A graduate from a Geography Degree in the mid-1970s asks ‘what is GIS?’ : coming to GIS by a circuitous route

Nigel Walford
Department of Geography and Geology

Kingston University London
Outline

• In the beginning ...
• Geography degrees in 1970s
• Spatial analysis in 1970s
• Doctoral research
• Data - let’s map them
• Business of GIS
• GIS everywhere
In the beginning ...

- 1962 Canada Land and Geographic Information System
- Developed to address a problem: how to manage and monitor land-based resources
- Technological assemblage
  - Computer Aided Design
  - Computer mapping
  - Database management systems
- Not necessarily part of Geography as a discipline
Geography degrees in 1970s

- Geography degrees in British universities
  - Quantification and statistics
  - Systematic geography in, regional geography out
  - So many ‘isms and ‘ologies”: positivism, modernism, Marxism, behaviouralism, phenomenology, ...

- Where was GIS?
  - Spatial analysis
  - Spatial laws (normative)

- Quantification and statistics
Spatial analysis in 1970s

- Based on earlier work by mathematicians and statisticians
- Mathematician Leonhard Euler showed four areas of Kõnigsberg (A, B, C and D) could not be visited by crossing all bridges without re-crossing at least one of them

Spatial analysis in 1970s

• Analysis of networks based on graph theory
  • Connectivity increases with a fixed number of nodes from minimum (9) to maximum (24)
  • Calculating connectivity using connectivity matrix


• Applying techniques to assess impact of adding links to a transport network

Spatial analysis in 1970s

• But we (Geography undergraduates) in British university in 1974 used:
  – Calculators that plugged into the mains to calculate statistics
  – Pen and paper to work out network connectivity

• Although fellow undergraduate students on a Biology degree learnt how to program in Basic
Doctoral research

- Doctoral research combining agricultural geography and farm management
- Linear Programming used to determine optimal cropping solutions by modelling resource constraints - LP subsequently linked to GIS to gather data for input to model and to visualise solutions
- Using interpolation techniques on non-spatial data (age and power rating of tractors) – isolines represent number of tractors

South East

East Anglia
Data - let’s map them

- Population census and associated digital boundary data ‘burst onto the scene’ early 1980s
- Central and local government, public agencies, commercial organisations, academic researchers and Geography students start mapping on computers using GIMMS, MAPICS, SYMAP, ODYSSEY, etc.
- Census atlases produced using the newly available digital boundary and statistical census data became popular outputs from Geography Departments in British universities and Planning Departments in local government
Business of GIS

• Chorley Report in mid-1980s recognised importance of *Handling Geographic Information* by commercial organisations (business), notably by
  – utility companies during era of privatisation
  – retail sector with expansion of out of town shopping
  – civil engineering for planning and developing road transport infrastructure
  – environmental managers for monitoring and assessing changes
GIS everywhere

- By the mid-1990s was everywhere, but desk-bound not mobile
- By mid-2010s GIS is mobile everywhere for everyone
GIS everywhere

• In gerontology, psychology and planning
• Older people’s experience of unfamiliar places
GIS everywhere

- Historical population censuses: British like it's never been seen before!
  - Persons per metre on early 20th century streets in Hammersmith
  - Decennial change in persons at addresses
GIS everywhere

- South Downs farms: WWII plough-up campaign land linked to bedrock geology and slope

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<th>Bedrock</th>
<th>South Downs farms</th>
<th>1940 &amp; 1941 Plough up</th>
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<td>Mudstone and Gault Clay</td>
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<td>Clay with flints</td>
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<td>Other bedrock types</td>
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In conclusion ...

• GIS always was more than Geography and still is more, although Geographers might be reluctant to admit it.

• GIS as a mediator between disciplines:
  – Those viewing space is as a context for non-spatial processes.
  – Geography whose *raison d’être* is the role of space (geography) in differentiating the outcomes of such processes.