Distributing Occupational Information Resources for Comparative Research: Experiences of the GEODE project

Presentation to the CESSDA PPP Expert Workshop on Harmonisation issues in Comparative Social Surveys, 3 April 2008

GEODE – <u>www.geode.stir.ac.uk</u>

Grid Enabled Occupational Data Environment

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GEODE, DAMES and Comparative Research

- 1) Approaches to distributing occupational information resources
- 2) Strategies for working with occupational information resources in comparative research
- 3) **GEODE and DAMES and the relevance of e-science**
 - GEODE began as an UK ESRC project 2005-7
 - DAMES (<u>www.dames.org.uk</u>) is a UK ESRC project 2008-11 which now incorporates GEODE





Context for GEODE (commenced October 2005)

- Occupational information crucial to social science investigation
 - Social class and social classifications
 - Employment statistics
 - Occupations and economics
- Most nations have facilities for collecting and coding up occupational titles:
 - www2.warwick.ac.uk/fac/soc/ier/publications/software/cascot/
- We lack accessible and standardised facilities for dealing with occupational micro-data





Occupational information resources: small electronic files...

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ISEI tools, home.fsw.vu.nl/HBG.ganzeboom	Int. OUG	20 <i>(50)</i>	У
E-Sec matrices www.iser.essex.ac.uk/esec	Int. OUG*(e.s.)	20 (200)	n
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For example: ISCO-88 Skill levels classification

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10	6	Skilled agricultural and fishery workers	2			=
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12	8	Plant and machine operators and assemblers	2			
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981	123	-4	4	41.7	39.6	53.01	053.1	.70	.0	.0	
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983	123	-2	6	39.1	52.6	52.01	052.1	8.00	4.0	8.0	
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991	124	-2	6	39.1	37.9	52.02	052.2	8.00	4.0	8.0	
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Social scientists want to:

- 1) Produce and disseminate, and access other, Occupational Information Resources
- 2) Link together their (secure) micro-data with OIR's

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We are agreed on how to do this:

Preservation of two levels of data

- Index units: Occupational Unit groups, employment status
- Social classifications and other outputs

Use of transparent (published) methods [i.e. OIR's]

- for classifying index units
- for translating index units into social classifications

for instance ...

- Bechhofer, F. 1969. 'Occupations' in Stacey, M. (ed.) Comparability in Social Research. London: Heinemann.
- Jacoby, A. 1986. 'The Measurement of Social Class' Proceedings from the Social Research Association seminar on "Measuring Employment Status and Social Class". London: Social Research Association.
- Rose, D. and Pevalin, D.J. 2003. 'A Researcher's Guide to the National Statistics Socioeconomic Classification'. London: Sage.





...but here come the buts...

Inconsistent preservation of source data

- Alternative OUG schemes
 - ISCO-88 4-digit; ISCO-88 3-digit; SOC-90; SOC-90 (my special version)
- Inconsistencies in other index factors
 - 'employment status'; supervisory status; number of employees
 - Individual or household; current job or career

Inconsistent exploitation of Occupational Information Resources

- Numerous alternative occupational information files
 - (time; country; format)
 - Substantive choices between social classifications
- Inconsistent translations to social classifications 'by file or by fiat'
- Dynamic updates to occupational information resources
- Strict security constraints on users' micro-social survey data
- Low uptake of existing occupational information resources





Three reactions

1. Enforce common standards

- In both data collection and classification
 - Feasible for coordinated projects (cf. 'Measurement equivalence')
 - Not always desirable ('universality' or 'specificity')
 - ...not so plausible for wider academic research...
- 2. Give up
 - No attempt at engaging with published standards

- 3. Support plural occupational information resources in an accessible and consistent manner
 - Internet facility coordinating OIR's
 - **GEODE Grid Enabled Occupational Data Environment**





GEODE: Objectives and outcomes

- Create an international Virtual Organization for occupational data community
 - Sharing, indexing, & curating diverse occupational data
 - GEODE website portal allows users to deposit their own OIRs (or somebody else's OIRs)
 - Requires: Occupational index unit; note of country and time period OIR is relevant to; weblink and/or data file for upload

Operate as a user-friendly portal

- Facilitate non-specialist user's access to occupational information
- GEODE portal allows search and browse for occupational information, download data files or follow weblinks
- Program for secure linkage from user's micro-data to OIR's







This is the GEODE portal allowing access to search, deposit and link to occupational data resources.

Click here to visit GEODE webpages

Click here to view the GEODE portal instructions

The site is navigated by choosing form the selection of tabs. Within each tab, there are often multiple sub-tabs (known as portlets) to choose between. Which options you see will depend upon which tabs the account you logged in with is allowed to access.

If you have logged in as 'guest', you will see the following tabs:

- Welcome: information on the GEODE portal, including portlets leading to further help and FAQs
- geodeguest- links to further portlets covering:
 - GEODE search ('Search for data resources'): allows you to search the details of occupational information resources which have been indexed with and/or supplied to GEODE and download relevant data files
 - Link data resources ('User Occ Match portlet') allows you to undertake an application which can link your own data files (e.g., survey data files) with occupational information which has been supplied to GEODE (if suitable circumstances apply)
 - GEODE Feedback opportunity to submit feedback on the service

If you have logged in with an individual account, you should see the following tabs:

- Welcome: information on the GEODE portal, including portlets leading to further help and FAQs, and facilities
 allowing you to edit the settings of your personalised portal account
- Feedback: opportunity to submit feedback on the service
- Deposit data: Links allowing you to send in original format occupational information ('deposited data resources'), and manage and edit the metadata stored by GEODE on the resources you supply. Also includes links allowing you to edit information associated with GEODE applications which run on your original data ('G1 applications').
- GEODE search: allows you to search the details of occupational information resources which have been indexed with and/or supplied to GEODE and download relevant data files

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Name Paul I	Lambert Affiliation University of Stirling		Email paul.lambert@stirling.ac
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Searching – uncurated resources



Searching – curated resources

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GEODE – Critical experiences

- 1) Curating OIRs: Imposing structure on occupational information resources
- Metadata in a standardised format
 - Data Documentation Initiative, xml files
 - Terms to identify important contexts: Country; Time period; relevant occupational units
 - <stdCatgry uri="http://www.geode.stir.ac.uk/ougs.html#soc2000"> Standard Occupational Classification 2000</stdCatgry></var>

In GEODE, we defined a small subset of key metadata (most critically, the occupational unit group, OUG)





www.geode.stir.ac.uk/ougs.html

ISCO-88	International Standard Classification of Occupations
Description:	ISCO-88 is a standardised occupational unit group scheme, published by the International Labour Office. It is designed to be implemented across countries and is recommended for international comparative research. Applicable from 1988 to present, it was designed as an update from earlier versions of ISCO developed in 1958 and 1968. The next revision to the ISCO scheme is anticipated for 2008.
Structure:	4-digit numerical index. Hierarchical structure incorporating 3-digit, 2-digit and 1-digit subgroups. Subgroups may be indexed both by truncation and by trailing zeros (e.g. ISCO-88 2445 'Psychologists' is part of minor group 244 'Social Science and related professions', which may also be indicated as minor group 2440 'Social Science and related professions').
GEODE URI:	http://www.geode.stir.ac.uk/ougs.html#isco88
Examples:	1111 Legislators 2131 Computer systems designers and analysts 2142 Civil engineers 3413 Estate agents 5130 Personal care and related workers 5131 Child-care workers 8 PLANT AND MACHINE OPERATORS AND ASSEMBLERS 83 DRIVERS AND MOBILE-PLANT OPERATORS 832 MOTOR-VEHICLE DRIVERS 8322 Car, taxi and van drivers 8323 Bus and tram drivers
Internet links:	http://www.ilo.org/public/english/bureau/stat/class/isco.htm
References:	ILO (1990) ISCO-88 : International Standard Classification of Occupations, New York: International Labour Office.
Author of this note:	Paul Lambert, 22 August 2006

TOP

ISCO-88(COM)	International Standard Classification of Occupations, European Union Variant
Description:	ISCO-88(COM) is a slight variant on ISCO-88. It is an standardised occupational unit group scheme, based upon the ISCO-88 scheme published by the International Labour Office, but with selected additional categories to allow integration with European Union statistical databases.
Structure:	As ISCO-88.
GEODE URI:	http://www.geode.stir.ac.uk/ougs.html#isco88com
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GEODE – Critical experiences

- 2) Usable services?
 - GEODE has not yet been widely adopted
 - The depository of OIRS is not yet comprehensive
 - Searching / browsing facilities lack efficiency for social science users
 - There is no quality guide to existing resources
 - File matching facility requires intermediate user input and is not as smooth as existing alternatives (at least for those that know how..)

Future work to concentrate on usability, publicity for service, speed and robustness of data, volumes of data





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i) {Descriptive data on occupations – there's lots of it, & it isn't standardised} **ii)** Using occupations as an indicator of social position

The Treiman constant (universality – same occupations mean the same things across countries)

- This *is* mostly true, esp. for broad comparisons, but..
- occupational change; case studies; agriculture; gender
- Sometimes, different measures for different contexts are appropriate, during data collection and/or analysis ('specificity')

The relation between **concepts and measures**

- No measures uniquely measure the concepts attributed to them, and nothing else (doh!)
- Measures mostly measure the same thing: social stratification
- Two common flaws in comparative research:
 - We choose reduced versions of certain measures (e.g. EGP in 3 categories) since these appear the only level in common
 - We choose one type of measure, on conceptual grounds, which may not measure stratification in all countries equally well





From: Lambert, P.S. and Bihagen, E. (2007) 'Concepts and Measures', presented to ISA RC28, Montreal.



From: Zijdeman, R.L. and Lambert, P.S. (2008), 'Measuring Historical Occupational Stratification', forthcoming in *Belgian Journal of Contemporary History*.



Source: Historical Sample of the Population of the Netherlands, 1835-1939, N~= 16,000. Graph shows R2 for linear regression including only the occupation-based social classification and scaled BIC statistic (BIC - Null BIC / Null BIC). Unweighted data. Primarily a technological issue – making bridges across the obstacles to considering more alternatives

Can contribute to 'universal' approaches

- Encourages discipline on occupational data (standard categories)
- Guides users towards mainstream standards and cross-walks

Can also support 'specific' approaches

- data collection: support researchers with local as well as standardised occupational unit data
- data linkages: Supports classifications using occupations that may differ across contexts
 - {E.g. the CAMSIS project <u>www.camsis.stir.ac.uk</u>, scale derivations within countries and time periods}





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- Portal access to coordinated resources
- GEODE used key metadata on occupational information resources
 - DDI independent xml file with summary data, contributes to search functionality
- Possible widening to ontologies
 - Occupational metadata:
 - define meaning of relevant occupational unit groups
 - Occupational data ontology:
 - Tell us what things are related to occupational data
 - fuller capacity for linking together information





'GE*DE' within 'DAMES': 'Grid Enabled Specialist Data Environment'

- Occupations
 - Expanding GEODE and its usability
- Education (resources for working with data on education level)
 - 'Education information resources'
 - databases about qualifications in different coutries
 - Translations schemes to ISCED, CASMIN
- Ethnicity (resources for working with data on ethnicity, immigration, religion, race...)
 - New databases on ethnic groups
- Education and Ethnicity
 - Likely to supplement by active data retrieval (not in GEODE)
 - E.g., 'query survey resource X to give me summary statistics about all people with Y qualification in 2006'





'Data Management through e-Social Science', www.dames.org.uk

- Attention to supporting data manipulations and comparative research practices
- Trying to encourage standards for associated data resources (beyond data collection)
- Trying to demonstrate accessibility of these resources (with suitable metadata)
- Could change the costs/benefits evaluations in comparative research



