



MESH

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Mapping Edinburgh's Social History

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Simpson & Brown Architects
with Addyman Archaeology

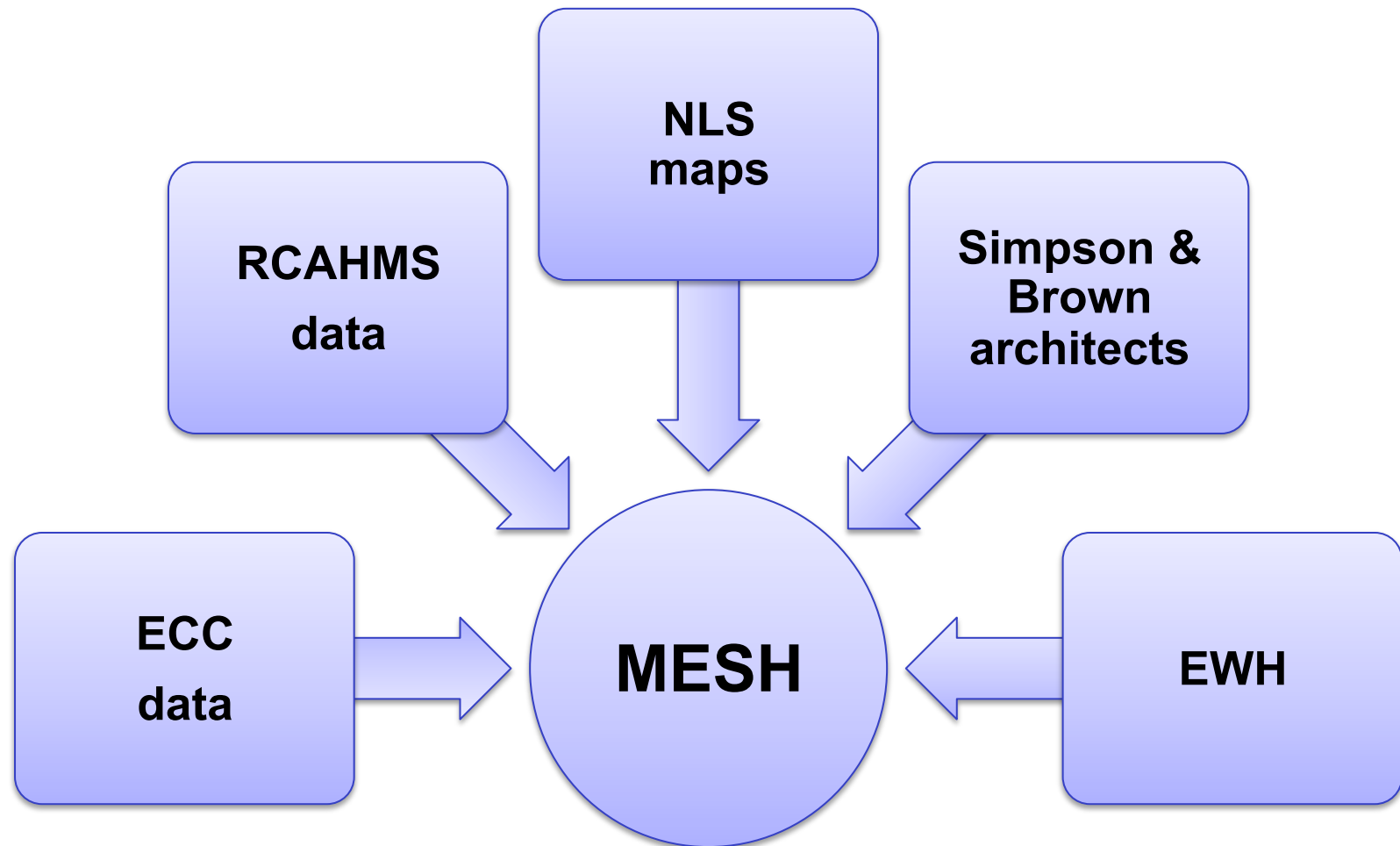
MESH objectives

- A new printed ***Atlas of Edinburgh*** 1000-2000 AD
- An **online Atlas of Edinburgh** based on new, thematic maps
- An **open digital data resource** for historians **and** the general public
- **Accessible, free online tools** to allow **anyone** to create historical maps

Atlas themes

- 1 Living and dying (population dynamics)
- 2 Making, selling and earning (local economy)
- 3 Teaching and learning (knowledge, innovation)
- 4 Worshipping (belief and belonging)
- 5 Feeding and drinking
- 6 Moving and communicating (streets, goods, utilities)
- 7 Socialising (leisure pursuits)
- 8 Managing and administering (power: the state, civil society)
- 9 Building and owning (property)
- 10 Imagining (representations)

MESH Atlas organisation



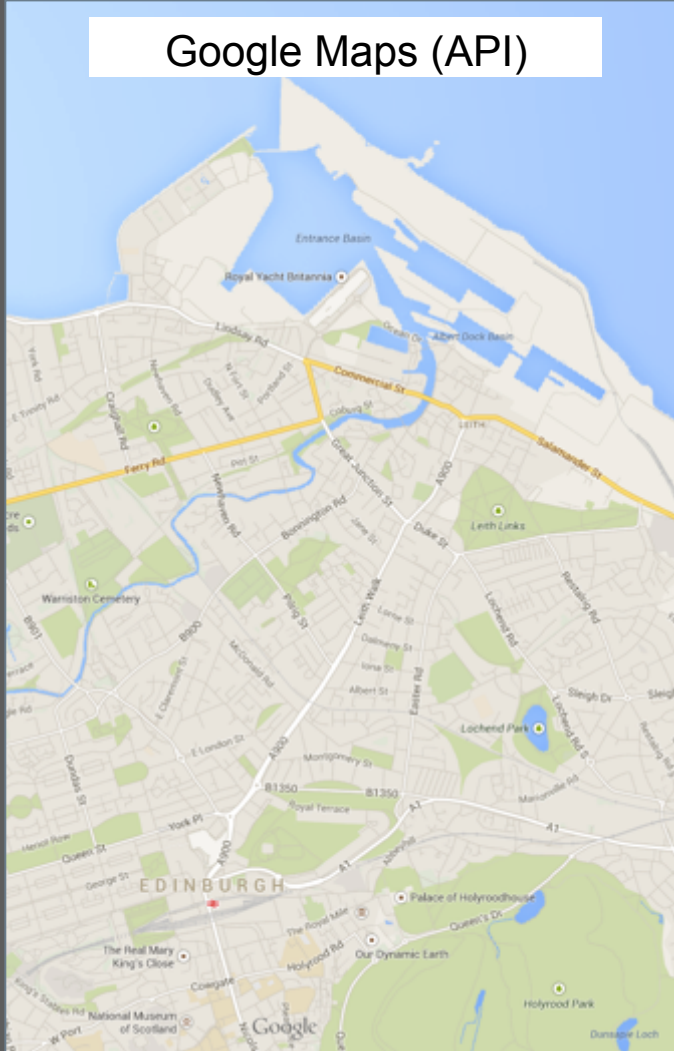
MESH constraints

- Robust historical GIS essential
- Open source tools available online as well as desktop software
- Open data
- Sustainability of at least 5 years (10 years is the goal)
Hosting provided NLS

Building the MESH HGIS

Main possible solutions to build the MESH HGIS

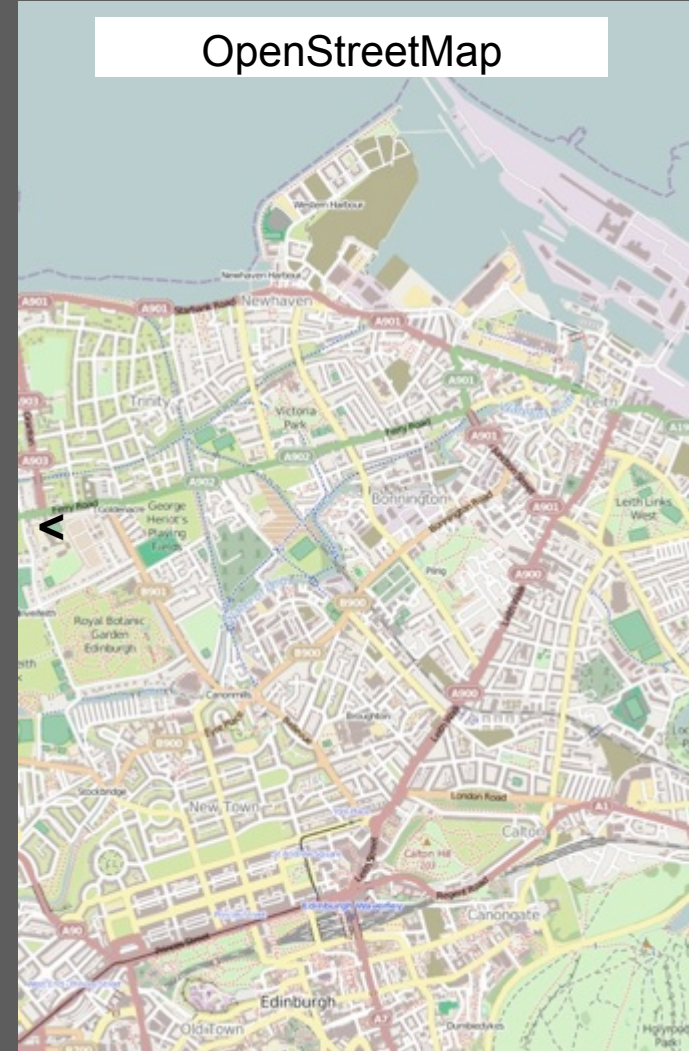
Google Maps (API)



Ordnance Survey



OpenStreetMap



Main possible solutions to build the MESH HGIS

	GOOGLE	ORDNANCE SURVEY	MAPPING FROM SCRATCH	OSM
TYPE OF DATA	Images only	Raster and Vector	Vector	Vector
COPYRIGHT	Yes	Yes	Our choice	No
OPEN LICENCE	No	Only OpenData (poor quality)	Our choice	Yes (ODbL)
DATA REDISTRIBUTION	No	No	Our choice	Yes (ODbL)
QUALITY	Relatively good (depends where)	Very good	Very poor	Good (3-5m)
DATABASE QUERY	Only through Google APIs	Yes but tools need to be developed	Yes but tools need to be developed	Yes with some already existing tools

Improvement of OpenStreetMap



State of the map, April 2014

MESH improvements to OSM



Geocoding tools

- ▶ And what about the quality of the results? (test: advocates, 1861)

Google geocoder



OSM geocoder



*City of Edinburgh
Council geocoder*



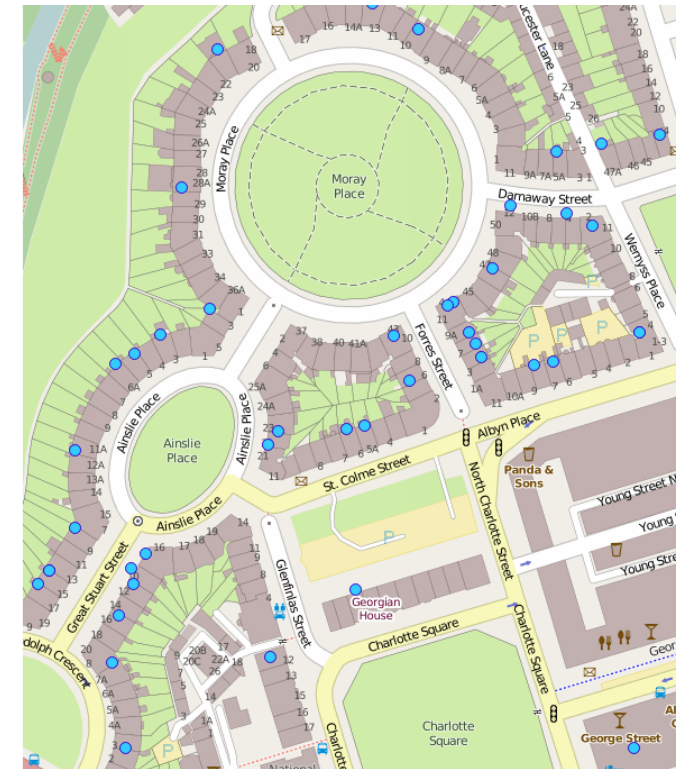
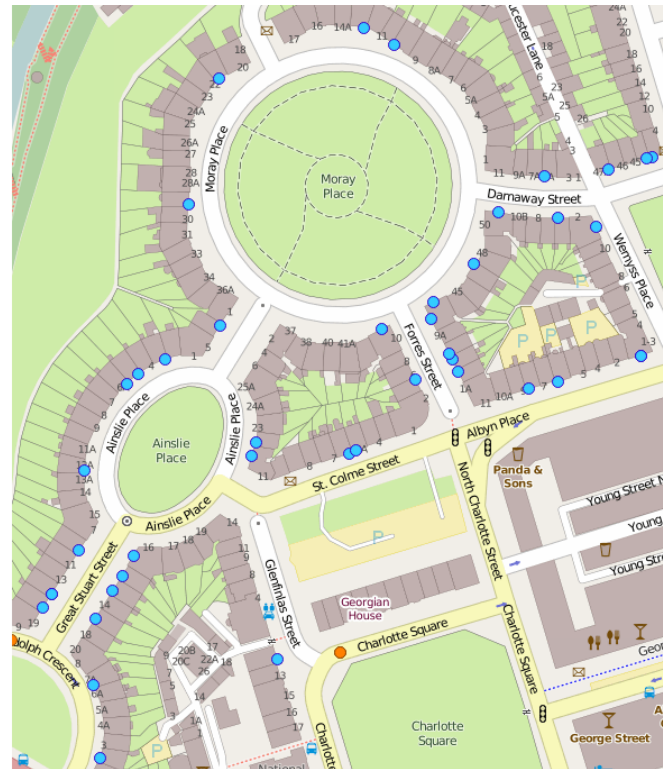
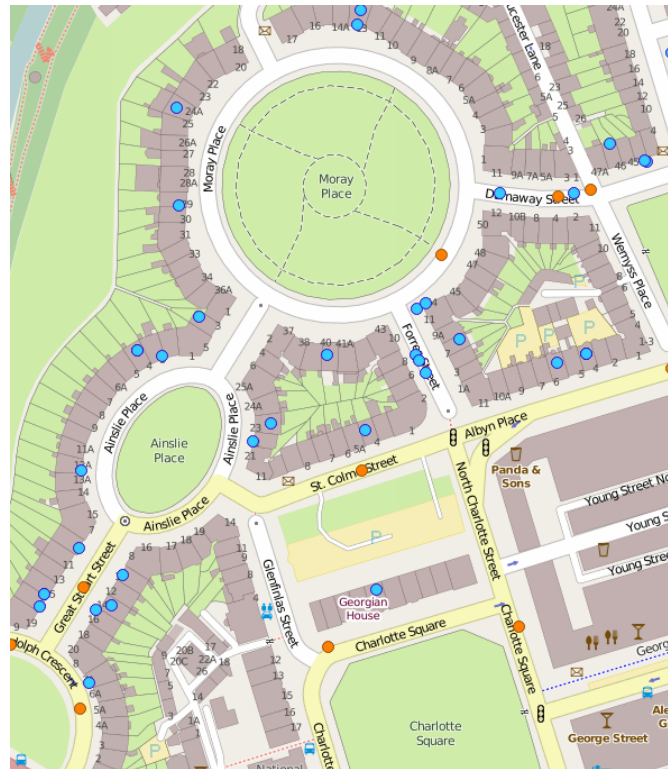
Geocoding tools

- ▶ And what about the quality of the results? (test: advocates, 1861)

Google geocoder

OSM geocoder

*City of Edinburgh
Council geocoder*



From resources to HGIS

John Wood map, 1831 (NLS)



Scottish Post Office Directories (NLS)

Aikman George merchant, Luckenbooths
Aikman Andrew shoemaker, head West-bow
Aikman Mathew hairdresser, head of James's court
Ainslie Sir Philip No 57, Queen's street
Ainslie and Cos, saddlery ware house, No 3 Prince's str
Ainslie Mrs No 6 St James's square
Ainslie Mrs stationer, No 42 south Hanover street
Ainslie Robert, Esq; W. S. No 9 north Castle street
Ainslie Mrs pastry shop, No 3 St James's square
Ainslie John land surveyor

↓
Georeferencing (image)
and
Vectorisation (DB)

↓
Optical Character Recognition (OCR)
and
Geocoding

↓
Historical Geographic Information System

Resources: historical maps

National Library of Scotland

John Wood map, 1831



OS town plan, 1876-1877



OS town plan, 1893-1894



Bartholomew plan, 1912



Bartholomew plan, 1919



Bartholomew Post Office map,
1939-1940

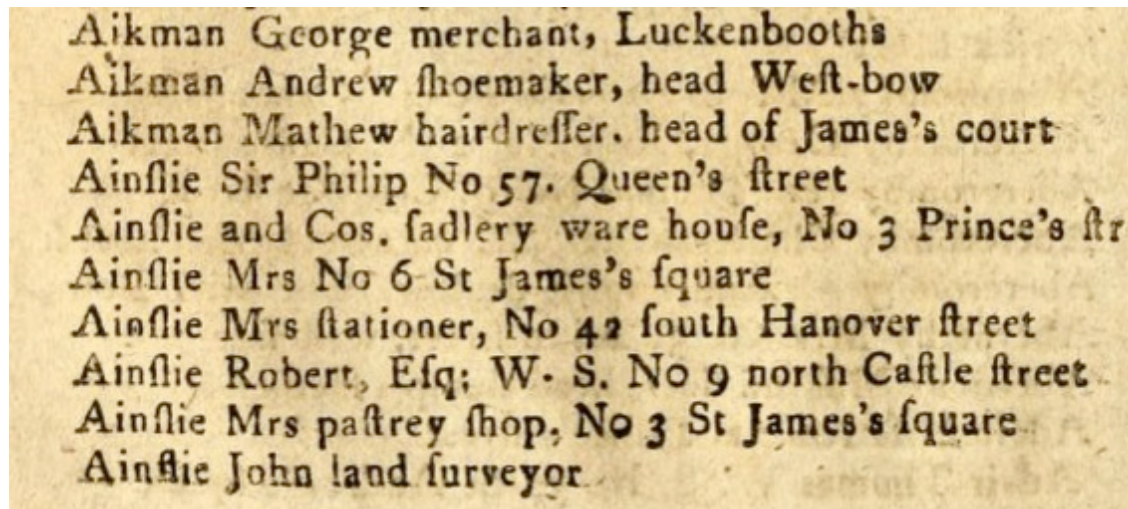
Resources: historical maps

National Library of Scotland: maps comparison



Other resources

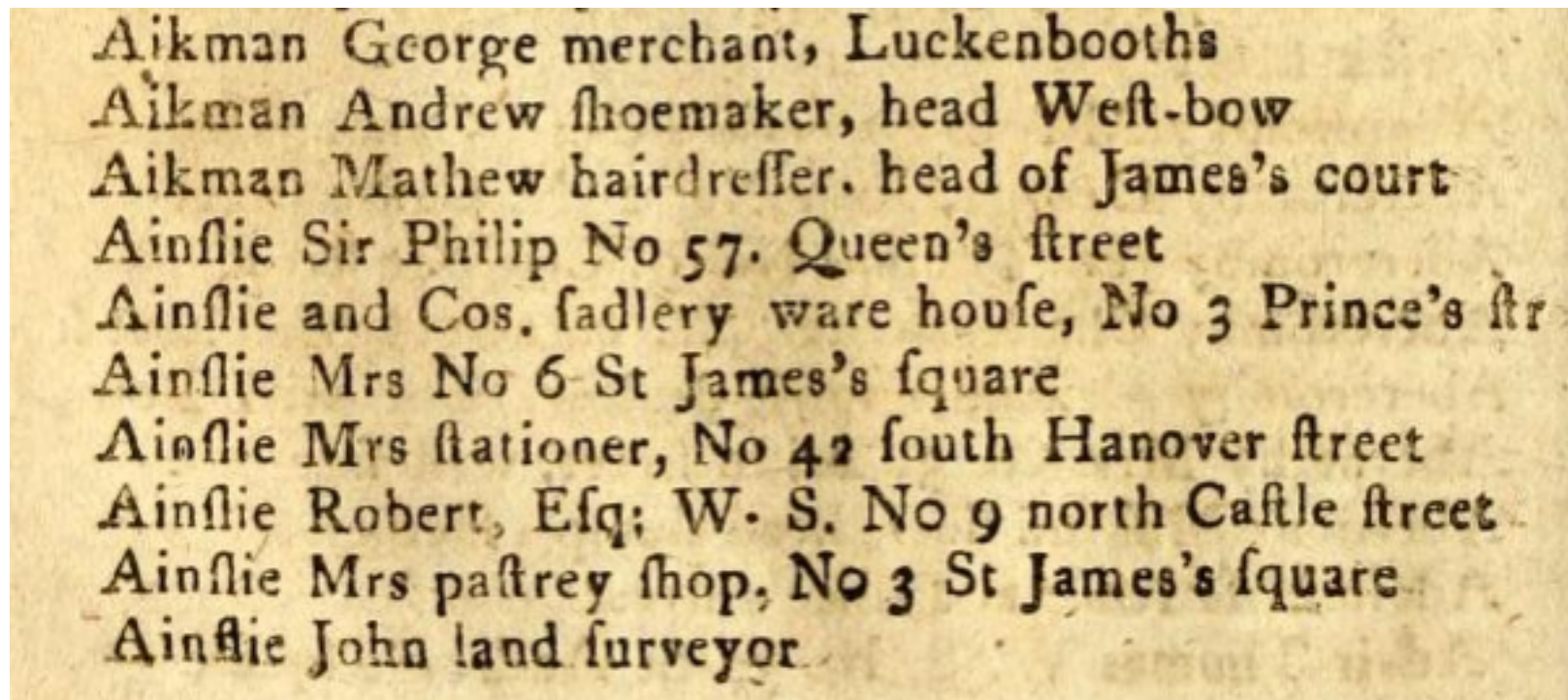
- Data from the Archives
- Example: Scottish Post Office Directories (NLS) – around 130 in Edinburgh



- From academic: books, articles, etc.
- Other sources, e.g. census data

From resources to HGIS: OCR

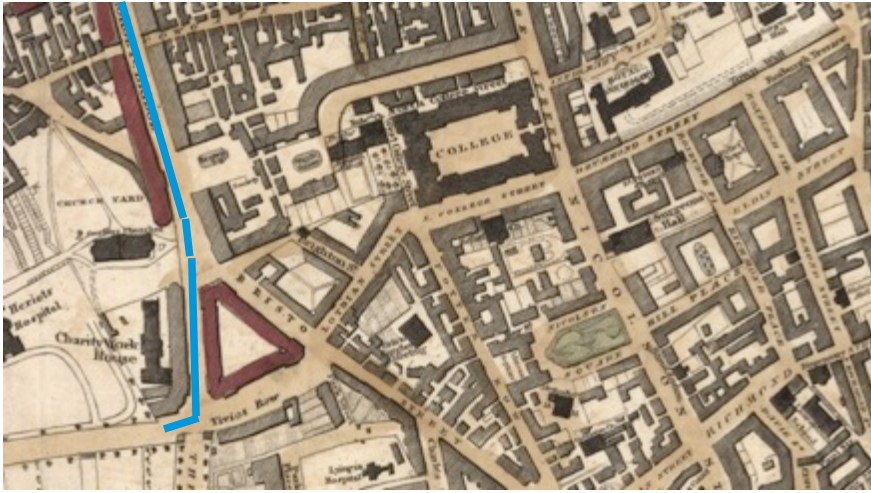
- Problems with the OCR: old typography, quality of the resources, old letters (e.g. 'f'treet > street), etc.



Scottish Post Office Directories (NLS)

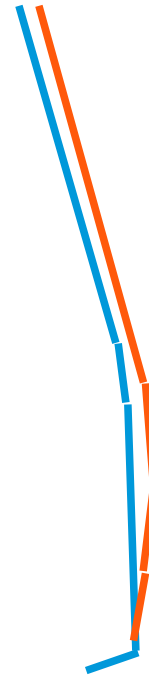
From resources to HGIS: vectorisation

John Wood map, 1831



Bartholomew plan, 1912

Superimposition...



Mapping Framework

1647 Gordon

1765 Edgar

1780 John Ainslie

1817 Robert Kirkwood

1849 OS

1876 OS

1893 OS

1910 Johnston PO

1939 Bartholomew PO

1947 OS

2012 Open Street Maps

From resources to HGIS: vectorisation



Outputs of the project

- Historical frameworks and tools to display it on top of a server



- Database of addresses (current and historical) and tools to geocode these addresses
- Historical layers including many boundaries
- All outputs will be under Open Data Commons Open Database License (OdbL) – Attribution and Share-Alike for Data/Databases

Geocoding

- Geocoding at a house number level in Edinburgh possible until 1811 (nearly the same numbers)



Robert Kirkwood map (1817)

- Before 1800, geocoding at a street level

First MESH results

Evolution of the Edinburgh markets (1477-1825), Michael Lynch

Mapping Edinburgh's Social History – Evolution of the markets (1477-1825)

John Ainslie (1804)

Markets 1477



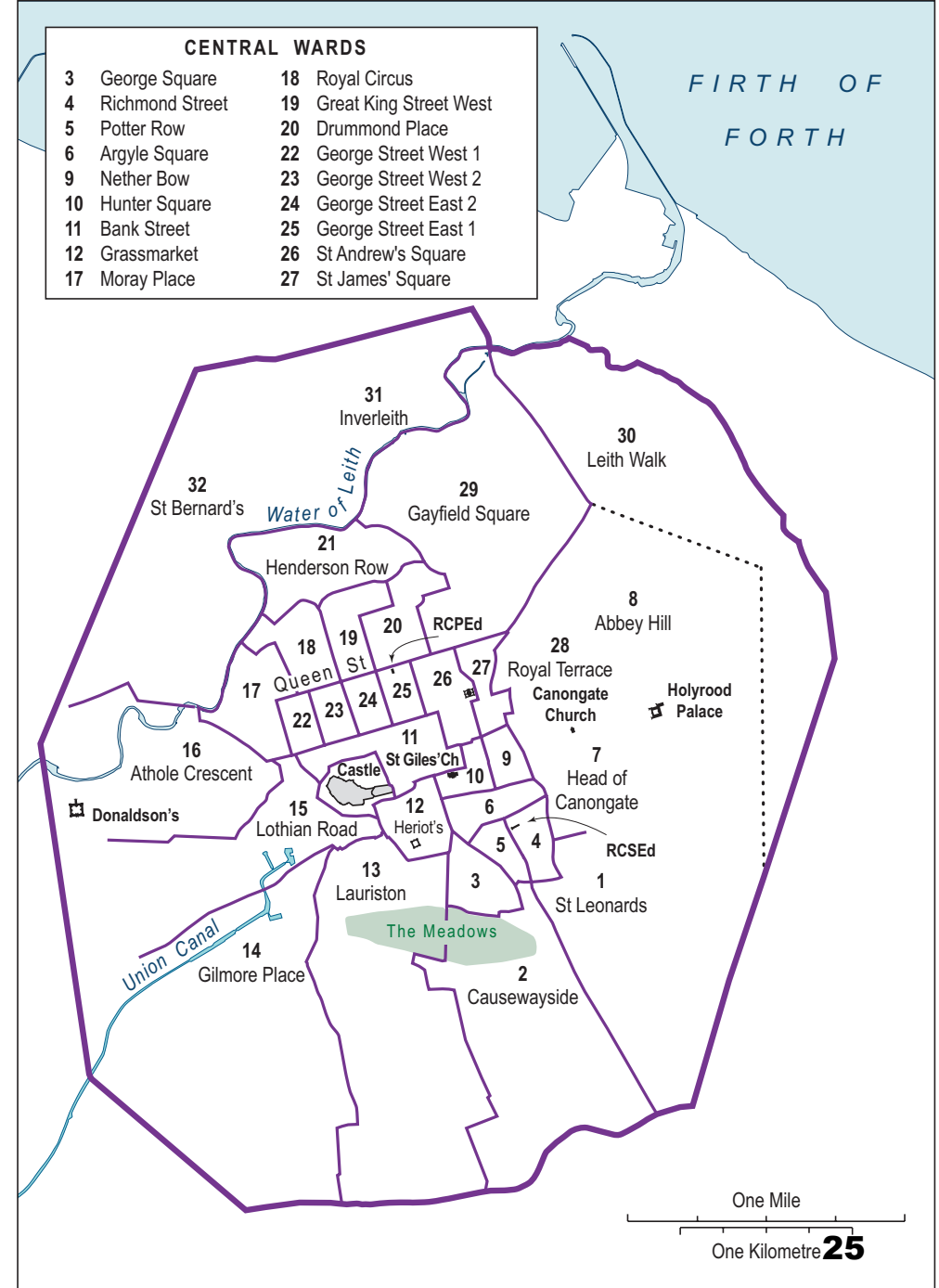
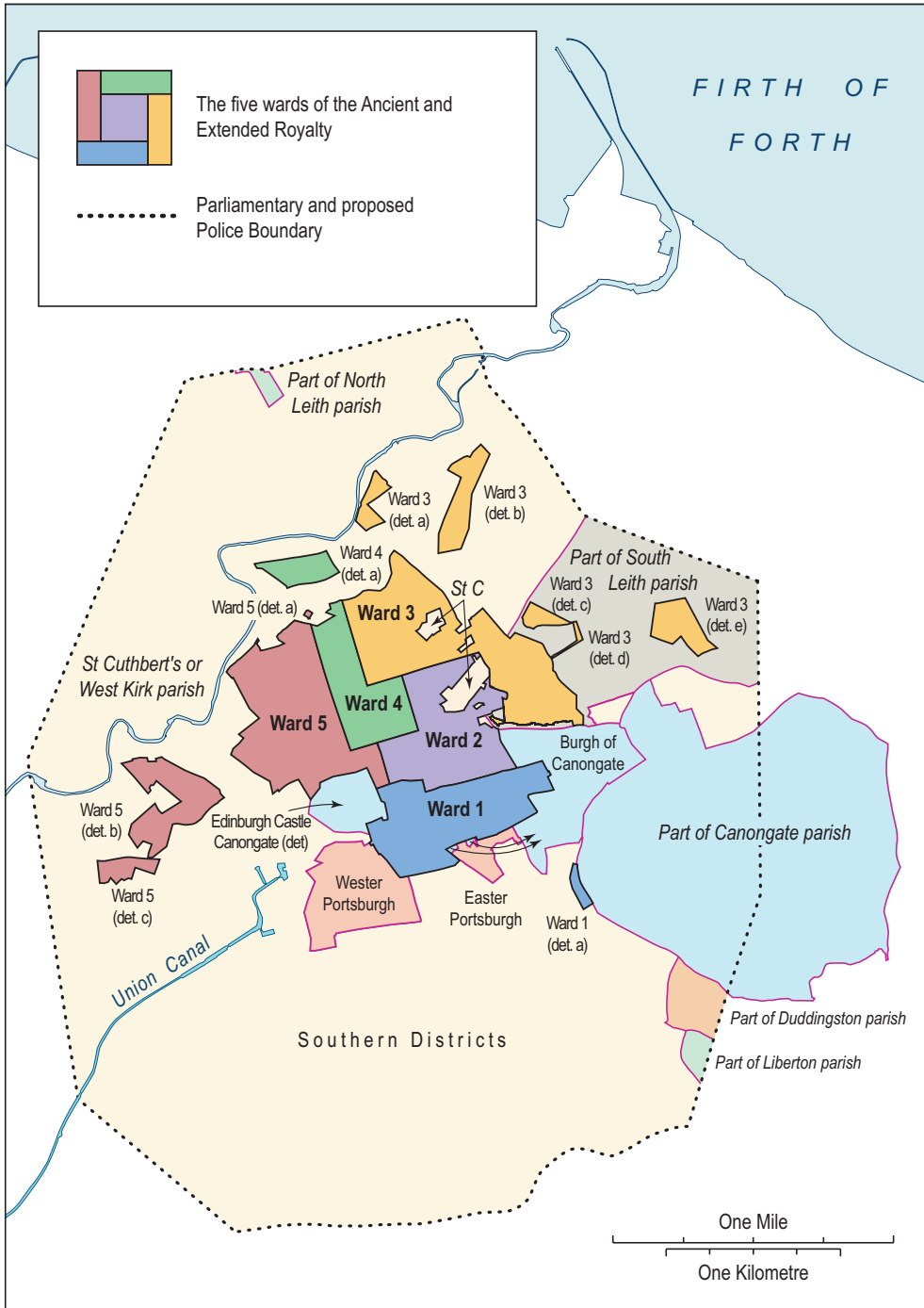
Markets 1650



Markets 1785

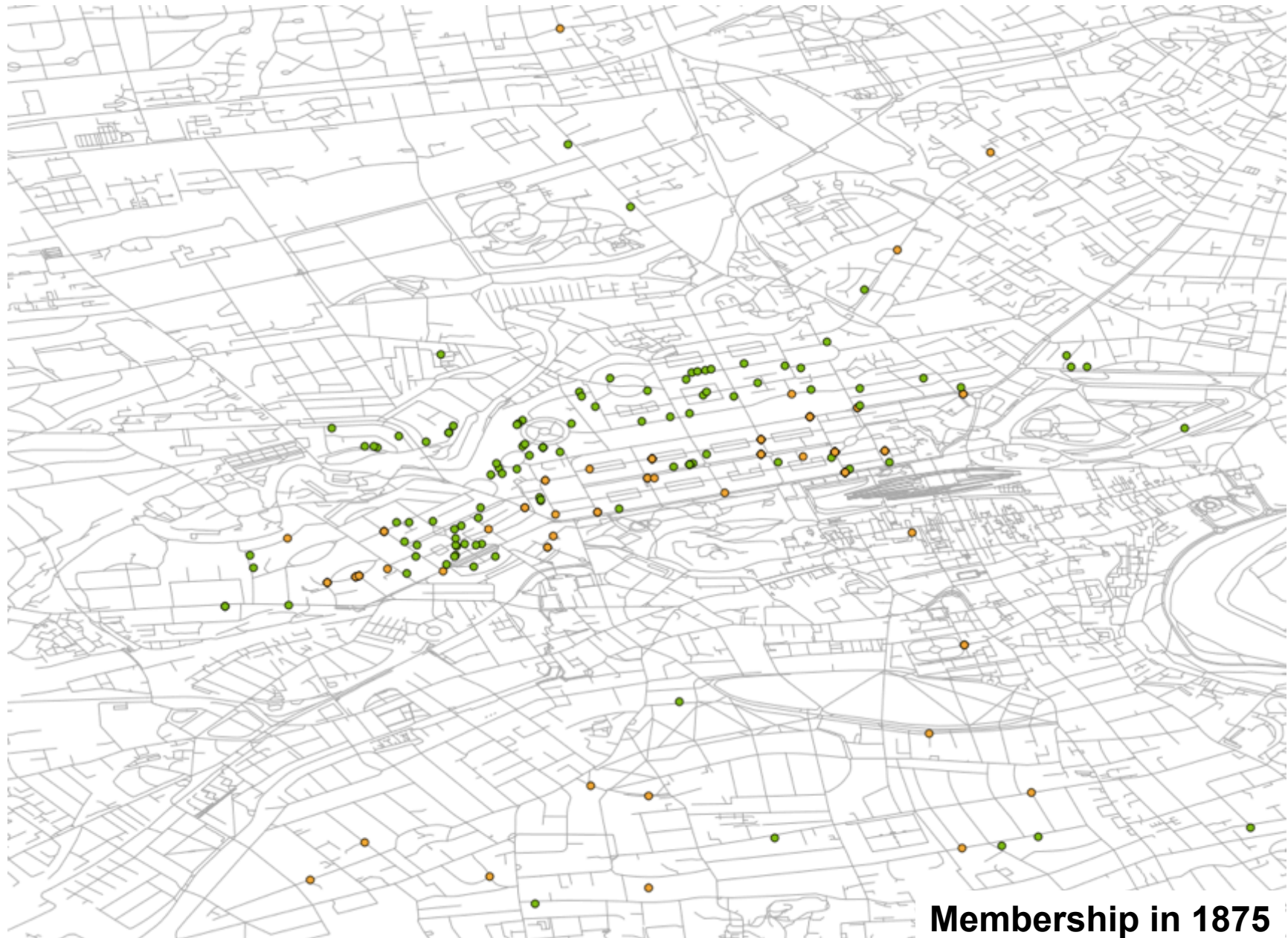
Markets 1825

Boundary Complexities before 1856

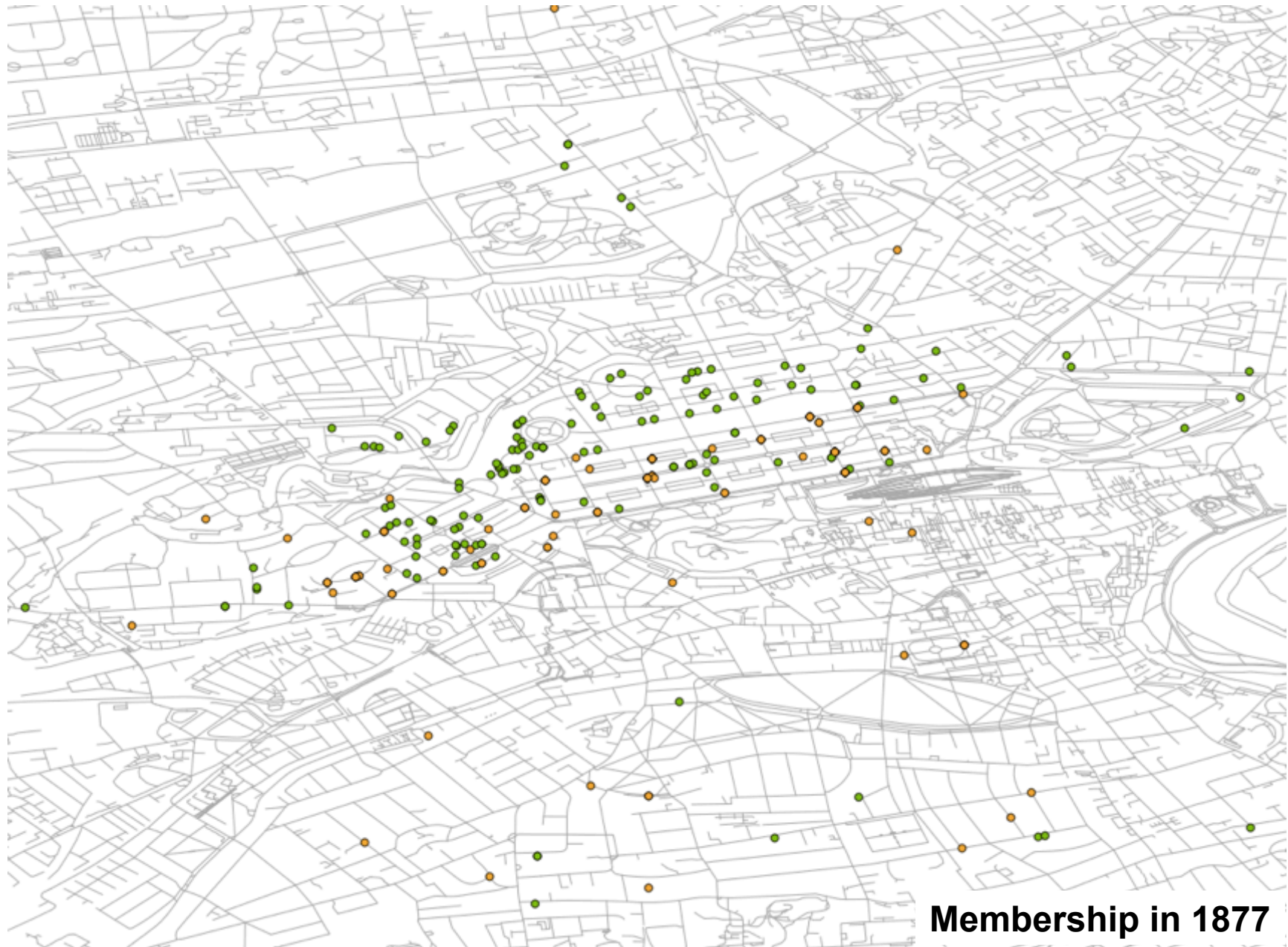


Examples

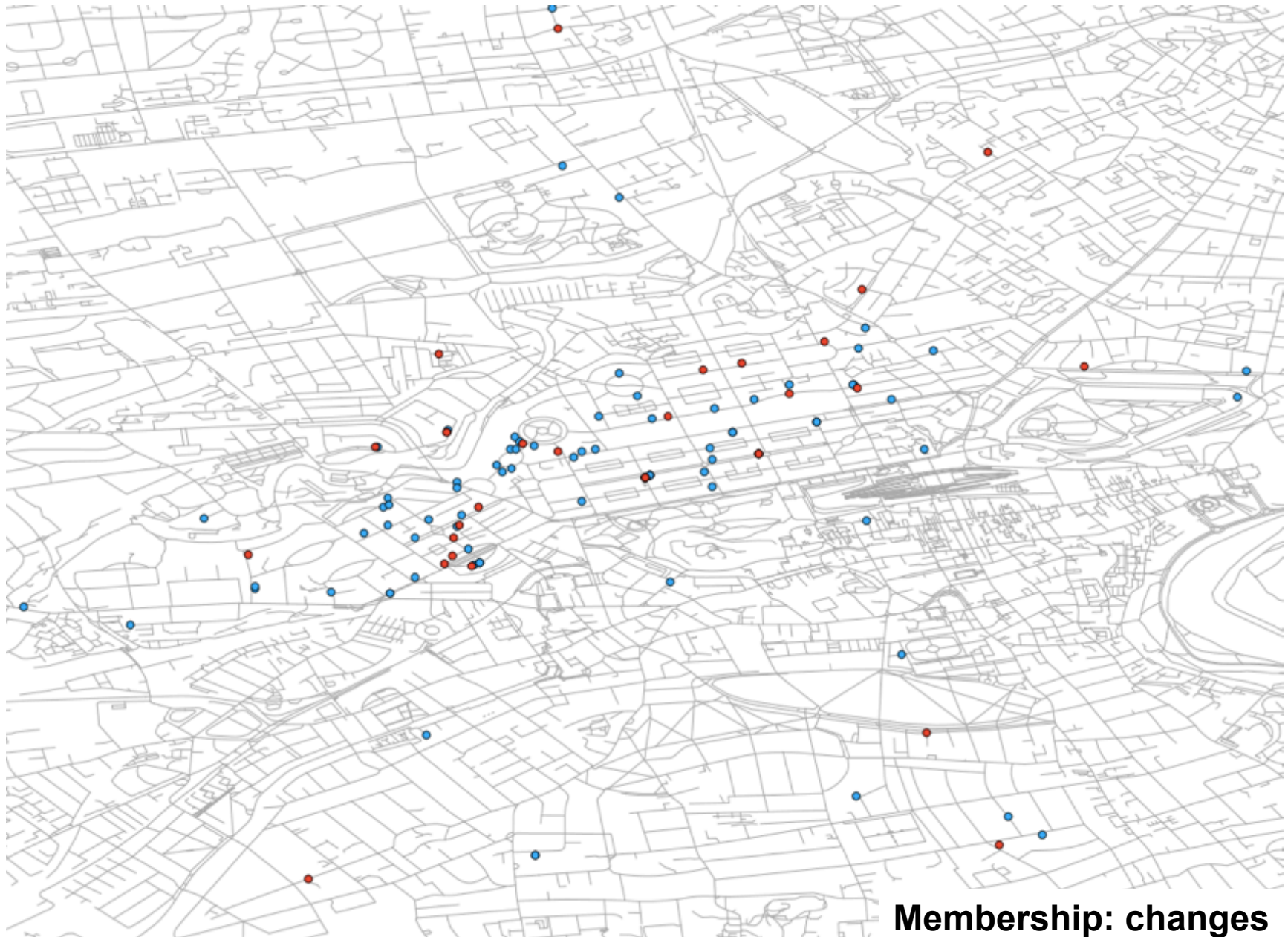
Mapping examples



Mapping examples



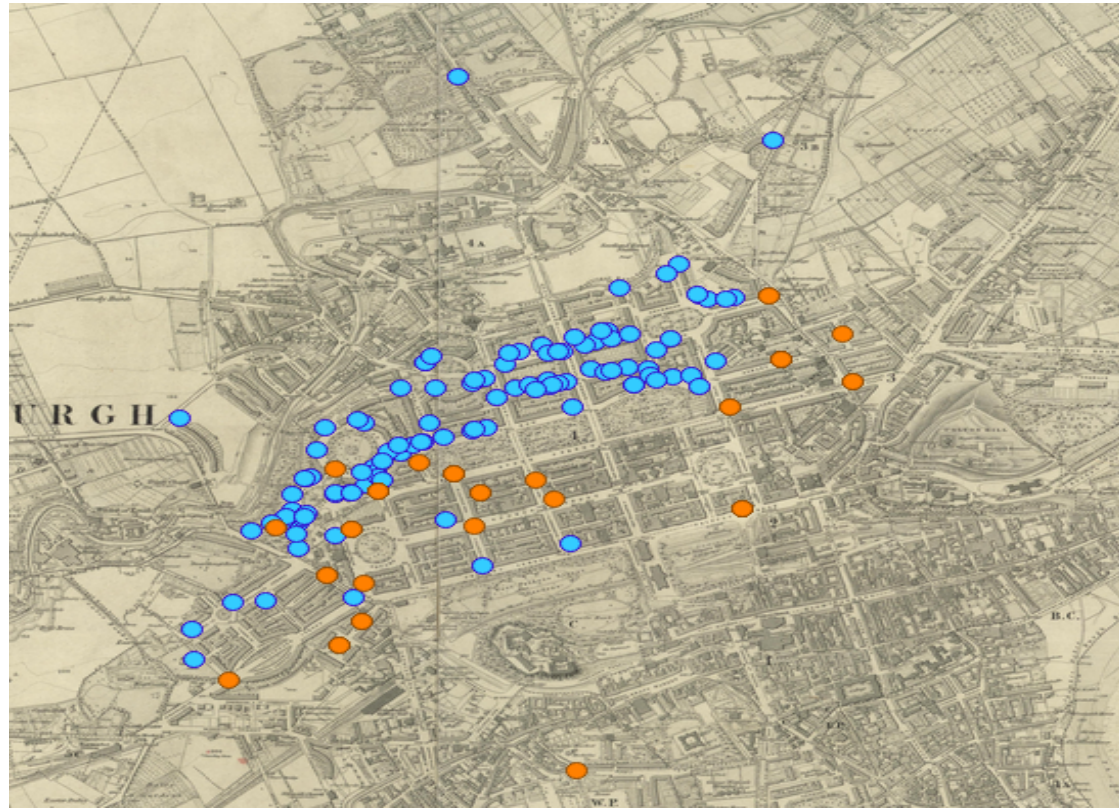
Mapping examples



Use cases

Use case 1: geocoding data using addresses

- Advocates in Edinburgh, 1861

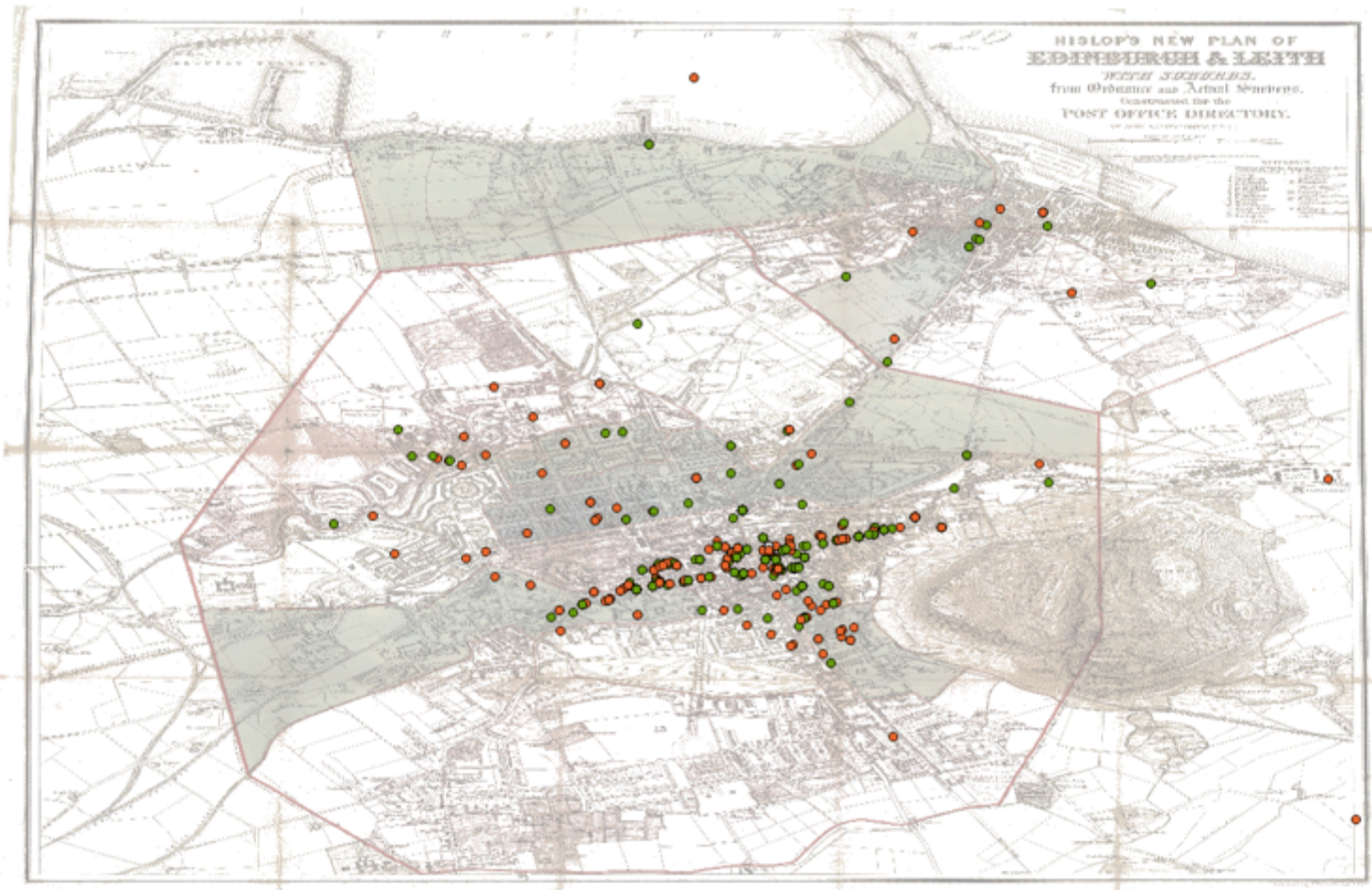


<http://www.mesh.ed.ac.uk/meeting/geocoder-comparison2/>

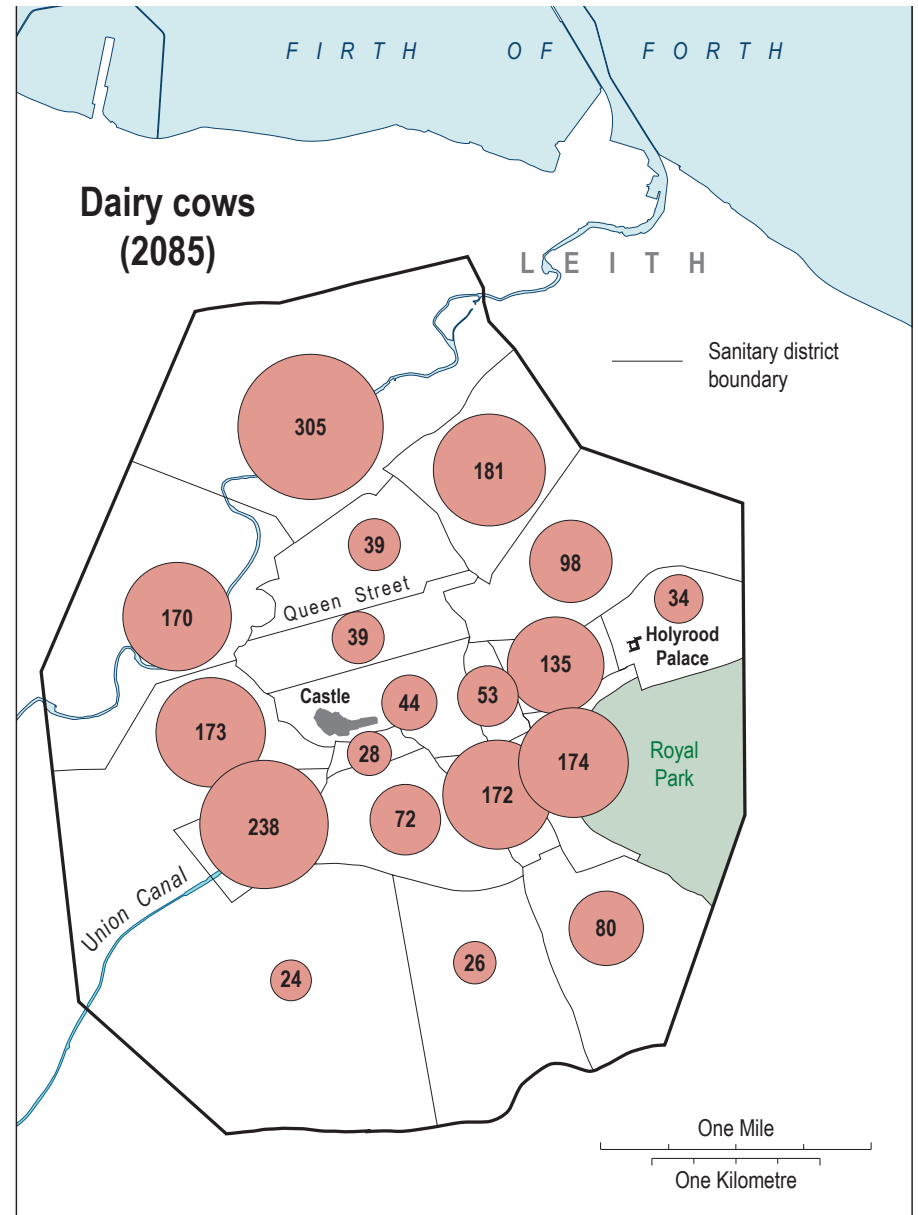
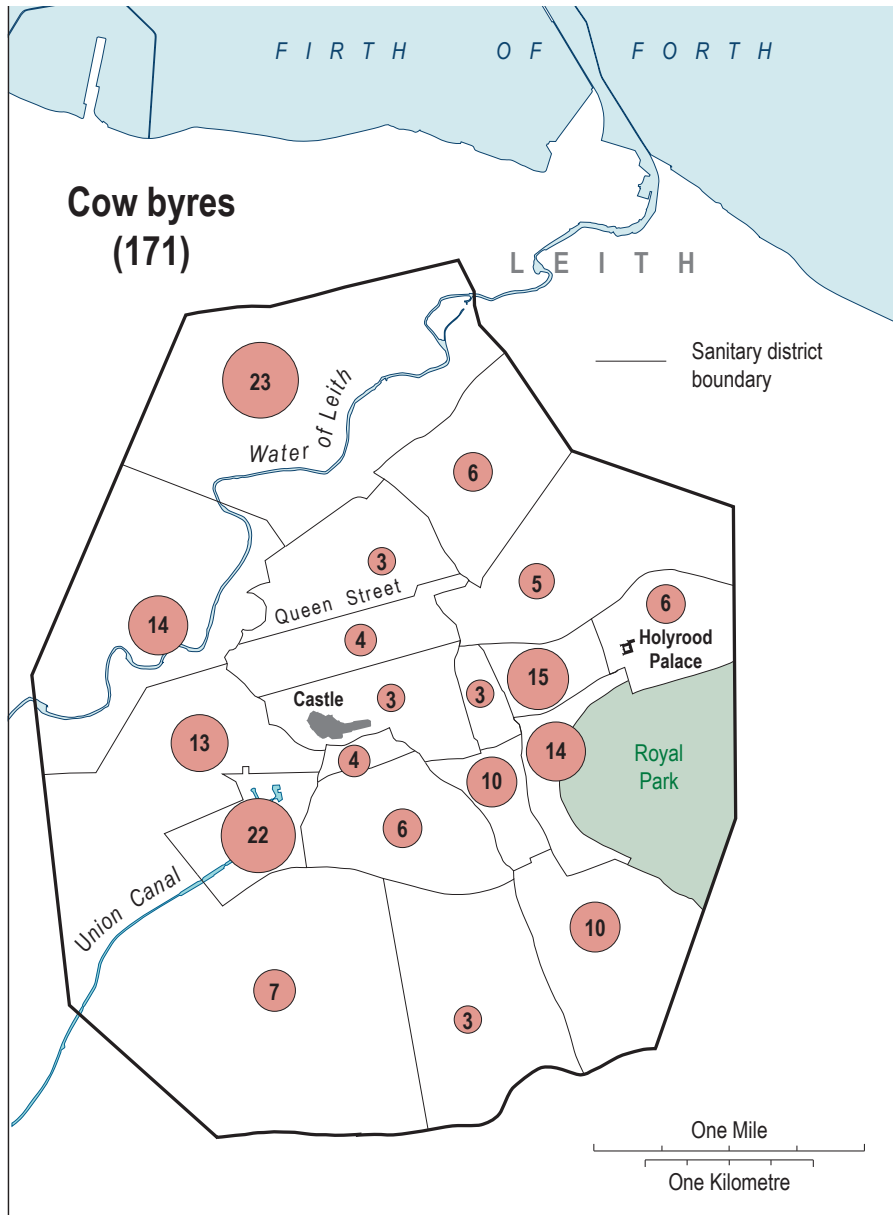
Use cases

Use case 2: display data using a classification

Example of the cholera patients



Using Boundaries



Edinburgh Byres and Dairy Cows 1864 (sanitary districts)

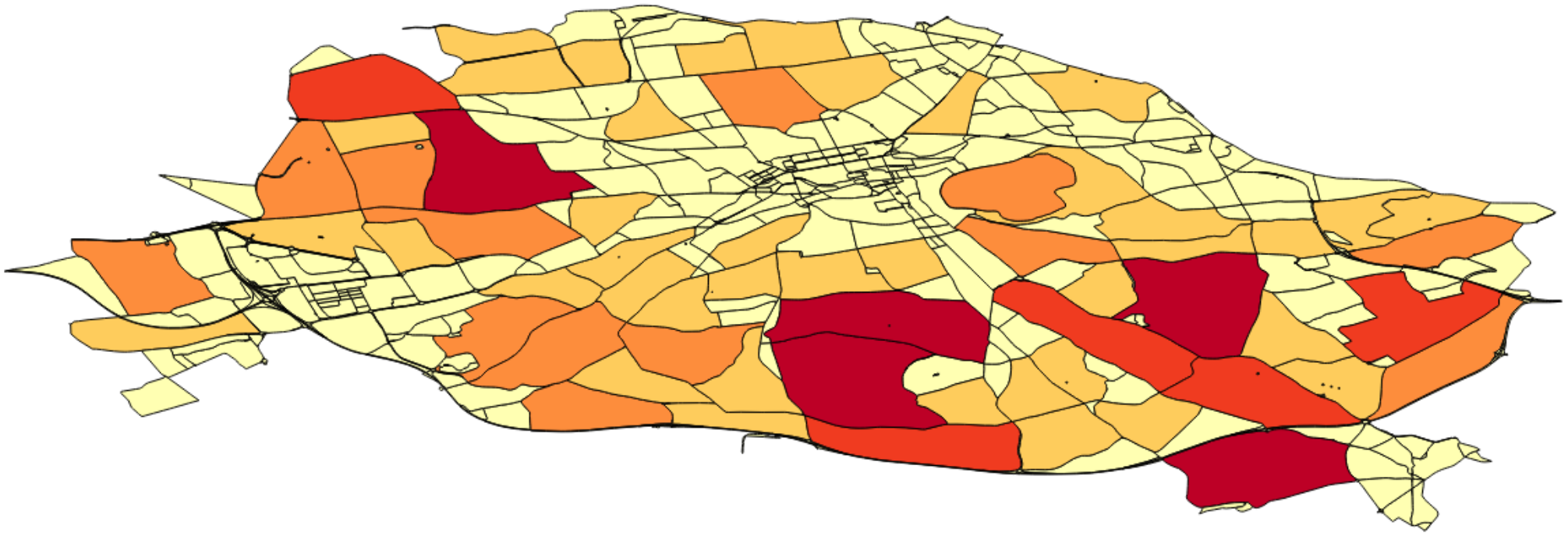
Use cases

Use case 3: compute statistics and map it

- Statistics can be:
 - the areas of some boundaries,
 - the number of individuals in a given boundary,
 - the average of this number,
 - their density,
 - etc.
- In what format? Text, spreadsheet, spatial file, etc.

Use cases

Use case 3: compute statistics and map it



Use cases

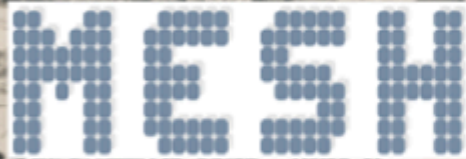
Use case 4: cross analysis

- Examples:
 - What are the urban blocks in Edinburgh containing at least 1 shoemaker, 2 smiths and 3 bakers?
 - What is the distance between an individual and the sea front, or between some patients and the closest hospital?

Use cases

Use case 5: pick up some data, display it and play with it

- Choose an historical framework to display as background
- Choose one or more boundaries available online
- Choose one or more historical data available online
- Choose the legend you want
- Add some of you data, spatial or not (if not, use the geocoding tool)
- Do the computation you want
- Play with it, export it in any spatial format to be able to use offline or just print your map



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Mapping Edinburgh's Social History

Mapping Edinburgh's Social History (MESH) is an AHRC funded project which will provide, and facilitate, new visions of historical space. The project team will deploy digital technologies to develop new types of historical maps based on social, cultural, political, religious, military, environmental, architectural and economic information.



Arts & Humanities Research Council

• EDINBURGH •
THE CITY OF EDINBURGH COUNCIL



Simpson & Brown Architects
with Addyman Archaeology