

ArcGIS shapefile of the Steam Engines in Britain, 1706-1804

SteamEngines.shp

This point shapefile geolocates steam engines installed from 1706 to 1804 in Britain. This was funded by grants from the NSF grant (SES-1260699), Modelling the Transport Revolution and the Industrial Revolution in England, and the Leverhulme Trust grant (RPG-2013-093) Transport and Urbanization c.1670-1911. The majority of the work was executed by Max Satchell and Mike Gill with assistance from Dan Bogart.

The steam engine was the quintessential invention of the Industrial Revolution. It revolutionized mining, textile manufacturing, transportation, and many other important economic sectors. The main engine types were the Savory, the Newcomen, and the Watt, each named after their inventor.

Our goal is to identify when steam engines were installed and where. The original data for this exercise comes from Kanefsky (1979) and is described in Kanefsky and Robey (1980). The data set names the year when an engine was installed and a brief description of the location. The original data were digitized from a paper form and updated by Alesandro Nuvolari, Bart Verspagen, and Nick Von Tunzelmann (2011). We thank Nuvolari, Verspagen, and Von Tunzelmann for sharing their digitised data. The Kanefsky dataset included 2268 steam engines. We were able to match 1688 of these engines to an approximate location. The description of locations in the original Kanefsky data was not always clear and so we used the available information to best match the location. As noted below, the current list of engines linked to the GIS is the best that can be done with our current knowledge.

Method

The digitized list of engines were first checked by Micha Eversley. Under the supervision of Max Satchell, Xuesheng You and Keith Sugden did some programmatic and manual matches on the file but Mike Gill used his amazing knowledge of mining history to match the great bulk of the engines. The very variable nature of the place data means that some matches have an accuracy of within 250 metres, but others are more generalised being only a central point on the settlement associated with the engine. If the location was unclear, then no match was not made and the engine was omitted from the shapefile. There are 2268 steam engines in the digitized list and we were able to match 1688. This list of engines linked to GIS is preliminary and is the best that can be done with current knowledge.

Attribute data

<i>Field</i>	<i>Data type</i>	<i>Description</i>
FID	Object ID	Unique ID for each row in the shapefile table
Shape	Polyline	Point for location-year installation of engine
Year	Numeric	Year engines are installed
Type	String	Type of engine, (1) B & W Non Rotary= Bolton and Watt Non Rotary engine, (2) B & W Rotary= Bolton and Watt Rotary engine, (3) Bull, (4) compound, (5) High pressure, (6) Newcomen, (7) Pirate B & W= Pirate

		Bolton and Watt engine, (8) Rotary Newcomen, (9) Rotary Steam Wheel, (10) Savery Wrigley, (11) Symington, (12) Two Cylinder non comp., (13) Unknown.
County	String	Name of county where engine was installed.
Industry	String	Name of industry for engines application
Purpose	String	Purpose of engines application
Maker_s	String	Engine maker
Horse_powe	Numeric	Horse power of engine, 00=unknown
Cylinder_d	Numeric	Not sure what this is?cylinder diameter
Stroke_fe	Numeric	Not sure what this is? Cylinder stroke to the nearest foot
Location	String	Description of location given in Kanefsky
From	String	Further description of location.
Number	Numeric	Number of engines installed in location-year
Comment	String	Comment on locations etc
ID	Numeric	ID for engines database
X_COORD	Text	X coordinate
Y_COORD	Numeric	Y coordinate

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

Bogart, D, Satchell, A.E.M., Gill, M., Bottomley, S., and Shaw Taylor, L., 'Steam Engines of Britain, 1706-1804', 2017.

Sources

Kanefsky, J.W, (1979), *The diffusion of power technology in British Industry, 1760-1870*, University of Exeter, PhD thesis

Kanefsky, John, and John Robey. "Steam engines in 18th-century Britain: a quantitative assessment." *Technology and Culture* 21.2 (1980): 161-186.

Nuvolari, Alessandro, Bart Verspagen, and Nick Von Tunzelmann. "The early diffusion of the steam engine in Britain, 1700–1800: a reappraisal." *Cliometrica* 5.3 (2011): 291-321.