Designing a Knowledge Base to Research the History and Geography of the UK Museums Sector

www.mappingmuseums.org

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Joint work with Jamie Larkin, Nick Larsson, Val Katerinchuk

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Mapping Museums: the history and geography of the UK independent sector 1960-2020 (AHRC, 2016-2020)

- Mapping Museums is providing the first evidence-based history of the development of the UK’s independent museums sector and the links to wider cultural, social, and political concerns.
- As such, it aims to contribute to scholarly understanding of British culture, be useful for policy makers and arts funders, and also be of interest to the general public.
Mapping Museums

- During the first two years of the project, the research team gathered and codified data on over 4000 UK museums.

- A major part of the project has been the design of a Knowledge Base to store the data and metadata relating to these museums and also a Web Application allowing scholars to browse, search and visualise the data in order to investigate their research questions.

- The project is the first to produce an authoritative database of museums opening and closing during a period of rapid expansion and change in the sector.
Data Collection Challenges

- No directly usable digital datasets, all data had to be collected manually into an evolving "master" spreadsheet, plus additional auxiliary s/sheets
- The Digest of Museum Statistics (DOMUS), 1994-1999, was used as the starting point (around 1,800 museums)
- Additional contemporary and historical datasets from various organisations (e.g. Arts Council England, Museums and Galleries Scotland, Association for Independent Museums) were then incorporated
- OCR techniques were used to process photographs from the Association of Independent Museums archive (housed at the University of Leicester)
- Use of online resources such as museums' websites and Wikipedia resulted in a wider spread of entities that are considered as being “museums” by the public
KB and Web App Development

- Evident from the outset that the gradual collection of diverse data and gradual development of understanding about the required functionality of the KB and Web App would require an iterative, agile methodology to be adopted.

- Also pointed to the need to adopt semantic technologies in order to develop the KB and search facilities:
  - the different relationships between entities can be described in fine detail
  - both the conceptual model and the data can be extended with new triples as new knowledge/data accrue
  - possible to integrate the evolving MM ontology with other existing taxonomies, e.g. for UK geographical regions (ONS)
Zooming in on: Governance
Browse
Museums that opened in 1980
Museums that opened in 1980

<table>
<thead>
<tr>
<th>Year</th>
<th>Museum Name</th>
<th>Subject</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>12 STAFFORD TERRACE</td>
<td>Unknown</td>
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</tr>
<tr>
<td>1980</td>
<td>ALLEY HALL</td>
<td>Unknown</td>
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</tr>
<tr>
<td>1980</td>
<td>AUTOMOBILIA MOTOR MUSEUM</td>
<td>Unknown</td>
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</tr>
<tr>
<td>1980</td>
<td>AUTOMOBILIA TRANSPORT MUSEUM</td>
<td>Transport Cars and motorcycles</td>
<td></td>
</tr>
<tr>
<td>1980</td>
<td>AVCLIFFE AND DISTRICT BUS PRESERVATION SOCIETY</td>
<td>Transport, Buses and trams</td>
<td></td>
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<tr>
<td>1980</td>
<td>BANCHRESHOFT MILL</td>
<td>Industry and manufacture, Textiles</td>
<td></td>
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<tr>
<td>1980</td>
<td>BANWELL MUSEUM</td>
<td>Archaeology, Mixed</td>
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<tr>
<td>1980</td>
<td>BODELIC WEAVING CENTRE</td>
<td>Arts, Costume and textiles</td>
<td></td>
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<tr>
<td>1980</td>
<td>BOWNESS &amp; KINNEIL RAILWAY</td>
<td>Transport, Trains and railways</td>
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<td>1980</td>
<td>BROADFIELD HOUSE GLASS MUSEUM</td>
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</tr>
<tr>
<td>1980</td>
<td>BUXTON MOTOR MUSEUM</td>
<td>Unknown</td>
<td></td>
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<tr>
<td>1980</td>
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<td>1980</td>
<td>CORRIGALL FARM MUSEUM</td>
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<td>1980</td>
<td>COULTERSHAW HERITAGE SITE AND BEAM PUMP</td>
<td>Utilities, Water and waste</td>
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</tbody>
</table>
Museums that opened in 1980

<table>
<thead>
<tr>
<th>Name of museum</th>
<th>18 Stafford Terrace</th>
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<td>Unaccredited</td>
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<tr>
<td>Government</td>
<td>Government Local Authority</td>
</tr>
<tr>
<td>Government Change</td>
<td>/Government/Local Authority from 1980 to 1989</td>
</tr>
<tr>
<td>Government Change</td>
<td>/Government/Local Authority from 1995 to 1999</td>
</tr>
<tr>
<td>Government Change</td>
<td>Independent/Not for profit from 1980 to 1989</td>
</tr>
<tr>
<td>Government Change</td>
<td>Independent/Not for profit from 1994 to 1989</td>
</tr>
<tr>
<td>Subject Matter</td>
<td>Personality/Other</td>
</tr>
<tr>
<td>Year opened</td>
<td>1980</td>
</tr>
<tr>
<td>Year closed</td>
<td>Still open</td>
</tr>
<tr>
<td>NameOfMuseum</td>
<td>County</td>
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<tr>
<td>--------------------------------------------</td>
<td>-----------------</td>
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<tr>
<td>ABERDEEN ART GALLERY</td>
<td>Aberdeen City</td>
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<tr>
<td>ABERDEEN MARITIME MUSEUM</td>
<td>Aberdeen City</td>
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<tr>
<td>ABERDEEN SCIENCE CENTRE</td>
<td>Aberdeen City</td>
</tr>
<tr>
<td>ANATOMY MUSEUM, UNIVERSITY OF ABERDEEN</td>
<td>City of Aberdeen</td>
</tr>
<tr>
<td>GORDON HIGHLANDERS MUSEUM</td>
<td>City of Aberdeen</td>
</tr>
<tr>
<td>HERBARIUM, UNIVERSITY OF ABERDEEN</td>
<td>Aberdeen City</td>
</tr>
<tr>
<td>JAMES DUNS HOUSE</td>
<td>City of Aberdeen</td>
</tr>
<tr>
<td>MARSHAL MUSEUM, UNIVERSITY OF ABERDEEN</td>
<td>City of Aberdeen</td>
</tr>
<tr>
<td>PROVOST SKENES HOUSE</td>
<td>City of Aberdeen</td>
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<tr>
<td>ROBERT GORDON UNIVERSITY</td>
<td>Mixed</td>
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<tr>
<td>ST PETERS HERITAGE CENTRE</td>
<td>Local Histories</td>
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</table>
Search

Museum project | Home | Browse | Search | Visualisations | Configuration | About | Resources

Filter 1: Accreditation  
Filter 2: Matches Accredited

Results (15)

Table | Map | Details

Filter 1: Admin Area Matches Aberdeen City (Scottish Council Area)
Filter 2: Accreditation Matches Accredited

Submit
Visualise

Number of museums opening over time, by Governance type
Visualise

Number of museums closing over time

- Visualisations
  - Number of museums
    - open at a given time
    - that opened up to given time
    - open over time
    - openings over time
    - closings over time
  - All
    - Governance
      - Government
      - Independent
      - State
  - Classification 2018
    - Archaeology
    - Arts
    - Belief and identity
    - Buildings
      - House
    - Communications
    - Industry and manufacture
    - Leisure and sport
    - Medicine and health
    - Natural world
    - Personality
    - Rural Industry
    - Science and technology
    - Sea and seafaring
    - Services
    - Transport
    - Utilities
    - War and conflict
  - MM size
  - Location
  - openings and closings over time
- Plot
  - X
  - Y
Visualise Number of museums opening and closing over time
Visualise

Plotting Subject Classification vs Governance
Publication of KB and Web App

- KB and Web Application will be freely accessible on a dedicated website by end 2019
- Dataset will be published and freely available as Linked Open Data
- Project software is open-source and GPL licenced
- Hard copies of the dataset will be archived in the Micromuseums Archive at the Bishopsgate Institute
Ongoing Work

• Formative evaluation has been undertaken with 15 independent domain experts from the UK museums sector
• Additional user testing is planned for Autumn 2019
• A full project website is being developed
• Quantitative, interview-based, and archival research is being conducted to establish correlations between museum openings/closings and attributes such as governance, location, size, subject matter
• Additional data on Output Area classification and Deprivation Index is enabling new analyses into the demographic context of museum openings/closings
Towards Museum Analytics

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blogs.bbk.ac.uk/mapping-museums
Museums in place

- Why do museums open and close?
- National and Regional funding, economic growth, tourism, deindustrialization, peace
- Geo-demographic context
- Charting new geographies of UK museums
Per capita GDP vs number of museums

(UK, 1960–2017)
Independent museums per 100k people

Government museums per 100k people
The geodemography of places

- The population of a geographic area can be understood across multiple variables (age, ethnicity, income, etc).
- **Geo-demographic classifications** summarise these characteristics into categories.
Geodemographic categories

• **Countryside living**: The population for this supergroup are characterised by living in rural areas with a low population density and a much higher median age (46). Residents are more likely to own their own home .... Unemployment and qualification levels are below the national average. ...

• **Ethnically diverse metropolitan living**: The major characteristic of these areas is that they have a high proportion of residents from non-White ethnic groups. Population density is high, as is overcrowding .... There is a relatively young population age structure. Households are more likely to reside in terrace housing or flats

(ONS 2011 residential-based area classifications)
Output area classification (Census 2011)

What is the demographic context of museums?

Where do museums tend to be opened (and closed)?
What is the demographic context of museums?

Where do museums tend to be opened (and closed)?
Over- and under-representation for governance

What categories attract more or fewer museums of a given governance?

<table>
<thead>
<tr>
<th>Areas %</th>
<th>government</th>
<th>independent</th>
<th>university</th>
<th>unknown gov</th>
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<tbody>
<tr>
<td>13</td>
<td>1.3</td>
<td>-1.8</td>
<td>-0.7</td>
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<td>-0.2</td>
<td>-7.5</td>
<td>-11.9</td>
<td>-6.5</td>
</tr>
</tbody>
</table>

1r Affluent England
2r Business Education and Heritage Centres
3r Countryside Living
4r Ethnically Diverse Metropolitan Living
5r London Cosmopolitan
6r Services and Industrial Legacy
7r Town and Country Living
8r Urban Settlements
Over- and under-representation for size

What categories attract more or fewer museums of a given size?
Museums & deprivation

Are museums a public service with a catchment area?

How do museums relate to deprivation?
Deprivation and governance

How do museums relate to deprivation in each country by governance?

[Box plot showing deprivation levels for 'government', 'independent', 'university', 'unknown gov']
Museum analytics

• Broad vision
• Applying **data science** to the sector
• Integration of data collection in a single format and repository
• Cross-reference with other data sources
• Inform practitioners and policy-makers
Possible directions

• What factors predict the survival of a museum?
• Are there museums that are located in deprived areas that nonetheless survive?
• Can those museums provide models for museum practice more generally?
• Is the geography of museums’ location congruent with that of its visitors? How to study the two geographies?