Northern Ireland. The latter has generally tended to follow mainland British practice, but there have been three notable exceptions. A redrawn quarter-inch 'Road Map', prepared in 1939, used Caslon and other 'mechanical fonts'. A new 1:250,000 map published in 1970, the first and only instalment in a projected all-Ireland series, used a mixture of Times Roman and sans-serif that was in principle similar to the Seventh Series in Britain, but quite different in final appearance. A similar mixture was used on what was understood to be the first instalment of an all-Ireland 1:50,000 map, published in 1978-85. Times Roman was particularly used for townlands, which make up a large part of the rural names on these maps. In 1999-2002 this mapping was replaced by a digital version, which retained serified lettering for most of the purposes for which it had been used on the analogue predecessor.

In the Free State sans-serif lettering had been adopted by the late 1930s for revised and republished 1:2500 mapping, and by the late 1940s for revised six-inch mapping.⁷ A new 1:500,000 published in 1953 used a mixture of 'mechanical' serif and sans-serif fonts. In 1958-62 a new 1:250,000 used sans-serif lettering throughout, except for 'antiquities', and in this regard was more 'modern' than anything then being produced across the water in Britain. In the mid 1960s an ambitious modernisation policy was adopted for Irish mapping, to include a 1:50,000 series. A trial sheet was not published, but part of it seems to have been used to replace a section of the one-inch *Dublin* sheet: the sans-serif style used is consistent with that used earlier on the 1:250,000 and on the new larger-scale mapping.⁸

This mapping was produced by analogue means. In 1988 the Ordnance Survey of Ireland began producing 1:50,000 mapping, by digital means and in a

⁶ I have not investigated Irish procedures as completely as I have those in Britain: the following account will be found indicative rather than exhaustive.

⁷ The writer confesses to particularly uncertain chronology here.

⁸ For the trial sheet and the new styles see P.G. Madden, 'Proposed mapping policy for the Republic of Ireland', paper presented at the Conference of Commonwealth Survey Officers, 1967.

radically different style from anything hitherto associated with any 'Ordnance Survey'. In the definitive style, introduced in 1993, almost all names are sans-serif, including 'antiquities', distinguished in reddish-brown, except for towns, which use Bookman. Both on this and on the North Irish mapping serifed styles are presumably used in order to provide adequate emphasis of 'important' names.

Serif versus sans-serif

As was said at the start, it has been widely believed that serifed fonts are more legible than sans-serif ones. A recent article in the *Cartographic Journal* investigating typography suggests otherwise, at any rate in the circumstances of the particular experiment reported there.⁹ Serifs certainly continue to be favoured for 'running text', despite the recent rise in popularity of some sans-serif fonts, notably Arial, and when the writer changed a newsletter from Arial to Garamond the response was favourable.¹⁰ Such investigations apart, there are three wholly practical reasons for employing a sans-serif style on topographic maps:

1. A name of given size is likely to be more compact in a sans-serif than a serif style, and thus can contribute to the avoidance of 'clutter', and reduce the conflict of names and detail in 'busy' areas.
2. In analogue photo-mechanical map production, serifed lettering is much more prone to need touching up to maintain the serifs. It is understood that this was the main reason for the wholesale adoption of Univers in the late 1960s.
3. It reduces problems of hierarchies and consistency across scales.

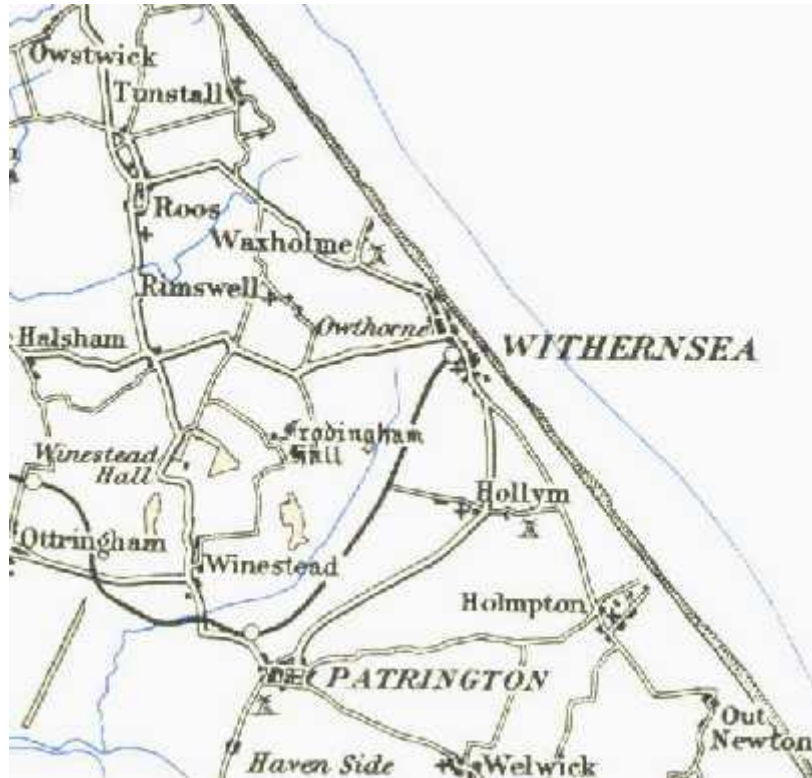
The last point needs enlargement. The usual practice in mapping using serifed lettering has been to mix 'Roman' (upright) with italic. It is therefore necessary to decide which categories of name are to appear in which style. The normal Ordnance Survey solution was to use upright lower-case Roman for 'parish villages', but this presents difficulties of balance where such villages are few. There is a similar 'domination of inconspicuousness' where italic is used for smaller villages on a strict size criterion, as on the new half-inch and 1:250,000 maps designed in the 1950s. In turn, these introduced a further problem of inconsistency between scales: parish villages in 'upright' on the one-inch often appeared in italic on the smaller scales. The consequent extensive use of italic tended to give the half-inch Second Series of Great Britain, in particular, a certain 'monotonous', uncertain, unpunctuated quality. On its otherwise rather similar half-inch Second Series, published in 1968-70, Ordnance Survey of Northern Ireland eschewed upright lower-case and used italic capitals for settlements of a certain size: in Britain this would be interpreted as 'small town', whereas the 'correct' meaning was often 'larger village'. Aesthetically it was an undeniable improvement.

These points are demonstrated by the two groups of figures. Figure 5a is from the quarter-inch Fourth Edition, with 'parish villages' and hand-lettering imitating

⁹ Rasha Deeb, Kristien Ooms and Philippe De Maeyer, 'Typography in the eyes of Bertin, gender and expertise variation', *Cartographic Journal*, 49 (2012), 176-85, p.181.

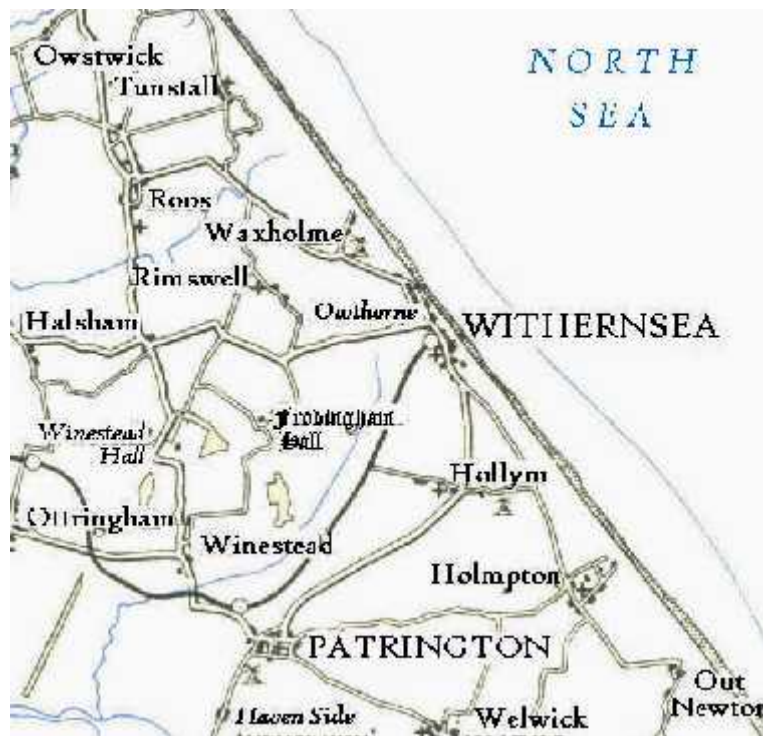
¹⁰ *Exeter Quaker Newsletter*: not a widely circulated 'serial'!

engraving. Figures 5b, 5c and 5d have had the lettering replaced. Figure 5b uses Bookman, which produces an effect similar to Caslon. Figures 5c and 5d use High Tower, which produces an effect generally similar to 'Withycombe': figure 5c retains 'parish villages', figure 5d uses italic for all villages.



above: Figure 5a, below: Figure 5b





above Figure 5c, below Figure 5d

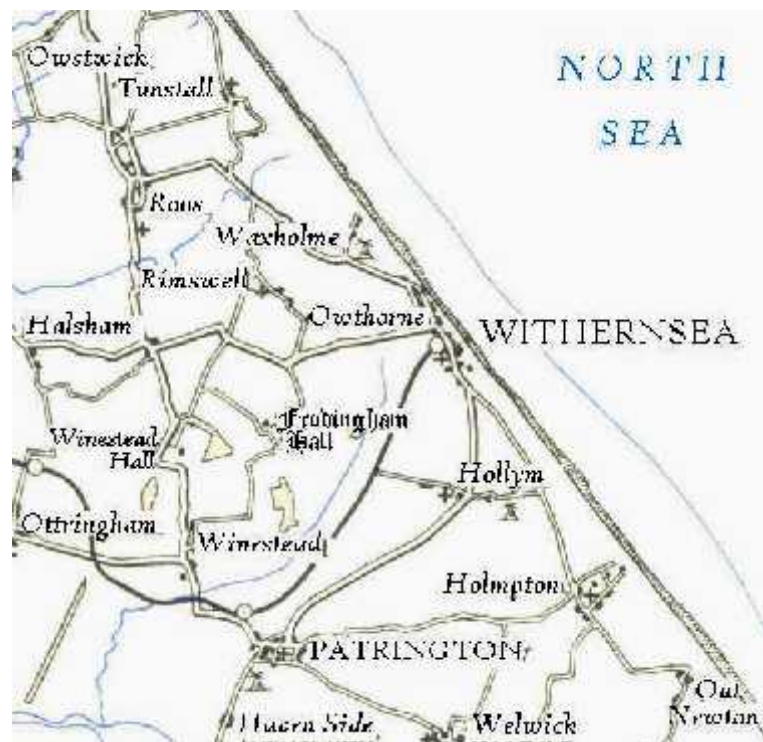


Figure 5. Extract from quarter-inch Fourth Edition sheet 3 (outline version), 1940

Figure 5a as printed

Figure 5b relettered in Bookman (to mimic Caslon), following conventions in 5a

Figure 5c relettered in High Tower, following conventions in 5a

Figure 5d relettered in High Tower, with all lower-case names in italic

Figure 6a is from the Popular Edition, and exemplifies the basic style used on engraved mapping from the late eighteenth to the earlier twentieth centuries. Figure 6b has been relettered using High Tower, and retains ‘parish villages’; figure 6c uses Times Roman, italic throughout; figure 6d uses Arial, and with no hierarchy.¹¹ Serifs may therefore be ‘characterful’, but they can lead to spatial, categorising, mechanical and aesthetic complications. A judiciously-chosen sans-serif font is not troubled by these considerations, and a move back to favouring serifs for cartographic work seems unlikely.



Figure 6. Extract from one-inch Popular Edition sheet 46 (1940)

Figure 6a (top left) as printed

Figure 6b (top right) relettered in High Tower, mainly following conventions in 6a

Figure 6c (bottom left) relettered in Times Roman italic

Figure 6d (bottom right) relettered in Arial

¹¹ These extracts were prepared by scanning originals, which were then edited using ‘ZoomBrowser’, supplied by Canon with the writer’s digital camera. The ‘insert text’ function was used first to ‘white out’ the existing text (or, for names in rivers, cover them with blue), and to supply the replacement text: Arial, Bookman, High Tower and Times Roman are all available in Zoombrowser. It is not possible to supply curving names satisfactorily. Professional cartographers and more sophisticated software would no doubt make a much better job of it than in the examples here.