

# **Complex Causal Mechanisms, Epistemology, and Poverty by Wendy Olsen**

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# Content of the Paper

- Complex Causality
  - Open systems
    - Path dependence
    - Permeability
    - Organic transformation
  - Contingent Causality
  - Probability
- Interpretation of Data, Aiming to Understand Causal Mechanisms
  - Context, mechanisms, outcomes (Pawson)
- Empirical Part I
  - All-India Labour Force Participation
    - Regression
  - Rural Women 20-35
    - Cluster Analysis
    - Correspondence Analysis
- Empirical Part II
  - Scale Triangulation
- III: International Data

--there was a previous related paper:

# **Towards a Critical Epistemology of Analytical Statistics**

Paper currently available, by Wendy Olsen and Jamie Morgan, British Sociological Association, March 2004 (York). It argues for ficts rather than facts; against black-box interpretations of regression; and for cautiously interpreted logistic regression.

# Analytical statistics

- ...is a process of analysis which creates survey data, links it to other forms of data, transforms the data, and analyses the results, finally *interpreting* the data
- ...involves both qualitative and quantitative data
- ...is in danger of presenting as fact that which is only a representation of reality

# Variables

- Are not causes
- Need to be supplemented by qualitative research and by cautious interpretation
- Do not map onto real causal mechanisms easily
  - N to N mapping due to complexity
    - Uniqueness not well handled by large-scale studies
  - Absent variables cause bias in observed patterns
  - Interaction is real

# Regression Analysis

- If causal combinations A B C and D E F are not independent, and both affect outcome Y,
- And some variables are missing from either set, then the estimates of the 'effects' [associations of] A, B, C, E, F, on/with Y are going to be biased.
- The effect upward/downward is hard to know.

# Interactions of Variables

- If C overlaps with D or is causal to D E F then you have further confusion of the apparent 'effect' of D on Y
- If a contextual factor (such as 'state', proxying for a regulatory regime) is important, then the effect of A on Y is going to be altered state-wise
- These differences may be qualitative or quantitative – they cannot be assumed merely to be quantums ( $\beta'$ )

[www.durham.ac.uk/case.2004](http://www.durham.ac.uk/case.2004)

[www.compass.org](http://www.compass.org)

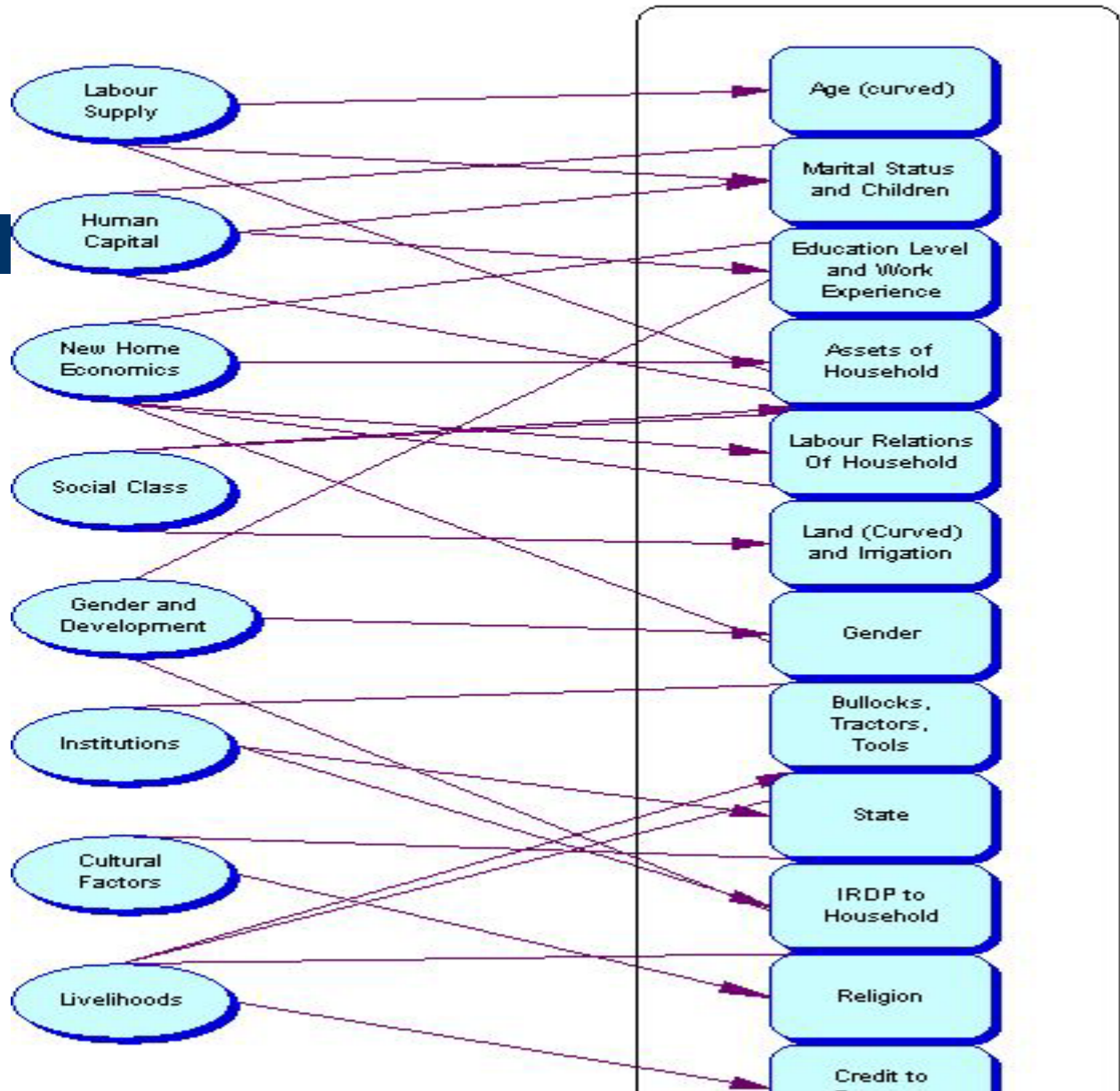
- The advocates of small-N use historical comparative method or Qualitative Comparative Analysis (QCA).
  - But for arguments for using survey data, see also:
- Byrne, D. (2002). *Interpreting quantitative data*. London: Sage.
- Byrne, D. S. (1998). *Complexity theory and the social sciences : an introduction*. London ; New York: Routledge.
- Ekstrom, M. (1992). Causal Explanation of Social Action. *Acta Sociologica*, 35, 107-122.



# Empirical Part I: Indian National Sample Survey, 1994, Employment

- 81,500 households
- 345,000 working-age people (16-65)
  - 56,500 rural women aged 20-35
- 184 clustered sampling strata
- For each person, details of their entire household including children
- For each person, activities on 7-day half-day recall, up to 4 activities per period

# Claims to Variables



# Findings

- Strong support for methodological pluralism
  - Weak support for the use of regression to ‘tease out’ causes
  - Path-dependence of the impact of IRDP and ‘state’ (regulatory regimes) imply weakness to the cross-sectional analysis
  - Poverty is associated with specific patterns of labour-force participation
- LFP
    - Distinguish extra-domestic work from domestic work
    - Women more likely to be doing domestic work (‘inactive’) with a U curve with education
    - Poorest women likely to be doing casual labour and to record themselves as ‘workers’ or ‘extra-domestic’ ie unpaid workers

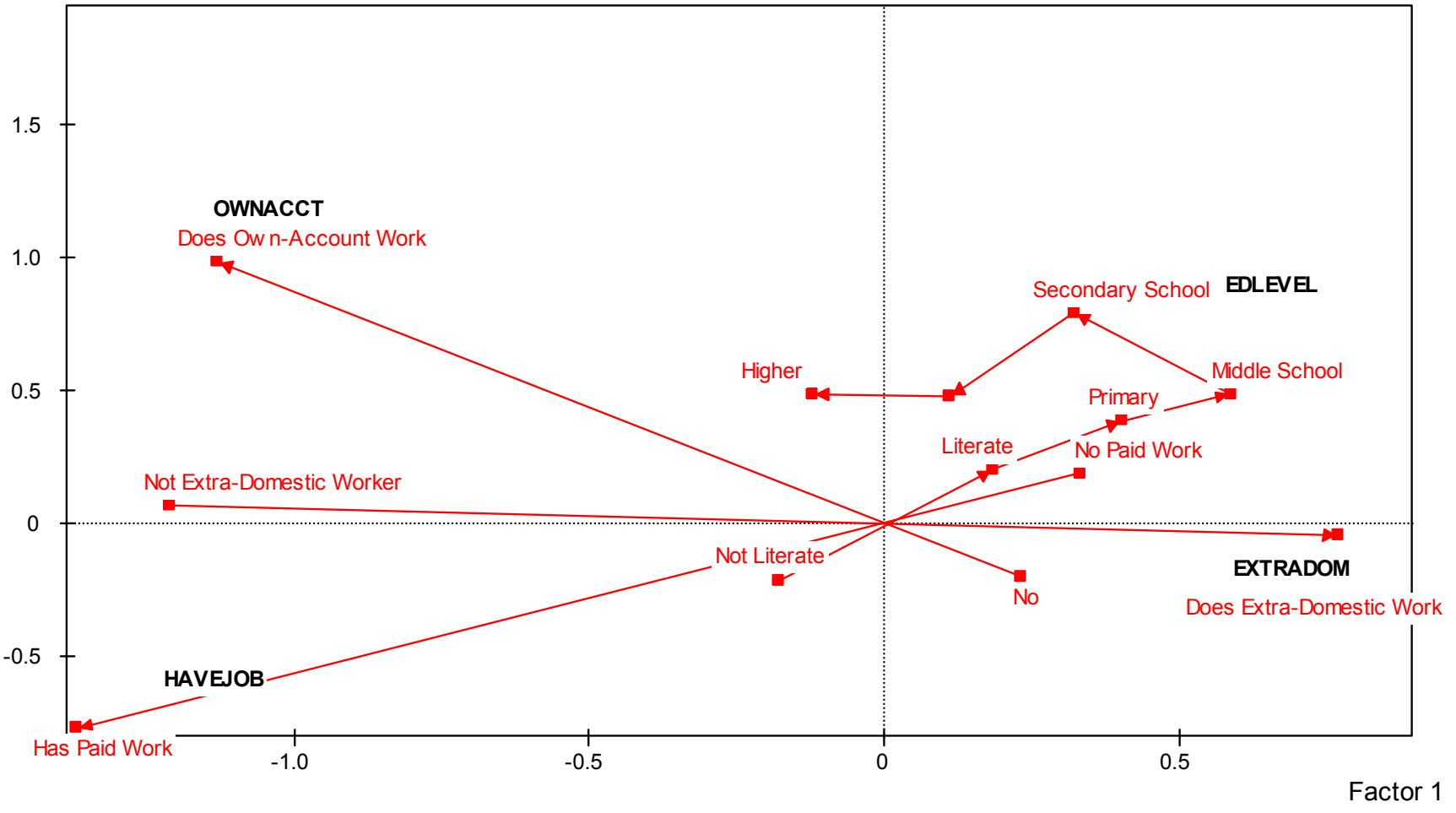
# Possible Further Research

- Can the debate between social class analysis and the economics of labour-markets be resolved using regression models?
- Mukherjee, White, and Wuyts suggest trying various sub-models to seek more stable coefficients – suggesting these have a stronger theory.
- Mathur, JDS 1994
- When looking at women's labour-force participation, is there a U-curve of housewifisation or is being 'inactive' a privilege of the well-off?
- Poverty is clearly associated with more paid (and unpaid) work

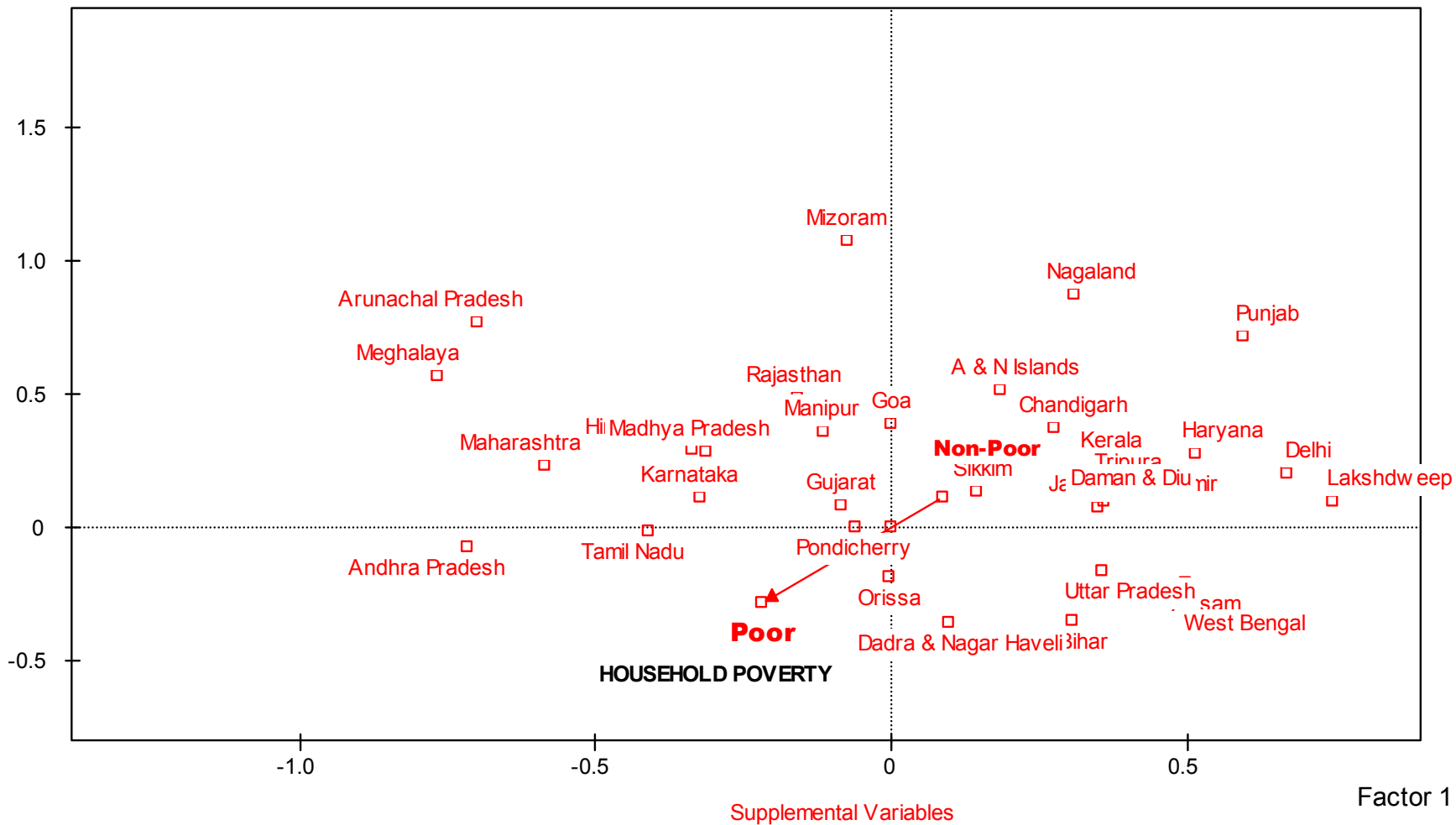
# Two Methods Other Than Regression

- Cluster Analysis (A case-based analysis which allows the causal trajectories to be categorised)
- Weakness: the analysis of change over time
- Strength: does not claim or pretend to expose causes directly
- Correspondence Analysis (A factor-analytic solution that uses ordinal variables and is thus case-based)
  - SPSS versions:
    - HOMALS
    - PRINCALS
    - Cancor
  - See Clausen book
  - See Greenacre (MCA)
- SPAD Software for MCA
  - See [www.decisia.fr](http://www.decisia.fr)

Factor 2



Factor 2



# Empirical Part II: Scale Triangulation of Indian NSS 1994 with Local A.P. Village Data 1995\*

- Local survey with 8 fieldwork months
- Interviews and survey are in ESRC Data Archive
- ODI / DFID funded the work
- 120 randomly sampled households
- Recall data about farm output, paid labouring, debts, investments, wells, persons



**The local survey shows that land, other assets, marriage events, investment pathways, and tenancy all affect the use of bank loans.**

**Bank loans appear to be substitutes for informal sector loans.**

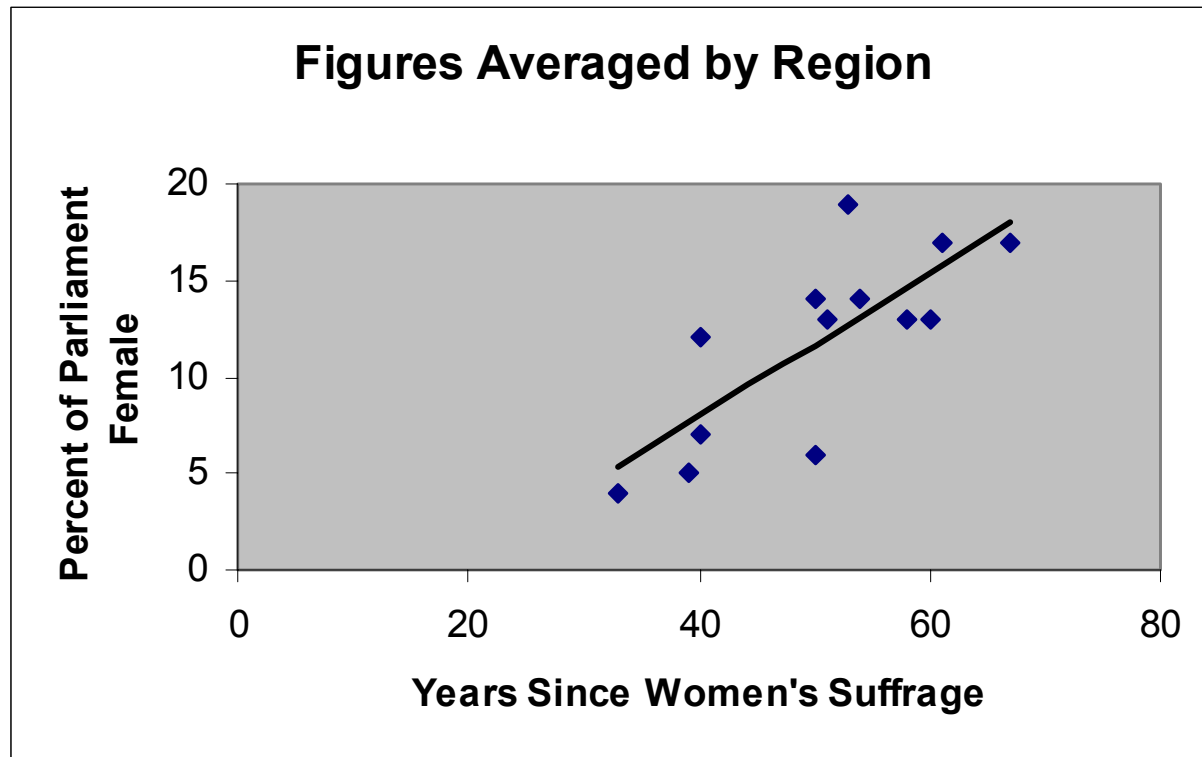
**The national data can be used to explore the same topics. The local data are of better quality.**

**Path analysis can help to adduce pathways of causality**

# Empirical Part III: International Data 2004

- An ESRC funded project
- 203 countries, for which data on gender, democracy, economic development, human development, and labour market activity are gathered
  - From UNDP, WDI, ILO, UNESCO, Freedom House, International Parliamentary Union
  - For 1952, 1962, 1972, 1982, 1992, 2002

# Women's Progress



# Causality in International Studies?

- A. Statistical inference is not a valid discourse in this particular type of situation
- B. Substantive trajectories are each unique, but fall into combinations (these are configurations)
- C. When gender-related indicators rise together, it implies that similar processes have affected various countries. It does not necessarily reveal the processes.
- There are limits to the observation of countries using the survey method

# Conclusions

- Causality is complex and involves real mechanisms.
- Variables act as proxies for various mechanisms in an N to N relation.
- Poverty can be an outcome in a causal analysis.
- It can also be queried as a possible contributing factor.
- In India, it appears that poverty influences labour force participation.