

'Candidate main roads of England and Wales, c. 1680 GIS shapefile documentation' by Max Satchell and Alan Rosevear

1680roads.shp

Network analysis ready shapefile of 8041 polylines representing 20932.8 miles of as "candidate main roads" c. 1680. The work to create this dataset was funded by grants from the NSF Modelling the Transport Revolution and the Industrial Revolution in England (SES-1260699) and the Leverhulme Trust Transport and Urbanization c.1670-1911 (RPG2013-093).

Identifying and mapping the main roads of England and Wales c.1680 is no easy task. In terms of cartographic sources, the national road network is hardly depicted at all, and certainly not with any accuracy, until John Ogilby published *Britannia*, his atlas of "principal roads" of England and Wales in 1675. While Delano-Smith and others have questioned the degree to which Ogilby's roads represented major routes, work by Satchell using a wide range of evidence for road transport has shown that most roads he mapped were important.¹ With the exception of Ogilby, different classes of roads were not mapped with any degree of consistency until the late eighteenth century by which time the network was fundamentally different. Ogilby's Atlas consisted of strip maps at 1:63360 scale of 85 routes on 100 copper plates which surveyed and mapped over 7500 miles of road. Despite the significance of Ogilby, hitherto his atlas has remained largely the preserve of the cartographic historian. This GIS contains two distinct elements: a digitisation of some 7,493 miles of road which derive from the strip maps of Ogilby's atlas and 13439.8 miles of other roads which derive from a variety of other sources.

The Ogilby digitisation was created as follows. In 2012 under an earlier grant, Satchell had identified as a digitisation source O.G.S. Crawford's mapping of Ogilby roads in his *A Map of XVII Century England*. This was then digitised and a handful of omissions added. However, the 1:1,000,000 scale of Crawford's map meant that the polylines digitised might be up to 1km out of alignment. This degree of inaccuracy is too great for some sorts of spatial analysis so in 2014 a more accurate version of Ogilby was begun using the Crawford derived GIS as a guide. This was made practicable by access to the unpublished work of others scholars who had invested thousands of hours in working on particular sections of Ogilby. The GIS that resulted would not have been possible without permission to use the unpublished marked up paper maps of the late Gordon Dickinson (4700 miles), and Derek Bissell (331 miles - Wales and the borders). Use was also made of the maps in the doctoral thesis of Andrew Jones (Yorkshire) and data from online resources created by Jean and Martin Norgate (Hampshire). The Dickinson section of the GIS was processed with the able assistance of Spike Gibbs who scanned 5303 pages of maps and notes, who under the supervision of Satchell rectified the

¹ C. Delano-Smith, 'Milieus of Mobility' in *Cartographies of Travel and Imagination*, ed. J. R. Akerman (London, 2006), pp. 16-96: 51; M. Satchell, 'Identifying the Trunk Roads of Early Modern England and Wales' Working paper, 2017: <https://www.campop.geog.cam.ac.uk/research/projects/transport/trunkroadspaper.pdf>

paper maps and digitised the Ogilby road network from them. The remainder of the network was digitised by Satchell. To ensure congruency with other datasets this was done using a pre-existing GIS of turnpike roads - where the Ogilby roads and the turnpikes coincided the turnpike polylines were recycled to form part of the Ogilby GIS. Some errors identified by Alan Rosevear were corrected and ferry crossings added.

It was clear from the outset that the network of main roads was larger than what was represented by Ogilby's roads alone. A second class of roads were created to fill this gap. They were not added randomly but were used to link settlements with significant evidence of road travel/ connectivity apparent from their provision of spare stabling given in a military survey of 1686. This comprehensive survey gives counts of spare beds and stables for some 11,000 separate locations in England and Wales. Max Satchell had identified the potential of this source and Jacob Field had ably transcribed it and linked to a parish polygon GIS. As initially conceived by Dan Bogart and Edvard Alvarez a threshold of 50 or more stables per parish was set, and a trial network constructed programmatically that connected the centroids of those parish polygons with 50+ stables by straight polylines to the nearest section of Ogilby road.

This approach was subsequently refined in three ways. First, Alan Rosevear advised that the threshold for a settlement to be added to the dataset should be reduced to 15 spare stables as this number reasonably well represented the number of horses in a single packhorse gang engaged in long-distance travel in this period. This increased the number of places that needed to be connected by the network to c. 1,350. Second, it was decided to replace the parish centroids with the actual location of settlements. The parish centroids were replaced by settlements in part recycling material from the project's towns dataset with Alan Rosevear adding the remaining settlements. Third, the straight polylines were to be replaced with actual roads digitised from a variety of sources. Of these, the most important were turnpike roads. Earlier Dan Bogart had identified the wording of the titles of the acts of turnpike trusts as being a valuable indicator of whether a turnpike was the adoption of a pre-existing road or a newly built one and suggested that this classification should be added as a variable to the turnpike trust GIS. He had also argued that the non-Ogilby roads in the county maps by Robert Morden in the 1695 edition of Camden's *Britannia* were also a potentially useful source as were some of the early directories giving the destinations of coaches and carriers from London. Max Satchell had suggested that Roman roads which remained in use might also be a minor category of road worth considering and obtained a dataset of such roads and he offered a GIS of destinations of carriers and coaches from London listed by Robert de Laune (1691) that he had created under an earlier grant.

Alan Rosevear then took on the formidable task of systematically integrating these disparate materials to build the rest of the network. In addition to the resources suggested by Bogart and Satchell, he had already digitised routes and traffic nodes listed in directories for 1637, 1727 and 1791 and had created a shapefile of putative "Old Tracks" which included well-known ridgeways and long distance tracks, such as the Icknield Way. His method was as follows. To assist in selecting routes and interconnections from the Ogilby Roads, he displayed following additional GIS data was over the 1st edition OS 1:10,560 base map;

1. All sections of turnpike road included in Acts that did not mention “Making new” or “Diversion” in the preamble (referred to as “ancient turnpikes”)
2. Destinations in the De Laune 1681 and Carriers 1637 Directories.
3. The routes and traffic nodes listed in the Itinerary section of the 1727 Directory
4. The ARC GIS layer of Roman Roads and Old Tracks
5. The full turnpike network
6. Carrier routes listed in the 1791 Universal Directory
7. Recorded ferries (estimated to be operating ca 1700)

The additional roads were added in a hierarchy based on relevance to 1680 and an “uncertainty” value given to this road as a 1680 road based on the coding below (see table 1). Roads were added until a minimum level of inter-connection was achieved with the “15 or more” stabling points.

The sections of “ancient turnpike”, Roman Road, Full turnpike and 1791 Directory route were copied directly from the relevant GIS layer. Where a section of road from a Morden map was needed, or no other relevant road could be found in an existing layer, a new line was drawn based on roads on the 1st edition OS.

The following criteria were adopted in drawing lines connecting points;

- The road goes through the point, connecting it with two Ogilby roads (i.e. it is on a route not normally a terminus except at coasts, major river crossings or moorland where no obvious trace remains on the OS map)
- Features are regarded as relevant if they are within 10 miles of each other in lowland areas and 15 miles in (sparsely populated) upland areas.
- Two stabling points on Ogilby roads may be joined if secondary evidence for a route
- Roads may be added if two secondary features occur (secondary features include smaller stabling (between 12 and 14), a de Laune destination, a 1727 transport node, a 1727 route, a 1791 Traffic route)
- Sections of Roman Roads may be added, even when not turnpiked, when the road has survived in use to be mapped by the OS. Where stabling is listed next to an old ferry it is assumed the route used the ferry
- Since the stabling is a parish-based dataset, it is sufficient for the road to pass through any part of the parish (including acting as a boundary line).
- Routes were chosen which were consistent with those in the 1727 Directory Itinerary
- If an Ogilby road exists between two points no other parallel route is drawn (i.e. ancient turnpike option not added)
- Where a ferry occurs between two points, this route is favoured.

Table 1: Uncertainty Code Hierarchy

Code	Source	Note	% of network
0	Ogilby Road	The base framework	37.817
10	Ancient turnpike – short link		0.004
11	Ancient turnpike – more than		0.109

	one stabling point		
12	Ancient turnpike – one stabling point		43.806
13 & 14	Ancient turnpike – one stabling point – long road		0.359
15	Ancient turnpike – one stabling point but off road		0.114
16	Ancient turnpike with other features	E.g. Morden or Roman road or traffic terminals	2.403
20	1727 Directory Itinerary route		2.486
21	1791 Directory Itinerary route		1.027
30	Unturnpiked surviving Roman Road or track		1.569
31	Turnpike route not listed as ancient		3.197
32	terminus in 1681 Directory		0.112
33	terminus in 1637 Directory		0.077
34	terminus in 1727 Directory		0.073
36	Long route		0.036
37	Non-turnpike from Morden County map		3.188
40	Not meeting other criteria but drawn off the OS 1 st Edition to link	Mostly remote upland areas	5.552
100	Ferry		0.082

Once finished the shapefile was passed over to Eduard Alvarez who edited it to make it ready for network analysis.

To conclude - this dataset undoubtedly contains speculative elements with some categories of "evidence" being far weaker than others. This is why it is referred to as *candidate* main roads. However, it should be emphasised that analysis of Ogilby in relation to the distribution of stables, postal and carry services upholds his characterisation of the routes he mapped as principal roads, and that the most robust evidence after Ogilby is that of ancient turnpikes and it these contribute the greatest mileage to the dataset (see table 1). It is probable that further research might lead to the revision of some sections of the network but in totality, it is sound.

In addition to issues concerning the speculative nature of parts of the network there are a number of other caveats. A handful of major hubs do not have stabling above the 15 horse threshold (e.g. Coventry and Worcester – though these are on Ogilby Routes). Some northern parishes are large and so stabling may represent agglomeration of several smaller units of stabling, making the network less certain. There are several instances of stabling beside ferries on roads that were not turnpiked suggests more minor crossing points before bridges were built at one point in the 18th cent. Since stabling is the main selection criteria for points, this network is relevant for horse traffic but not necessarily for wheeled traffic. In particular

the older tracks over or down the Pennines are unlikely to be passable with anything other than pack animals.

Attributes

OBJECTID	object id
Id	1st Ogilby route ID of polyline (if any)
Id1	2nd Ogilby route ID of polyline (if any)
Id2	3rd Ogilby route ID of polyline (if any)
Id3	4th Ogilby route ID of polyline (if any)
Id4	5th Ogilby route ID of polyline (if any)
Id5	6th Ogilby route ID of polyline (if any)
Id6	7th Ogilby route ID of polyline (if any)
Type	source of Ogilby route e.g. Dickenson, Crawford etc
SOURCE	source of polyline if from a pre-existing GIS
STATUS	status of Ogilby road D = definite; U = uncertain
COMMENTS	comments
Uncertain	uncertainty code (see table 1)
Origin	source of road data e.g. Ogilby, Morden, ancient turnpike etc
NEWID	new ID
Ferry_name	name of ferry (if any)
Class	F, O, R, etc
Miles	length of polylines in miles
CATEGORY	0, 1, 2 etc

Co-ordinate system

British_National_Grid

Projection: Transverse_Mercator

False_Easting: 400000.000000

False_Northing: -100000.000000

Central_Meridian: -2.000000

Scale_Factor: 0.999601

Latitude_Of_Origin: 49.000000

Linear Unit: Meter

GCS_OSGB_1936

Datum: D_OSGB_1936

Citation guidelines

The citation in this document should be used to reference any maps and/ or data when they have been included in any essays, dissertations or other academic works. You should cite the data even if it does not appear as an image or map in your work if it has been used to generate findings or a new dataset that is used.

Citation

Satchell, M. Rosevear, A., Dickinson, G., Bogart, D., Alvarez, E., Shaw-Taylor, L., 'Candidate main roads of England and Wales, c. 1680' (2017). This dataset was created with funding from the NSF (SES-1260699) and the Leverhulme Trust (RPG2013-093). A description of the dataset can be found in Satchell, M., and Rosevear, A., 'Candidate main roads of England and Wales, c. 1680 GIS shapefile documentation' available at: <http://www.geog.cam.ac.uk/research/projects/occupations/datasets/documentation.html>

Copyright

© 2017 Max Satchell, Alan Rosevear, Dan Bogart, Leigh Shaw-Taylor.

Errors and further corrections

Collectively the research team and the scholars whose work benefited from it have contributed many thousands of hours to create this GIS and have struggled to make it as accurate as possible. However, we remain interested in refining it still further. If you spot something that is wrong with 1680s candidate mains roads GIS please email details to campop@geog.cam.ac.uk.

Sources

Delano-Smith, C., 'Milieus of Mobility' in *Cartographies of Travel and Imagination*, ed. J. R. Akerman (London, 2006), pp. 16-96

Jones, A.K., 'The maps of Yorkshire printed in the period 1577-1857 as sources of topographical information', unpublished Ph.D., University of Leeds, 1981

Pickman, C., *The tradesman's guide, or, The chapman's and traveller's best companion* (London, 1727)

Camden, W., *Britannia*, ed. W. Gibson (London, 1695)

The Universal British Directory, 8 vols (London, 1791-1798)

Ogilby, J., *Britannia* (London, 1675)

Satchell, M., 'Identifying the Trunk Roads of Early Modern England and Wales' Working paper, 2017:
<https://www.campop.geog.cam.ac.uk/research/projects/transport/trunkroadspaper.pdf>