Dimensions and boundaries: Comparative analysis of occupational structures using social network and social interaction distance analysis

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### Social interaction data: census records on within-household links

<table>
<thead>
<tr>
<th>Country, Year</th>
<th>Number of m-f couples with occs</th>
<th>Occupational unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States, 2000</td>
<td>2191104</td>
<td>US Census 2000 occupations (475 units)</td>
</tr>
<tr>
<td>Romania, 2002</td>
<td>221950</td>
<td>ISCO-88 3-digit (116 units)</td>
</tr>
<tr>
<td>Philippines, 2000</td>
<td>262855</td>
<td>ISCO-88 3-digit (130 units)</td>
</tr>
<tr>
<td>Venezuela, 2001</td>
<td>108273</td>
<td>ISCO-88 3-digit (115 units)</td>
</tr>
</tbody>
</table>

Data accessed from IPUMS-International, [www.ipums.org](http://www.ipums.org)

- Data on educational level (4 levels for US, Ro, Ph; 3 for Ve)
- Various derived metadata on occs including microclass translation codes and label files (see [www.geode.stir.ac.uk](http://www.geode.stir.ac.uk))
1) Social interaction distance analysis

- Using CAMSIS approaches, [www.camsis.stir.ac.uk](http://www.camsis.stir.ac.uk)
- First dimension of SID scales is usually ‘social stratification’
  - We’d interpret it as the contour of social reproduction
  - Gradational, but ‘lumpy’ for operational reasons (occ.s)
  - ‘Specificity’ (many scales!)
- Dimensions:
  - 1 main one
  - numerous subsidiary patterns
- Boundaries:
  - None(?)

Source: IPUMS-I, N=778k with occ data
Data is coded here to ISCO88 3-digit minor groups
Dimensions=1; Boundaries= none; or maybe 1 in Ro?

CAMSIS scale distributions

Venezuela 2001

Phillipines 2000

Romania 2002

USA 2000

All microdata from IPUMS-I. CAMSIS scales at www.camsis.stir.ac.uk.
Histograms show distribution of male scale for all adults in work.
Scatterplots show unweighted male-female scores unweighted, ISCO88 3-digit or census SOC for USA.
Male CAMSIS scale scores across four countries using 'microclass' units.
SID scales on occupation by education

Data from IPUMS. Points show scale scores for units defined by cross-classifying occupation and education. For Venezuela and Phillipines, units are for all occupations with or without 'secondary' level or above. For Romania units are for all occupations with or without 'university' level. For USA, only occupations in SOC range 1-196 & 370-593 were disaggregated by university level, with others coded to modal level.
2) A social network analysis of occupations

- The same data on {pairs of} connections between occupations could be analysed as network links
  - Without any controls, most occupations will have at least one connection with most others in a large dataset
  - We’ve used criteria which define whether occupational connections occur more often than would be expected given their national prevalence (‘k-core’ approach to map them)
  - Some descriptions plus illustrative do files at our website, e.g. http://www.camsis.stir.ac.uk/sonocs/do/pajek.do, which compiles records of pairs of connected nodes & expected versus actual occurrences
Hypothetical network: 469 US OUGs & micro-classes

- Medical and dental technicians
- Medical professionals
- ‘Pseudo-diagonal’ or ‘situs’
- Dental hygienists

(Four different isolated components with internal links within microclass but no external links)

Green: prof.; Blue: routine non-mnl; Red: manual; Yellow: primary; Green: military

(further isolated components)
Actual composition of occupational networks in USA in 2000: links reflect stratification as much as they do microclasses and psds
Red to violet for low to high CAMSIS (grouped into 7).

Structures similar to CAMSIS scales. Using Kamada-Kawai algorithm and no manual adjustment (expect removing some occs with no ties/relations)
The US network differs, with separation of the lower/higher OUGS.
Microclasses*univ. educ
Blue = graduates, red = non-graduates. Distinction between graduates / non-graduates in Romania & Philippines, but slightly more interaction in US.
Internal-external ties between macroclasses

- Professional internal ties
- Manual internal ties
- Prof. internal/external
- Man. internal/external

USA, Venezuela, Romania, Philippines
## Summary: Dimensions and boundaries and cross-national comparisons

<table>
<thead>
<tr>
<th>SID</th>
<th>SNA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions</strong></td>
<td>1 that matters = Stratification</td>
</tr>
<tr>
<td><strong>Boundaries</strong></td>
<td>None (?or education)</td>
</tr>
<tr>
<td><strong>Cross-national differences</strong></td>
<td>Slight (positive skew of less modernised economies; gender segregation; relative economic differences in selected jobs)</td>
</tr>
<tr>
<td><strong>Further work</strong></td>
<td>New versions and scales…</td>
</tr>
</tbody>
</table>

Griffiths/Lambert, RC28, April 2011
Conclusions (& SONOCS project 2010-12)

- Analyse occupational stratification over different countries and time-points to understand more about the underlying structure of how social hierarchies are formed/sustained

- SNA and SID here use similar stats but have different emphasis

- ..and a plug for some new resources!...
  - [www.camsis.stir.ac.uk/sonocs/](http://www.camsis.stir.ac.uk/sonocs/)
    - Refreshing CAMSIS scales/methods
    - Social network analysis methods and maps for occupational data
    - Associated metadata on occupations (also at [www.geode.stir.ac.uk](http://www.geode.stir.ac.uk))