“Representation of railway track layouts”

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Representation of railway track layouts on the County Series

Rob Wheeler

Introduction
Railway historians make extensive use of County Series maps to show track layouts of stations. Despite this, there appear to be areas of uncertainty about the rules followed at certain times. Useful though it would be to offer a definitive guide to this topic, in the absence of new documentary sources, all that I can offer in this article is to describe the changes that can be seen on the published maps.

Because the greatest uncertainties affect the earliest period, it seemed best to abandon any attempt at a chronological narrative and to organise the account by scale of map, starting with what is most certain and expanding to areas of increasing doubtfulness.

Town scales
The town scales provided space for the depiction of every running rail. This is particularly valuable where a mixed-gauge layout is recorded. The questions it raises are not so much cartographic as relating to railway practice.

Narrow-gauge and broad-gauge trains used the same platforms. It was necessary that the edges of the carriages should be a similar distance from the platform edge. The common running rail was therefore that closest to the platform. Since the Great Western – at least for lesser stations – preferred not to use island platforms, it followed that on double-track lines the common running rails were to the outside of the formation. All was straightforward. At major stations this pattern could not always be followed and the paths followed by narrow- and broad-gauge trains might be different. Figure 1 shows an example.

To switch a broad-gauge train in this way, it is necessary to press one tongue against the common rail, to switch a narrow-gauge train an additional tongue was employed; but if a broad-gauge train encounters the point thus set, it will be derailed. So how was such an accident prevented? Was there a treadle against the broad-gauge-only rail that would force the tongue back? Or was reliance placed on the signalman with, perhaps, different bell codes for trains of the two gauges?

Figure 1. Bristol Temple Meads. For clarity the tracks in question have been marked in yellow at the edges of the extract. For broad-gauge trains to pass to the left-band branch, a tongue connected to the rail coloured purple has to be pressed against the common rail; for narrow-gauge trains it is the tongue belonging to the rail coloured maroon.
The depiction of the rails was left to the Plan Examiner. The logic for this is clear enough: a complicated track layout was best drawn directly on a map rather than through the surveyor’s notebooks produced at the chain-survey stage. Even at this stage, surveying a complicated set of sidings, largely occupied by wagons, and with shunting in progress, can hardly have been easy. Given that the railway company will have had its own plans, one wonders how often the plan examiner copied them and carried out a few checks.

The intelligibility of a plan of sidings depends on the spacing between each pair of rails being distinguishable from the spacing between adjoining pairs. All too often the drawing and the lithography are inaccurate and all one can make out is a large number of approximately parallel lines. The depiction of tie bars linking the tongues at points serves as an occasional reminder of which pairs of lines constitute a track, but these tie bars are often omitted. When they are omitted at diamond crossings, it removes the only evidence this scale offers for the presence of slips (figure 2).

The six-inch scale presents the greatest problems. Railway historians sometimes offer the view that depiction of track layout on this scale is inaccurate and cannot be relied on. This evades the issue. All maps are inaccurate to some extent. What we need to know are the nature of the omissions / generalisations on the six-inch along with the nature and frequency of downright errors. Whilst the investigation may be somewhat academic for derivative six-inch sheets, it may throw light on what can be expected in those areas and periods where survey was at the six-inch scale. Some examples of outright errors are offered in an appendix.

One widespread omission affects crossovers between parallel tracks. Where the tracks in question are depicted by a double-track ladder symbol, the omission might be regarded as inevitable, though in fact one does occasionally find crossovers that have been drawn underneath the ladder. When the parallel tracks in question are both depicted by single-track symbols, a higher proportion of crossovers are shown, but by no means all of them. By the later-nineteenth

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2 Eg Newark (MR) station on Notts 30SE of 1884, Dagenham on Essex n87 of 1921.
century, it was considered bad practice for a siding to debouch directly on a running line. Even if there was not space for a head-shunt, there should be buffer-stops to catch runaway wagons and exit from the siding should be by a crossover onto the running line. Omission of this crossover on the map renders the track layout well-nigh incomprehensible; nevertheless it happens occasionally.\(^3\)

The biggest change in the appearance of the six-inch took place in 1889 and is illustrated by the two states of the first edition covering the centre of Lincoln (figs 3 & 4) The earlier state is largely a photographic reduction of the 1:2500 – though of course railways had to be redrawn. The later version was entirely redrawn on the basis of photo-reduced ‘blues’.\(^4\) The thinning-out of sidings may be considered a regrettable consequence of the obsession with removing ‘clutter’ which at the same time led to the omission of those parts of parish boundaries which ran through dense urban areas - an omission which often makes the rest of those parish boundaries difficult to interpret, it no longer being apparent to which parish any particular spot belongs. So far as railways are concerned, it means that states after 1889 are liable to underestimate the number of parallel sidings, whereas earlier states do appear to show the correct number.

\(^3\) At Greenhill Upper Junction, the Scottish Central Railway joined the Edinburgh & Glasgow. The six-inch (Stirlingshire 29, published 1865) shows the former converging on and running alongside the latter but with no connection. The 1:2500 makes it clear that there were crossovers by which a normal junction was effected. In contrast, on Stirlingshire 31 (published 1865) the Slamannan Jct Rly is shown joining the Edinburgh & Glasgow by a normal junction. From the 1:2500 it is apparent that trains could only pass from one to the other by reversing across crossovers.

Use of the double-track symbol

On figures 3 & 4, two pairs of tracks are shown by the double-track ladder symbol. Comparison with the Great Northern Railway’s own plan indicates that these were the through passenger lines and the through goods lines. The status of the latter as running lines could not have been deduced from the printed 1:2500, so one wonders whether there was any indication on the Plan Examiner’s trace. The limitation of the double-track symbol to running lines does appear to be normal practice by this date.

In contrast, its use in the early years seems to be more arbitrary. On a double-track railway away from stations, the two tracks linked together are necessarily the running lines - there is nothing else. Mere continuity of drawing often ensures that when a station with sidings is reached the running lines continue to be picked out by the double-track symbol. But this is by no means invariable. For example, figure 5 shows the tracks a little north of Guildford station. On the left is the line to Aldershot, on the right, that to Woking; but reading upwards from the bottom what appears to be the Up Woking line becomes the Down Woking line, its former companion having turned out to be merely a siding. The track layout shown looks implausible and perhaps an error has crept in, but that is not the point: the draughtsman has, by the standards of the end of the century, seriously misused the double-track symbol. Within stations, such misuse is extremely common in this period.

In the 1850s and 1860s, there was a willingness to extend the double-track convention to larger numbers of tracks. By making the spacing between rungs of the ‘ladder’ equal to the spacing between cross-bars on the single-track symbol, a style of drawing was evolved which merged multiple-track and single-track symbols into a coherent pattern (fig 6). I have gained the impression of a particularly large number of examples in Hampshire, but this may be a consequence of my own interests and good coverage on the NLS website. Occasionally one finds the rungs ‘jogged’ to produce a brickwork pattern (fig 7). This is perhaps an improvement, in that it assists the counting of tracks.
The early six-inch

The six-inch survey of Lancashire started in 1842. However, Colby must have been thinking about the issues before that. One of those issues was the depiction of railways. The English map-user had become accustomed to seeing railways on his maps. The private surveyor’s approach of just showing a swathe of blank territory would not do. How ought a six-inch map to show railways?

If we go back to the late 1830s, it would be fair to say that there were three sorts of railways.

1. There were railways like the London & Birmingham offering a fast passenger service with a level of comfort (for 1st class) surpassing that of ‘insides’ in a stage-coach, and with separate lines of track for trains in each direction. They handled merchandise as well, but that was secondary to the coaching service.

2. There were railways like the Leicester & Swannington or the Bolton & Leigh, which were built primarily for mineral traffic but which were nevertheless public railways established by Act of Parliament. They usually carried passengers, often in a mixed train with goods, and at slow speed. They typically made do with a single line of rails.

3. Lastly there were tramways connecting collieries to staithes and suchlike. These were private undertakings not sanctioned by Parliament and they did not offer a passenger service.

The one-inch employed a ladder symbol for pukka railways and a closely-spaced pair of lines for tramways. Category (2) above must have presented problems. Initially the Leicester & Swannington was shown as a tramway, the Bolton & Leigh as a railway. This may have been occasioned by the different dates at which the respective one-inch sheets were produced, or it may have been because the Bolton & Leigh functioned as a branch of the Liverpool and Manchester, or it may indicate a genuine perplexity about where to draw the line between the two symbols. So perhaps Colby tried to ease the problem by introducing a third symbol for category (2): the single line with cross-bars.6

Perhaps definitions were produced using expressions like ‘a first-class railway will normally have two lines of track’. In consequence, the ladder symbol did not indicate two lines of track, so much as the sort of railway that would normally have two lines of track. This is evident from the depiction of stations and sidings. For example, a later generation would interpret the depiction of Patricroft (fig 8) to indicate a double-track branch line covering the short distance to an iron works with a tramway, which almost (but not quite) connects with the double-track branch. Looking at a later edition of the map suggests that what was actually

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5 These things are relative.
6 The German 25k recognised 3 categories of railway (Haupt-, Neben-, and Kleinbahn) but then confused matters with concepts such as nebenbahn-like Kleinbahnen.
there was a goods yard, one of whose sidings continued across the road to link with the iron works. The ‘double-track branch’ should be understood as a spur which indicates a goods yard. The double-track symbol is not used because there were two parallel sidings but because they were part of a Class-1 railway.

One finds the same phenomenon sometimes in Yorkshire. At Durnford Bridge, figure 9 appears to show a very short double-track railway which crosses the main line.7 Again it is necessary to go to a later edition for clarification, where we find a goods yard each side of the railway line. Figure 10 shows the goods station at Manchester with tracks set at right-angles, reached by turn-plates. There are two double-track symbols side by side merely because that was the number the engraver needed to fill the space. In this case we can look at the contemporary Town Scale to see that there were actually six. There were also four tracks through the station, even though just one double-track symbol appears on the map.

By the time that Edinburghshire had been started in 1850, depiction had switched to something akin to later practice: all tracks are shown; the double-track symbol is predominantly used for running lines; other lines are usually shown with cross-bars but sometimes lack them where they might clutter the map. Railway tracks without their cross-bars are indistinguishable from fences, unless one traces them until they become unambiguous. The resulting confusion affected draughtsmen as well as map-users: sometimes what starts out as a railway track turns into a fence. Confusion sometimes led to generally erroneous representation, as can be seen if one compares the western approach to Edinburgh Waverley on Edinburghshire sheet 2 with the contemporary 1:1056.

This of course poses the question of when (or where) the change in convention occurred. Can one state that the whole of Lancashire and Yorkshire originally followed the early convention? One might suppose that the question could be answered by looking for examples where single-track and double-track symbols appear alongside one another, as in fig 11: surely that indicates the ‘modern’ convention was being followed? Not necessarily. At Newton Junction, a railway of single-track type comes in from the north-west to join a triangular

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7 Note the narrower gauge of the symbol. This appears to be associated with subsidiary features like goods yards, but I cannot present sufficient evidence at present.
junction of ‘pukka’ railways. All the single-track ‘sidings’ are connected to the former. Whether they were really exchange sidings or whether the surveyor was trying to draw the map in a manner as close to the ‘modern’ style as the Lancashire rules allowed, one cannot tell. The other problem is that the six-inch map was subject to revision, and alterations to railways might be drawn in ‘modern’ style. Thus the exercise postulated would have to be conducted using a set of six-inch maps in their original states.

**Tramways**

The division between tramways and the second class of railways seems to have been more fluid than the definitions above might suggest. It was also perhaps less controversial. In Lancashire one finds at least one instance of the single-line symbol annotated ‘Tram Road’: should this be regarded as a last-minute correction? As the century progressed, the practice of distinguishing public from private railways was abandoned altogether.

At Walton Junction, in Liverpool, the Lancashire & Yorkshire had an engine shed with a triangle for turning engines. The draughtsman evidently wanted to show it as a triangle rather than as some sort of generalised spur, but to show it as a double-track triangle was nonsensical, so he narrowed the double-track symbol and omitted the cross-bars. Was he declaring it to be a tramway? Treating it as such was perhaps permissible and provided a fairer picture of what was to be seen on the ground than any other option, but it nevertheless shows how impracticable the official policy could be.

The tramway symbol took up more space than the single-line symbol; it was therefore necessary to simplify track layouts, even when policy for other railways was to show every track. One can see this in figures 12 and 13 where the six-inch and Town scales are compared. The generalisation appears competent, although the turn-plate without its side connection looks odd. Elsewhere on that same tramway one finds a pair of parallel tracks represented on the six-inch as a single track: two parallel tramway symbols took up too much space.

*Figure 12 (left). Fisherrow (Edinburghshire. 3, published 1854)*

*Figure 13. Fisherrow (1:1056)*
Conclusion

The most important point to emerge from this short study is that depiction on the six-inch follows different principles up to about 1850; after that, it attempts to show every track (albeit only selected cross-overs) until 1888; from 1889 generalisation is introduced again. There is scope for a lot more work to refine details. This will be greatly facilitated when the NLS scanning of Town Scales reaches Lancashire and Yorkshire but it will still be necessary to use original states of six-inch sheets for these comparisons.

Appendix: Some examples of outright errors on the six-inch.

1. At Doune (Perthshire 125, published 1866) the track next to the station’s only platform appears to be a siding; there is also a very short passing loop just east of the station. Comparison with the 1:2500 shows that the apparent siding is actually a through track, and forms part of a much longer passing loop.

2. At Perth (Perthshire 98, published 1866) the large goods shed between St Leonard’s Bank and the Dundee line is bounded north by a single transverse line, and south by a double transverse line. Their significance is unclear from the six-inch. Inspection of the 1:500 shows that both of these represent a single transverse track, linked in by turntables. The northern one might be regarded merely as poor draughtsmanship: without crossbars or turntables, one has no idea what the line represents; but the southern one can only indicate a misunderstanding by draughtsman or engraver.

3. At Paisley (Renfrewshire 12, published 1864) the sidings west of the station, and perhaps to be understood as a coal depot in view of the lettering above them, are drawn with several crossovers that are most unlikely to have been approved by the Railway Inspectorate, involving facing points leading from a running line straight into a siding. Comparison with the 1:2500 shows that this is another case where the depiction of a track by a pair of lines at the larger scale has confused the draughtsman or engraver. What has happened here (multiple times) is that a crossover to an adjoining track has been drawn at the six-inch scale as though it led to the next track but one.

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