Qualitative Comparative Analysis

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Overview

- Review of QCA publications and software
- QCA as a formalization of the comparative method
- Three analytic components of QCA
  - Data set calibration
  - Necessity analysis
  - Sufficiency analysis
- Recent developments in QCA

Recommended Readings on QCA

- Ragin and Rubinson (2009) “The Distinctiveness of Comparative Research”
- Ragin (2008) *Redesigning Social Inquiry*
- Ragin (1987) *The Comparative Method*

Recommended Readings on Case-Oriented and Comparative Research

- Rubinson and Ragin (2007) “New Methods for Comparative Research?”
- Brady and Collier (2004) *Rethinking Social Inquiry*
- George and Bennett (2005) *Case Studies and Theory Development in the Social Sciences*
- Mahoney and Rueschemeyer (2003) *Comparative Historical Analysis in the Social Sciences*
- Skocpol (1979) Introduction to *States and Social Revolutions*
- Gaddis (2002) *The Landscape of History*

Other Related Readings

- Compasss web site (www.compasss.com)
- Gerring (2007) *Case Study Research*
- Goertz (2006) *Social Science Concepts*
- Ragin (2000) *Fuzzy-Set Social Science*
- Rihoux and Ragin (2009) *Configurational Comparative Methods*

Software

Ragin's fs/QCA (www.fsqca.com):

- always produces correct results, intermediate solutions, relatively user-friendly, described in *RSI,* cutting edge
- but: Windows-only, buggy, out of date documentation, the dreaded prime implicant chart, no tools for interrogating the analysis, cutting edge

Rubinson's acq and Kirq (www.grundrisse.org/qca/):

- always produces correct results, sophisticated necessity analysis, supports contradictions and impossible conditions, user-friendly, cross-platform, tools for interrogating the analysis, mailing list, no prime implicant chart
- but: no intermediate solutions, solution complexity, acq selective about its friends, Kirq doesn't exist yet
- Note: Seeking developers for R and Stata packages

Other Software

Cronqvist's TOSMANA:

- visualizations; cross-platform (via Mono)
- but: doesn't support fuzzy-set QCA; inspired by QCA 3.0

Dusa's QCA for R (also Huang's QCA3 for R):

- cross-platform
- but: doesn't support fuzzy-set QCA; inspired by TOSMANA/QCA 3.0
- Note: Rubinson's fsQCA package for R is obsolete

Longest and Vaisey's fuzzy module for Stata:

- ???

Varieties of QCA: Crisp Sets, Fuzzy Sets, & Multi-Valued Sets

- *The Comparative Method* (1987) describes "crisp-set QCA"
- *Fuzzy-Set Social Science* (2000) describes "fuzzy-set analysis"
- *Redesigning Social Inquiry* (2008) unifies "crisp-set QCA" and "fuzzy-set QCA"
  - crisp-set QCA is a special form of fuzzy-set QCA
  - fs/QCA, acq, and Kirq are all based on the RSI algorithms
- What about multi-valued QCA?

What is QCA?

- QCA is a formalization of the comparative method, using Boolean algebra.

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What is the comparative method?

- Many names: comparative research, comparative analysis, small-N comparison, small-N analysis, case studies, cross-case studies
- Assumes invariance (consistency)
- Characterized by the search for necessary and sufficient conditions.
- Is comparative research necessarily small-N?
- Is comparative research necessarily case-oriented?

Assumption of Invariance

- Definition: Certain aspects of cases tend to co-occur.
  - Tenured faculty tend to have many publications
  - Religious fundamentalists tend to be politically conservative
  - “business leaders and owners of capital … are overwhelmingly Protestant” (Weber 1958:35)
  - “No bourgeois, no democracy.” (Moore 1966:418)

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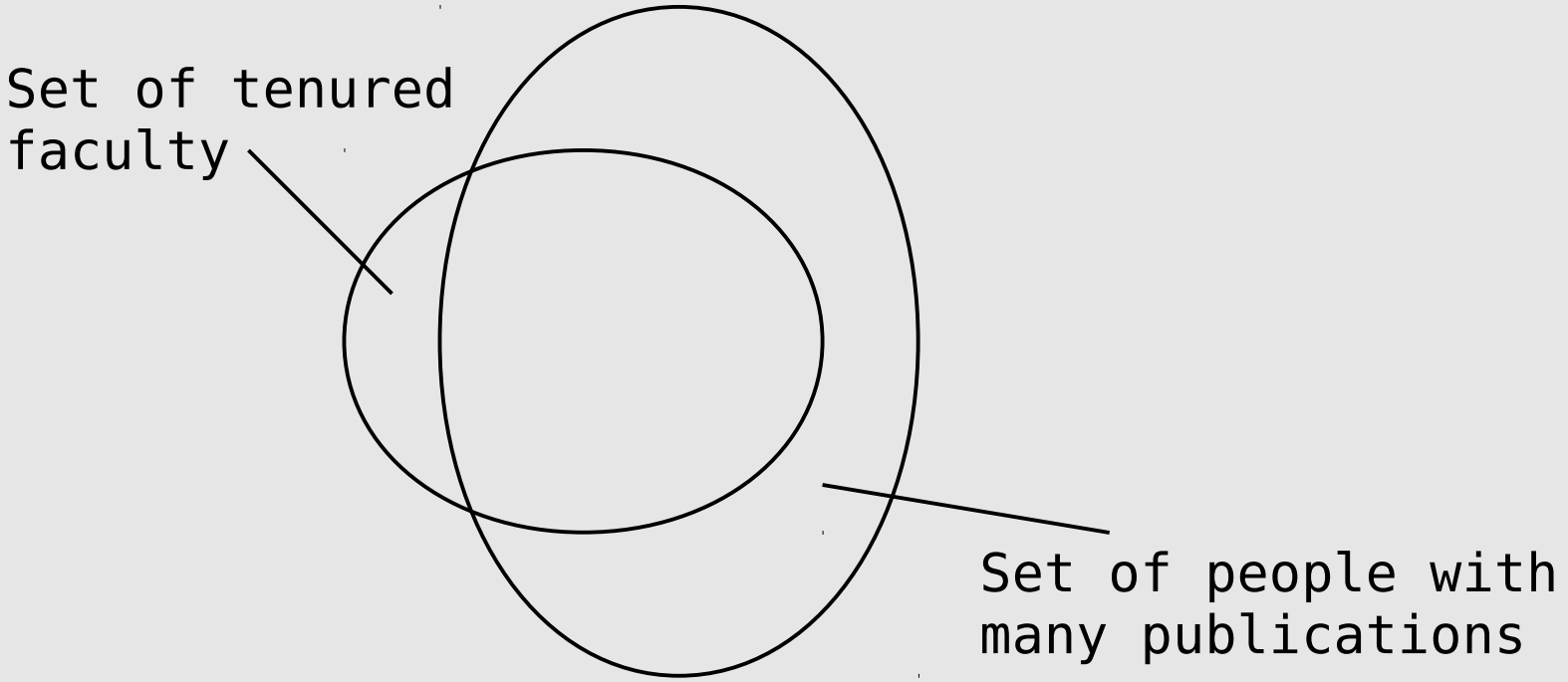

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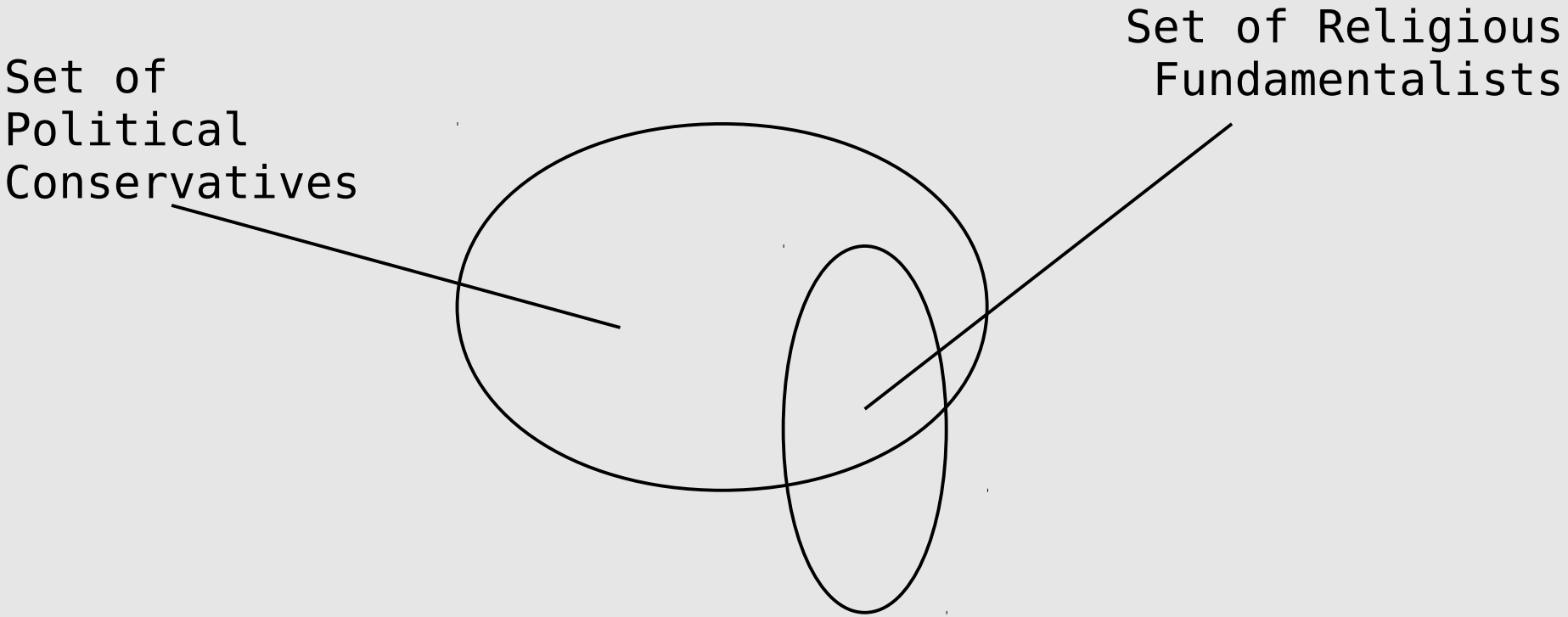

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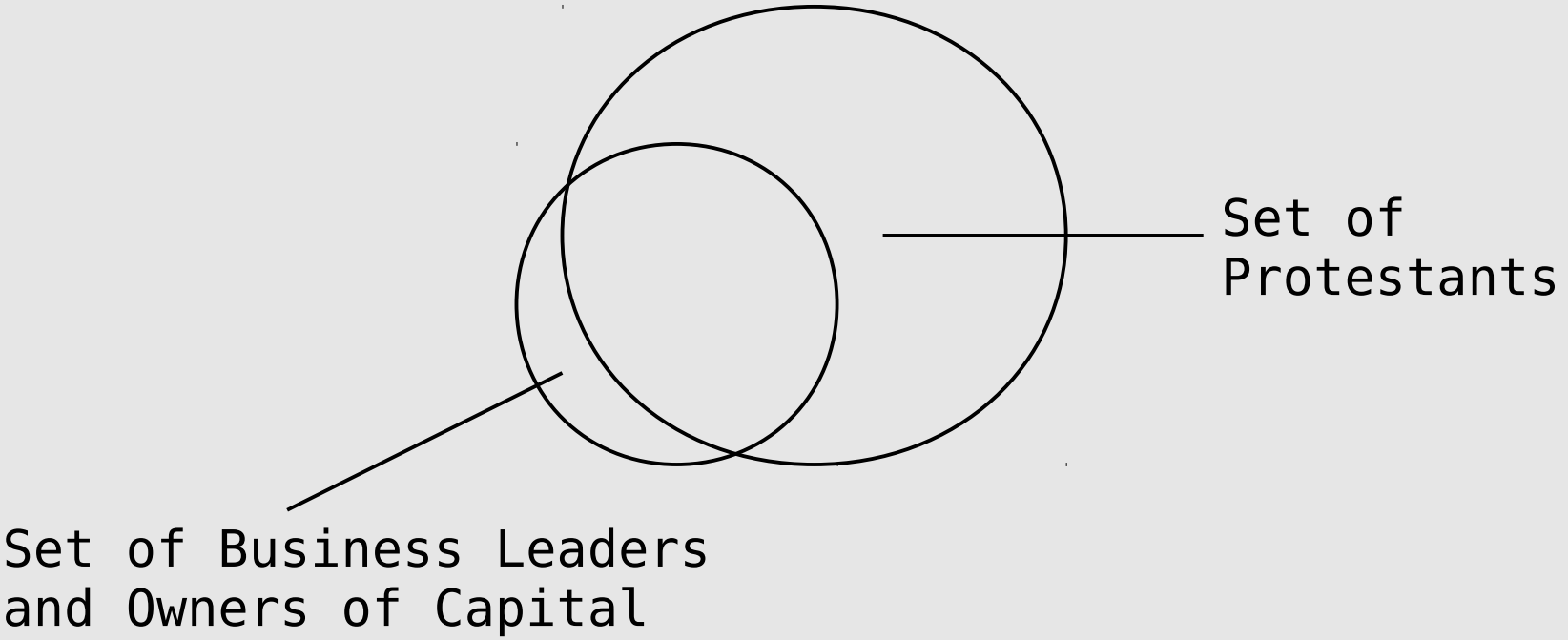

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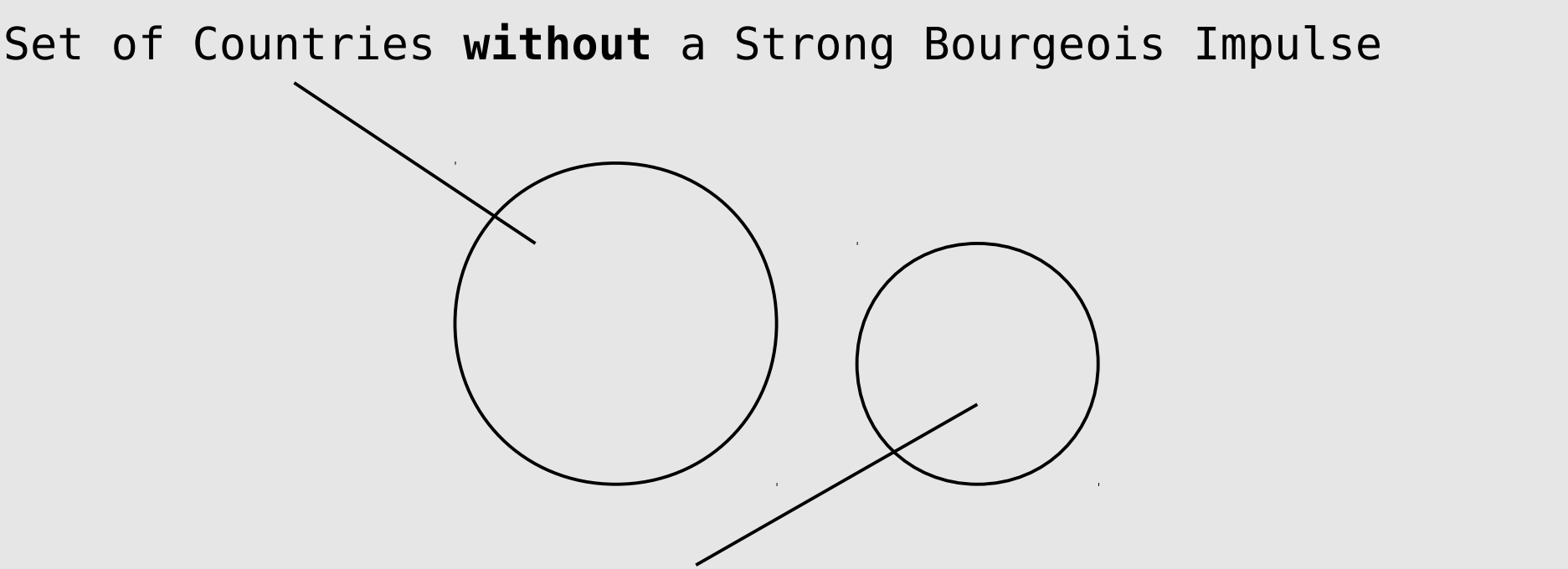

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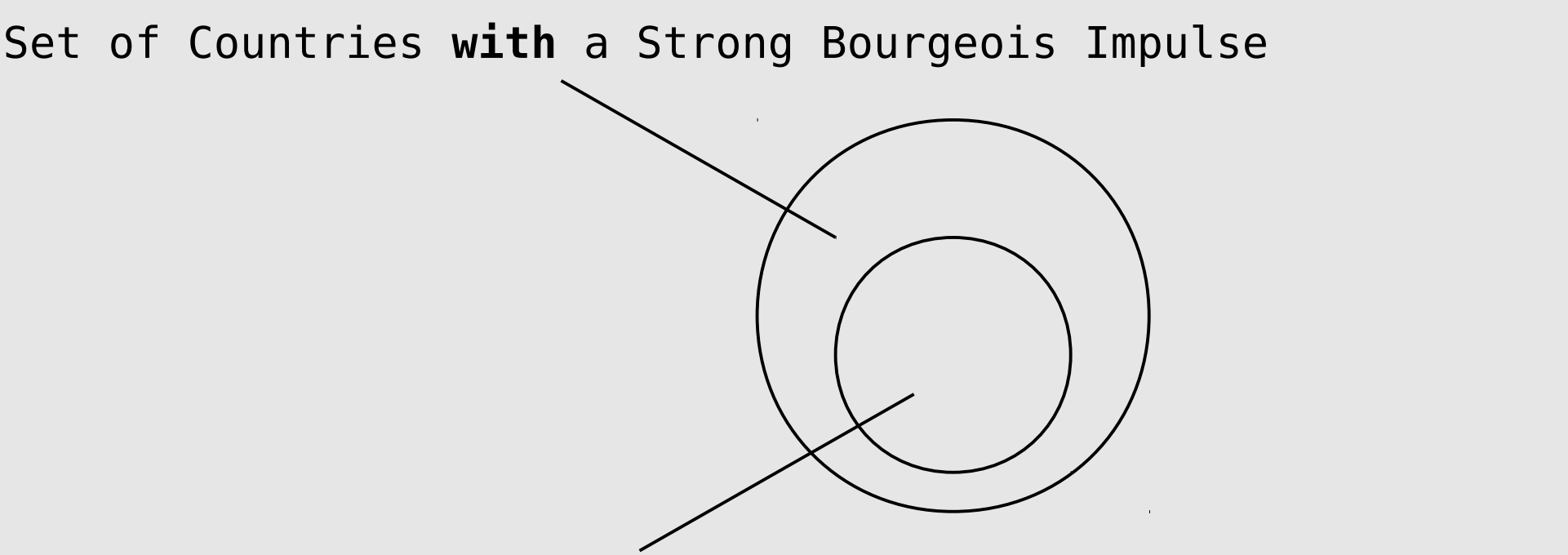


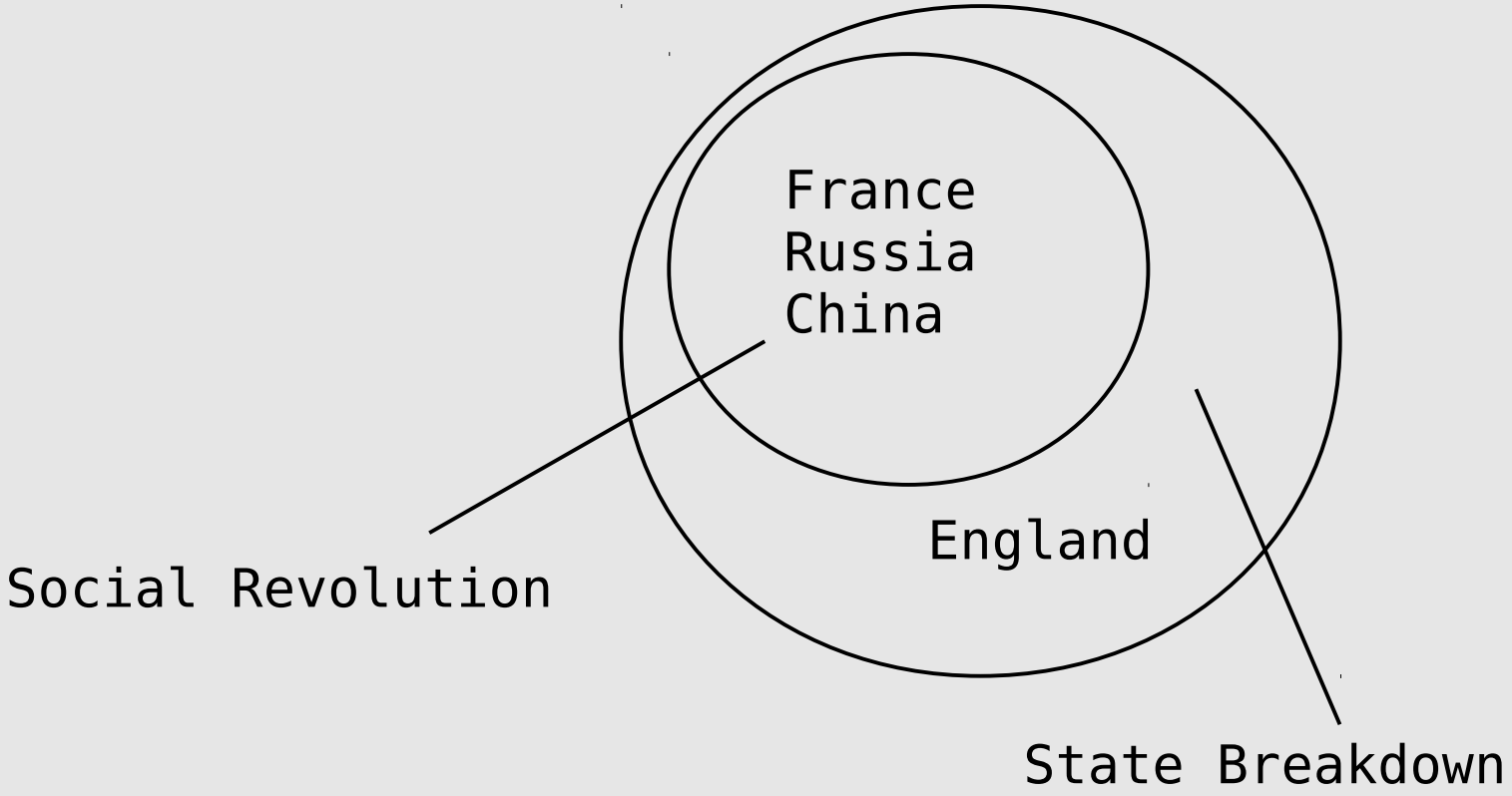
Assumption of Invariance

- Definition: Certain aspects of cases tend to co-occur.
  - Does not imply determinism (or stochasticism)
  - Is not vulnerable to a single disconfirming case
  - Is fundamentally set theoretic
  - Parallels how we typically formulate social theory:
    - The modern world system is a capitalist world-economy characterized by a single division of labor that prioritizes the endless accumulation of capital.
    - During unsettled periods, people actively use culture to learn new ways of being.

Necessary Conditions

Causal condition must (almost always) be present for outcome to occur.

Outcome is a subset of Cause



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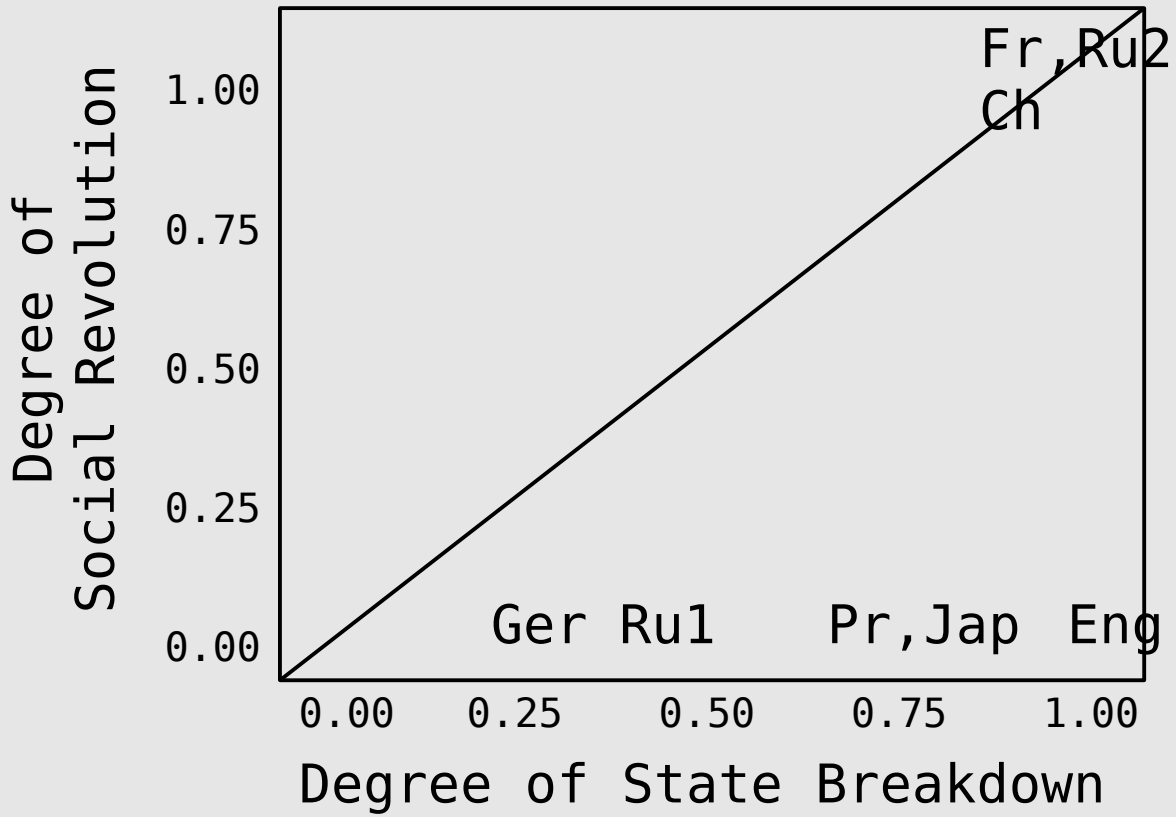

Sufficient Conditions

Outcome (almost) always occurs when causal condition is present.

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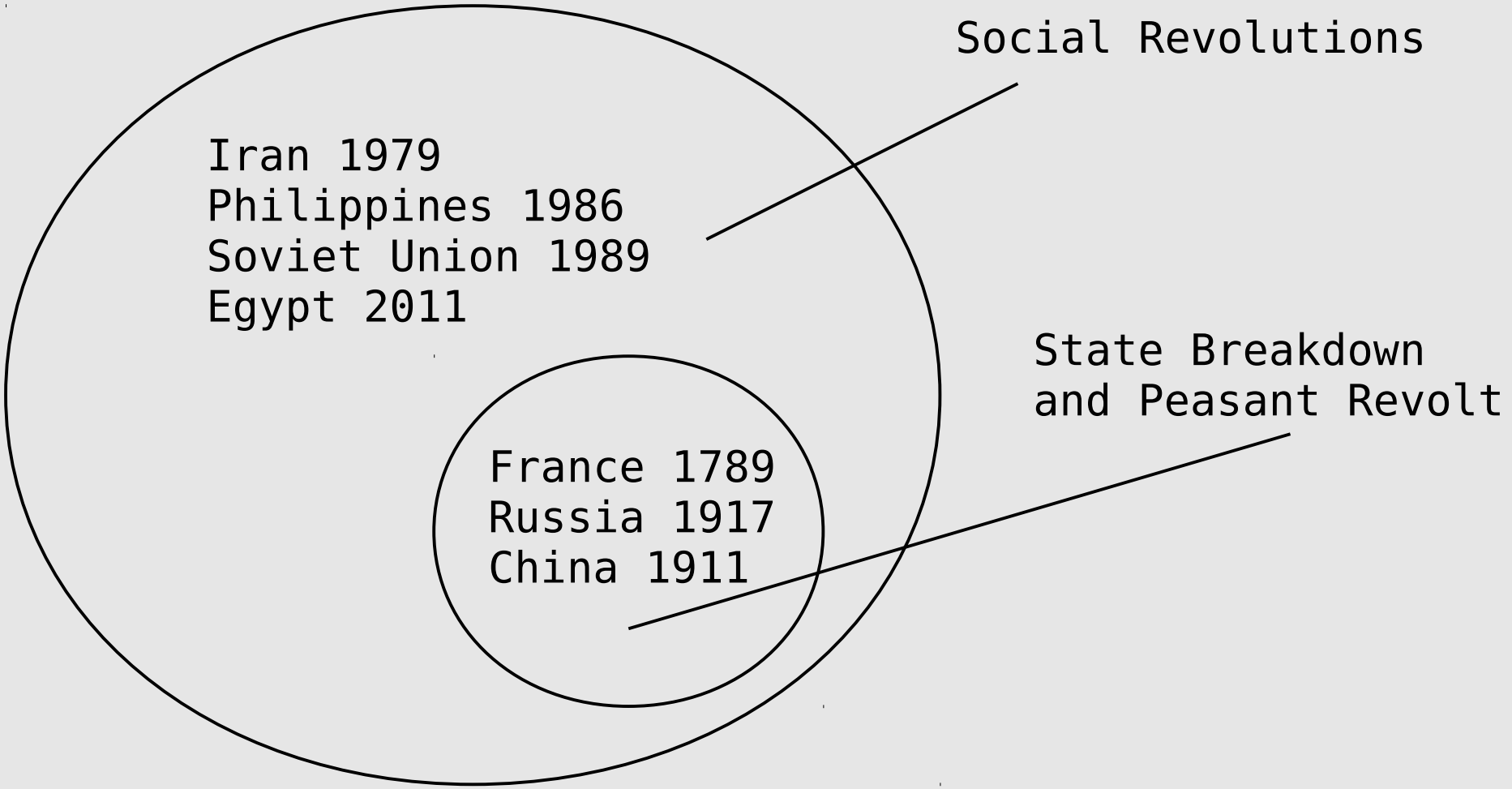

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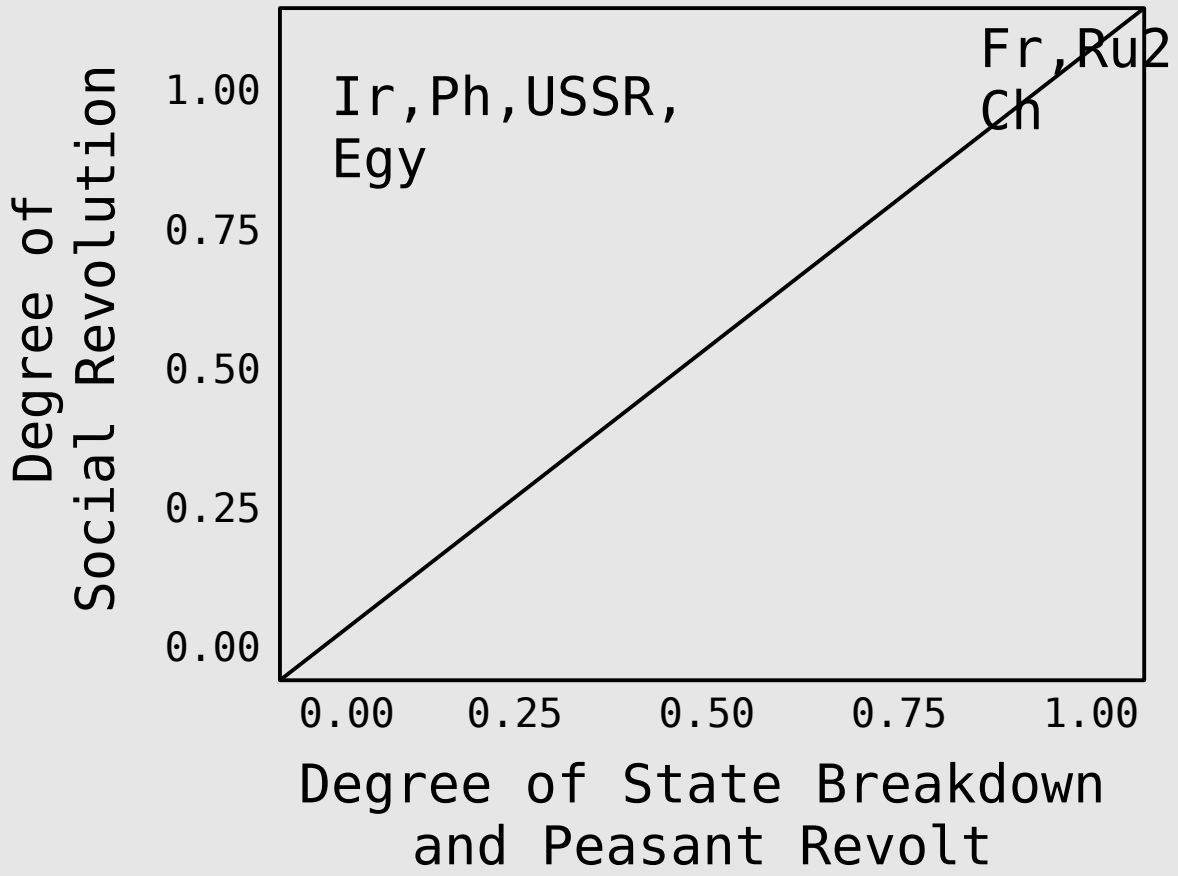


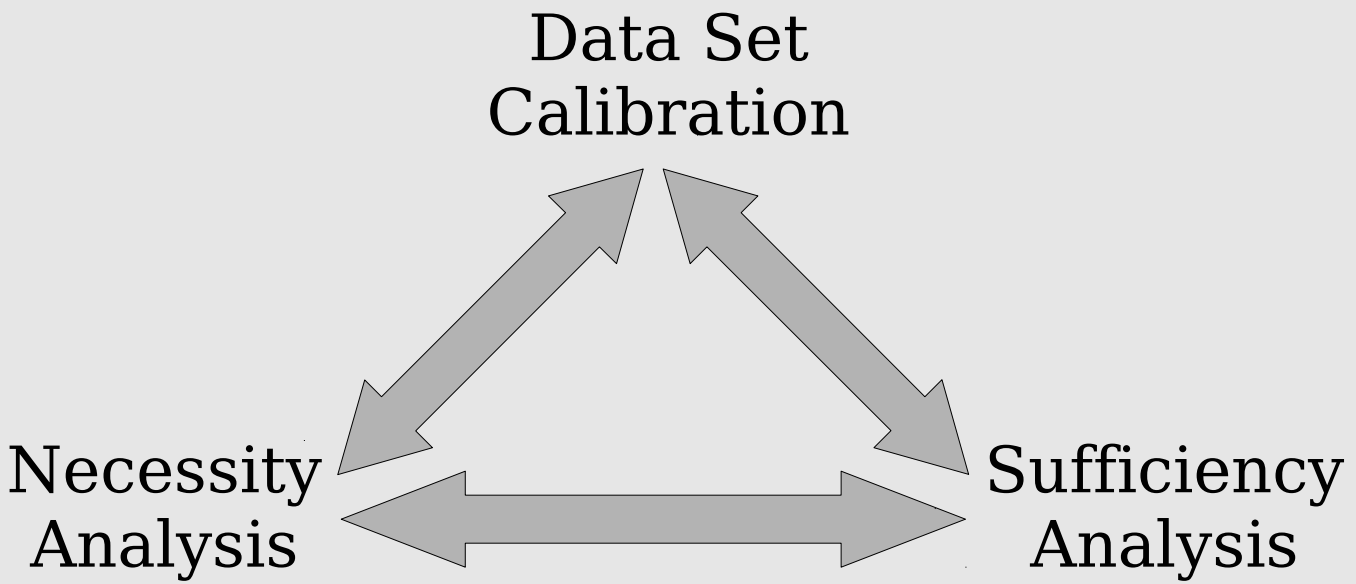
Historical Affinity with Case-Oriented, Small-N Research

- Holistic approach of comparativists encourages "structured, focused comparisons."
- Small number of countries enables in-depth analysis and helps cases to remain in the foreground

But:

- Small-N statistical analysis is possible (e.g., Esping-Andersen)
- Large-N comparative research is possible (e.g., Ragin and Fiss; Rubinson, De Fazio, and Franzosi)
- Small-N ≠ Case-Oriented; Large-N ≠ Variable-Oriented

Three Analytic Components of QCA



Boolean Algebra

- UPPERCASE for the presence of a condition
- lowercase for the absence of a condition
- Negation

  ~A = 1 – A

  a = 1 – A

- Logical and (Boolean multiplication)

  A•b = Ab = min(A,b)

- Logical or (Boolean addition)

  A+b = max(A,b)

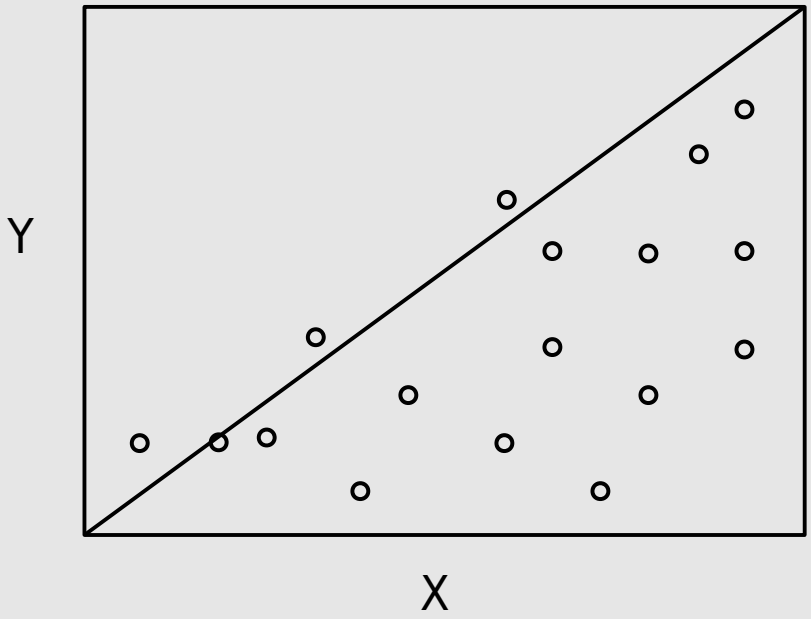
Data Set Calibration

- The process of constructing fuzzy-sets
- May be crisp or fuzzy
- Is about defining set memberships
  - degree of membership in the set of rich people (vs annual income)
  - degree of membership in the set of core countries (vs GDP/capita)
- Importance of negation and asymmetry
  - degree of membership in the set of *not* rich people
  - degree of membership in the set of *not* core countries

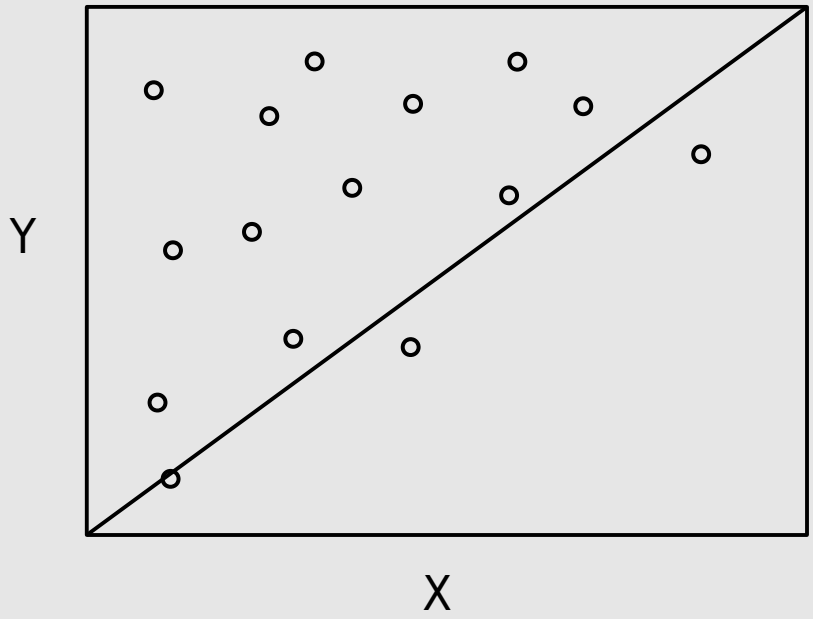
Analysis of Necessary and Sufficient Conditions

- Necessity analysis is underdeveloped in the literature; QCA development—and applications—have focused on sufficiency analysis
- but: libfsqca-based software has sophisticated necessity testing
- Sufficiency analysis emphasizes causal complexity (a.k.a., multiple conjunctural causation, “recipes,” equifinality, or INUS conditions)

Analysis of Necessary and Sufficient Conditions



Subset relationship consistent with necessity



Subset relationship consistent with sufficiency

Recent Developments in QCA

- Combining with other set-theoretic techniques
  - Correspondence analysis
  - Social network analysis
  - QNA
- Temporal and sequence analysis
  - Caren and Panofsky's “TQCA”
- Inferential techniques and statistics-like modeling
  - Eliason and Stryker's “Goodness of Fit” and “relative consistency” measures
- Visualizations