War and Peace?
The troubled history of the Geo-Data Wars

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Overview

• A little theory
• Data Wars
• Inspire
• Examples
• A Strategy
• Conclusions
What is geographic information?

• Information that relates to:
  – A specific *place, location or is attached to a Geographic Information Bearing Object* (GIBO)
What is geographic information?

- It combines
  - attributes
    - the characteristics of the place
  - with a geographical reference
    - which may be *direct*, comprising coordinates structured as a point line or area
    - or *indirect*, comprising a code such as a postcode, or area code, a place name, or structured text such as an address
What is geographic information?

• A resource?
• A scientific fact?
• A name?
• A database?
• An artistic work?
• An Invention?
  – The status of GI as Intellectual Property is subject to dispute and debate
Classic competitive equilibrium pricing

[Diagram showing a supply and demand curve with equilibrium point P.]
Monopoly rent pricing for GI

100% cost recovery

High P Price Low
**Geographic data matrix**

**Fig. 1. The Geographic Matrix.** A row of this matrix presents the place-to-place variation of some characteristic, or a spatial pattern of the variable which can thus be mapped. Each column contains the locational inventory of the many characteristics of some place. Every cell therefore contains a "geographic fact", the value assumed by some characteristic at some place. Comparison of complete columns is the study of areal differentiation in its holistic sense, and lends to regional geography. Comparison of rows implies the study of spatial covariances and associations, and leads to topical or systematic geography.
Fig. 2. A Third Dimension. The third dimension, time, may be introduced by arraying a whole series of geographic matrices such as were presented in Figure 1 in their correct temporal sequence. Each time period thus forms a "slice" of the three-dimensional cake, and every slice has all the features described in Figure 1. It will be obvious that such an arrangement makes possible examination of rows through time, of columns through time, and of boxes through time.
Geographic data matrix
Paradox of ‘place’

• This leads to what is known as the ‘modifiable areal unit problem’

• This is the problem that the characteristics of a place appear to change as its boundaries are re-defined
Infrastructure

1: the underlying foundation or basic framework (as of a system or organization)
2: the permanent installations required for military purposes
3: the system of public works of a country, state, or region; also: the resources (as personnel, buildings, or equipment) required for an activity

Merrial-Webster Online
Definitive

1: serving to provide a final solution or to end a situation <a definitive victory>
2: authoritative and apparently exhaustive <a definitive edition>
3 a: serving to define or specify precisely <definitive laws> b: serving as a perfect example: **QUINTESSENTIAL** <a definitive bourgeois>

Merriam-Webster Online
Broad gauge engines scrapped
Infrastructure wars

19th century – Railway Fever

Gauge wars, incompatible and duplicated railway lines built across the UK, and many other countries in pursuit of profit

Inefficiency led to bankruptcies and standardisation
Data Wars

In the early 1990’s a debate was conducted between Nancy Tosta and David Rhind in the pages of GIS World about the potential of ‘data wars’ over geographic information.

Such a ‘war’ is being fought in the UK over addresses, but it affects street networks, geographical names and boundaries.
Data Wars

• The address war
  – 1970s Gazetteer Pilot Projects
  – 1970s Origins of PAF
  – 1980s ICL LAMIS
  – 1980s PAF on CD
  – 1980s Gurmukh Singh – Pinpoint
  – 1990s AddressPoint
  – 2000s NLPG / LLPGs (DNA Scotland Pointer NI)
  – 2000s Abortive NSA1
LETTERS TO THE EDITOR
Financial Times Friday July 30 1999

Address file better as a public good than a private Post Office Asset

From Dr Robert Barr and others

Sir, The financial and commercial freedom that plc status will confer on the Post Office may be a welcome contribution to national competitiveness. However one Post Office asset, namely the Postcode Address File (PAF), a computerised and maintained list of all postal delivery addresses and their postcodes is too important a part of the national information infrastructure to be handed over without safeguards.

At present the Post Office receives new address information from local authorities, attaches additional information to optimise the address for postal delivery and allocates a postcode. This information is compiled into the PAF, which is copyrighted and published by the Post Office. It is also made available through a number of Value Added Resellers (VAR). These data are used by thousands of commercial enterprises, large and small for the maintenance of customer records and for a wide range of marketing and logistical purposes.

As a public corporation the Post Office has handled its monopoly position, as the national compiler of postal addresses, responsibly. However, some have questioned the price of the information and the control the Post Office has exercised over its re-use and re-sale. Once the Post Office is a plc directors tasked with maximising shareholder value could be tempted to extract further advantage from the PAF by restricting competitors’ access to the data, placing constraints on the operation of VARs or charging royalty payments for the use of addresses in other contexts.

To ensure that the Post Office cannot succumb to such temptation as a plc we would propose that the production, maintenance and placement of the PAF in the public domain should become a regulatory requirement for the Post Office in exchange for the privilege of retaining monopoly rights for the delivery of letters. This would ensure that the national address file becomes a public good to be used for the benefit of all rather than an unregulated private asset.

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Vanessa Lawrence, chairman, Association for Geographic Information
Christopher Roper, director Landmark Information Group
Richard Webber, director, Experian
Declare an end to the data wars

From Dr Robert Barr and others.

Sir, We welcome the news that a National Spatial Address Infrastructure (NSAI), a definitive maintained list of addresses and their locations, is to be produced and maintained by Ordnance Survey (“UK to have national address register, Ft.com, May 27).

This list will support many activities for which the postal address file alone is inadequate, such as collecting national statistics, modernising property transactions, co-ordinating the emergency services and locating people for identity purposes.

However, the prospectus issued by the Improvement and Development Agency (IDA) and the Office of the Deputy Prime Minister implies that access to this infrastructural resource, for the public sector, will cost some 50 per cent more than the current Ordnance Survey product. The voluntary and private sectors do not yet know how they will be treated.

We warned six years ago (Letters, July 30, 1999) that if Royal Mail plc retained control of the Postcode Address File, its directors might be tempted (inter alia) to “charge royalty payments for the use of addresses in other contexts”. This threat turned into reality; and Royal Mail’s demands for royalty payments contributed substantially to the collapse of local government’s own efforts, begun six years ago, to create a National Land and Property Gazetteer.

More seriously, the IDA’s subsidiary, the Local Government Information House, sought to compel local authorities to withhold address change information from Royal Mail and Ordnance Survey, presumably in the name of better management, but more likely to ensure that the intellectual property rights (IPR) in addresses stayed with local government.

Extensive and expensive round-table discussions between the various parties to resolve both the IPR and technical issues led to further delay.

We now call on the minister to put an end to ongoing data wars among government agencies, each of which wishes to raise revenue through a monopoly rent on address data. This can be done by ensuring that addresses are made available under licence from the Office of Public Sector Information for the cost of distribution (effectively zero using the internet) and that the necessary infrastructure is funded out of a modest fee charged to those registering or reregistering land or property or seeking planning permission. This would ensure that consequent changes in the national address database, a vital resource for national efficiency, are not a charge on the public purse.

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Statement on the National Spatial Address Infrastructure (NSAI)

Statement by Communities and Local Government on 1 June 2007.

The Department has been considering its role in the proposed National Spatial Address Infrastructure. During last year we consulted government departments on the core specification for addressing and continued to discuss this with Ordnance Survey and the Improvement and Development Agency (IDeA).

The Department has noted that there have continued to be improvements in the main address products produced by the Ordnance Survey and the IDeA and we expect this to continue. We also note that, although there are still challenges posed by addressing, local authorities are able to deliver efficiencies and government departments are able to deliver their business without the NSAI. On balance, considering the competing demands on departmental resources, we have concluded that we should not carry out any further work on the NSAI at this time.

In the meantime we will continue to encourage Ordnance Survey and IDeA to further their improvements, and would support new initiatives to improve addressing infrastructure that might arise through the Transformational Government agenda.
Data Wars

• The ED-Line debacle
  – 2 sets of 1991 ED boundaries digitised and re-sold mainly to the public sector
  – No cross validation allowed!

• The AA case – approximately £20 million of back payments for illegal use of OS IPR

• 2001 Output areas
  – Warning against commercial reuse of ward map
Data War consequences

• 2001 Census results put in question
  – Manchester and Westminster
  – Manchester re-estimated additional 14,000 dwellings, 27,000 people worth £150 million over 10 years

• Local errors
  – Newcastle, Richmond, Kingston

• Unmeasured consequences
  – Fire, Ambulance, Congestion, Delivery costs
INSPIRE
I

(Acts adopted under the EC Treaty/Euratom Treaty whose publication is obligatory)

DIRECTIVES

DIRECTIVE 2007/2/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 14 March 2007
establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)
The INSPIRE Principles

• data should be collected once and maintained at the level where this can be done most effectively;
• it must be possible to combine seamlessly spatial data from different sources across the EU and share it between many users and applications;
• it must be possible for spatial data collected at one level of government to be shared between all levels of government;
The INSPIRE Principles

• spatial data needed for good governance should be available on conditions that are not restrictive to its extensive use; and it should be easy to discover which spatial data is available, to...

• evaluate its fitness for purpose and to know which conditions apply for its use.
Annex 1

1. Coordinate reference systems
2. Geographical grid systems
3. Geographical names
4. Administrative units
5. Addresses
6. Cadastral parcels
7. Transport Networks
8. Hydrography
9. Protected sites
Annex 2

1. Elevation
2. Land cover
3. Orthoimagery
4. Geology
Annex 3

1. Statistical Units
2. Buildings
3. Soil
4. Land use
5. Utility and government services
6. Utility and governmental services
7. Environmental monitoring facilities
8. Production and industrial facilities
9. Agricultural and aquaculture facilities
11. Area management / restriction / regulation zones and reporting units
Annex 3

12. Natural risk zones
13. Atmospheric conditions
14. Meteorological geographical features
15. Oceanographic geographical features
16. Sea regions
17. Bio-geographical regions
18. Habitats and biotopes
19. Species distribution
20. Energy resources
21. Mineral resources
Principles for a national GI / Locational Strategy

• Public Interest
  – Maximize the use of geographic information for the benefit of the citizen, good governance and commerce

• Collect once – use many times
  – Concentrate only on *natural monopolies* with many uses
Principles for a national GI / Location Strategy

• Clear governance
  – Establish who is in charge
  – Avoid conflicts of interest

• Sustainable funding
  – Costs to be recovered from those who change the data rather than those who use it
    • Precedents in many public registers and the Internet
Conclusions...

• Inspire and the Location Strategy have the potential to resolve many issues concerning access to spatial data in the UK

• They will not succeed if existing turf wars, vested interests and unsustainable cost recovery regimes continue

• We may be shamed, by the success of implementations elsewhere in Europe, to stop business as usual
Conclusions...

• However expect a great deal of fear, uncertainty and doubt (FUD) to be spread about the consequences of change

• INSPIRE will only succeed in the UK if user interests are heard and override producer interests

• INSPIRE will only be politically acceptable if it is embedded in an acceptable UK Location strategy and sustainable funding is achieved
That’s it!

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