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# Mixed Methods in Social Network Analysis: Combining the Quantitative and Qualitative Approaches

**Daria Maltseva<sup>1</sup> and Anna Shirokanova<sup>2</sup>**

<sup>1</sup> International laboratory for Applied Network Research

<sup>2</sup> Laboratory for Comparative Social Research,

National Research University Higher School of Economics, Russia

[dmaltseva@hse.ru](mailto:dmaltseva@hse.ru)     [a.shirokanova@hse.ru](mailto:a.shirokanova@hse.ru)

# Outline

1. SNA: from structural analysis to cultural turn
2. MM as a movement and family of strategies
3. Using narrative data (biographical interviews) in Network Analysis
4. Conclusions

SNA:

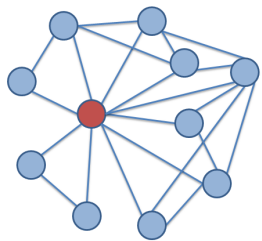
from structural analysis  
to cultural turn and  
beyond

# Role of SNA in Sociology

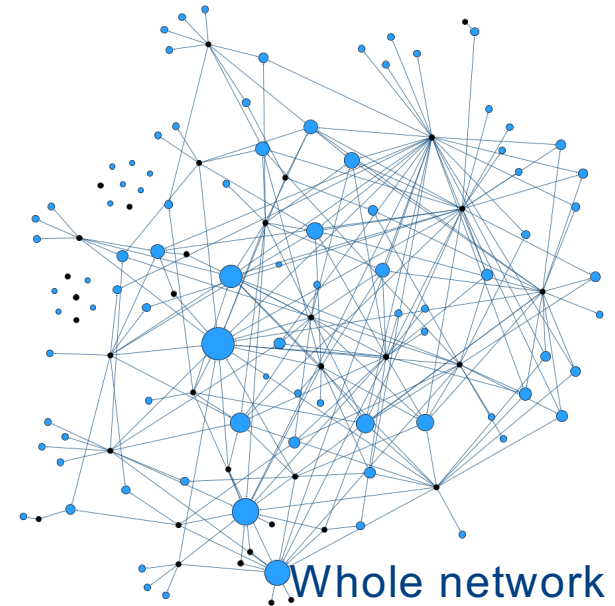
Social Network Analysis (SNA) is a theoretical and methodological direction of analysis based on graph theory that focuses on *relations* as ties between *individual units* (nodes) and reveals the *deep, hidden structures* determining the nature of relations, constrictions and mutual influence.

SNA addresses the agency-structure dilemma in sociology:

- return to the *system level* of analysis
- move *from the level of individuals* and their personal characteristics *to the overall structure of the group*
- explanation challenges remain, though

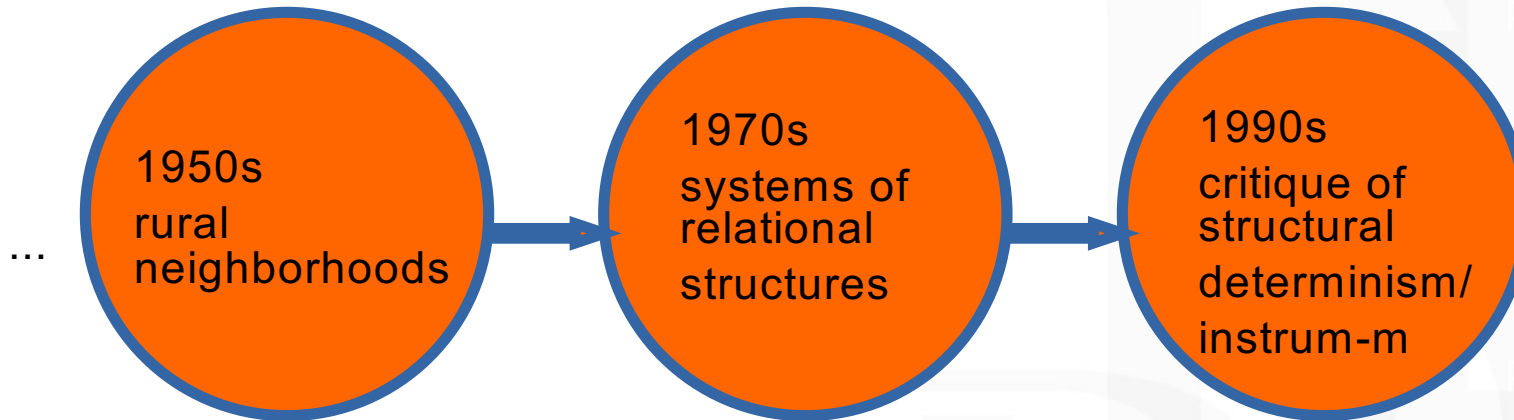


Ego network



Whole network

# Evolution of SNA (Hollstein, 2014)



# Quantitative (Structural) Approach

## Dominant strategy in quant SNA:

- Focus on the *analysis of the structures of relationships* and identification of the *influence of these structures* on actors due to their positions in networks [Borgatti et al., 2013].
- Uses various *formal statistics and graph metrics* to estimate relationships between actors (people, their groups or organizations) represented as networks [Wasserman & Faust, 1994].
- *Quantitative methods* of data processing.

## Criticisms

*“Relation between social actors entails several and changing meanings in particular cultural and intersubjective contexts”* [Emirbayer, Goodwin, 1994] - studying structures needs cultural backgrounds of behavior.

Empirical networks can be understood as *“relational webs of meaning, discursively constituted in processes and essentially cultural products”* [Mutzel, 2009].

# Quantitative (Structural) Approach

## Dominant strategy in the 1950-1980s

- Focus on the *analysis of the structures of relationships* and identification of networks (relationships)
- Relational Sociology:**

  - transactions as *dynamic, changing and continuous processes*, rather than their components (individuals or structures),
  - special focus of research to *content* (meaning) and *context* (external frames) of the relationships.
- *Quantitative methods* of data processing.

## “Cultural turn” in SNA

“... between social actors entails several and changing meanings in cultural and intersubjective contexts” [Brint 1992, DiMaggio] why studying structures needs inclusion of cultural aspects of behavior.

Empirical networks can be understood as “*relational webs of meaning, discursively constituted in processes and essentially cultural products*” [Mutzel, 2009].

# Qualitative Approach

## Developing since the 1990s

- Focus on the analysis of **construction, reproduction, variability and dynamics** of complex social ties [Edwards, 2010], linkages between network *structure* and network *actors*, problem of *agency* [Hollstein, 2011].
- **Interpretation of visual and narrative data**, collected by ethnographic methods, observations, in-depth interviews, as well as special technics of data collection, such as *network maps* visualizing individual ego-networks and interviews commenting these maps (participatory mapping techniques).



# Integration: Mixed Methods approach

**Quant**

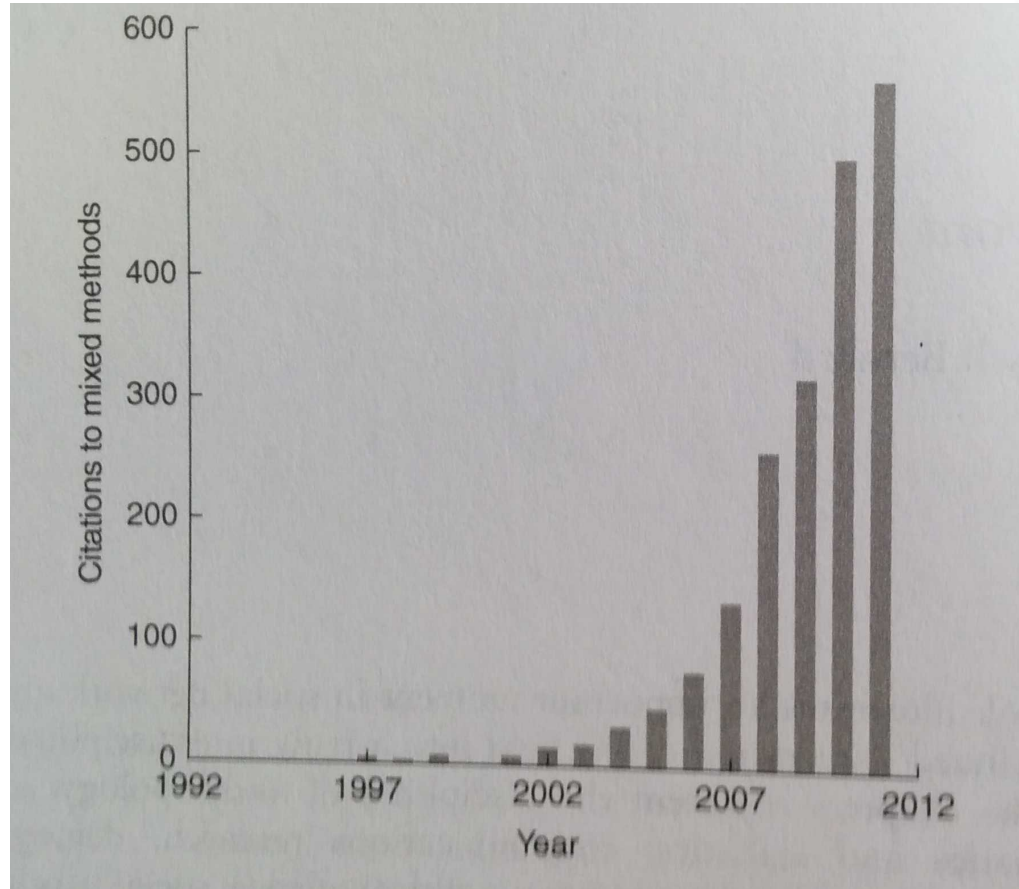
**Qual**



MM  
as a movement and  
family of strategies

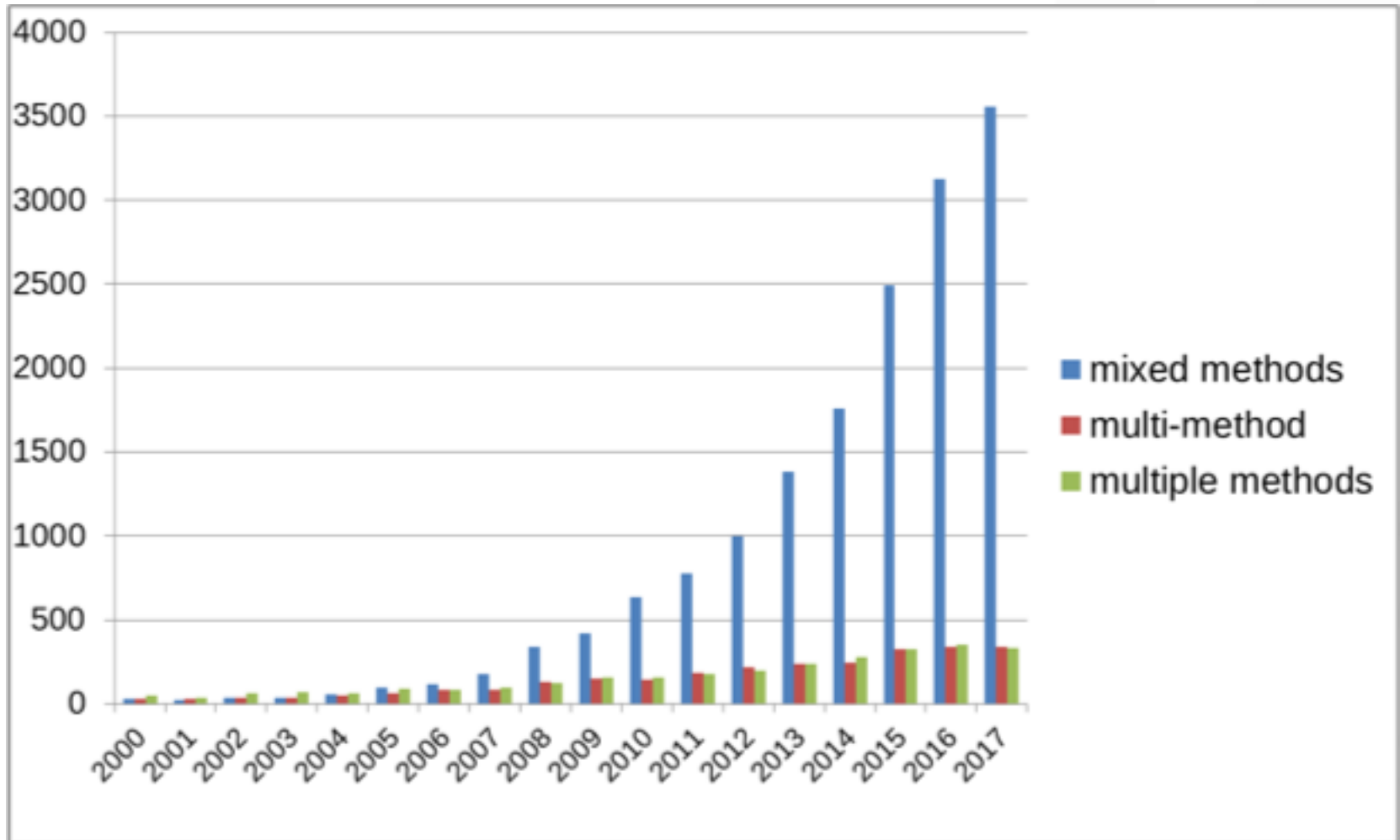
# Mixed Methods Approach

2007 – boom in MM research in the social sciences



(Dominguez & Hollstein (eds.), 2014: xxvi)

# Mixed Methods Approach



# Mixed Methods Approach

MM is combining techniques from methodological families within a single study (Seawright, 2016).

MM is a taken-for-granted mixing of various methods of data collection and data analysis; a „natural order of science“ (Bernard, 2014)

- reaction to a „war between quals and quants“ (Rossi, 1994) against the false dilemma of choosing sides, understanding vs. Explanation.
- In contrast to triangulation (Webb et al., 1966), MM implies the integration of methods: M1->M2->results
- Three conditions: q+q data, strategies of analysis, and integration

# Mixed Methods Approach

MM Strategies: single- and multistrand;  
sequential (Q-Q), parallel, fully integrated, embedded  
(nested), and conversion designs.

*survey+laboratory experiment*

*focus groups+participant observation*

*stat.text analysis+qualitative interpretation*

*ethnography+survey/data mining\**

MM can test assumptions – but should be designed  
as MM from the onset (case selection, statistics,  
qualitative inquiry)

# Mixed Methods Approach

## Quantitative methods

**Structures** of relationships and positions of actors within these structures.

## Partial integration

Help to make deeper analysis of the field, to enrich and validate information, to interpret the practices of actors in creating relationships, and to consider the conditions under which networks are created.

## Qualitative methods

**Meanings** that actors allocate to relations and interactive processes by which these relationships are formed.

## Full integration (MM)

This approach **goes beyond the positivist or realistic tradition** and involves **interpretive methodological strategy**, reflecting “the dual nature of social reality” [Bolibar 2015]

# Mixed Methods Approach

Need of benchmarks for methods combination and reconciliation of results.

MM argumentation only works if persuasive – methods combine to support a single theory, each method is used for what it is good at, weaknesses are minimized — in that case MM is more robust and of higher quality than single method study.



Using narrative  
biographical  
interviews in SNA

# Biographical interviews as a source of data for analysis

Depends on the general theoretical and methodological stand of the researcher:

## Quantitative approach

Data source for **networks formation** [Gradoselskaya et al.]  
+ analysis of the whole volume of available links (whole networks)  
- ignores the context of relationships and their qualitative change

## Qualitative approach

Source of information on **meanings of links** for the actor [Herz et al.]:  
+ deep dive into the interpretation of the relationships formed by informants  
- small data set that can be analyzed

## Mixed-method approach

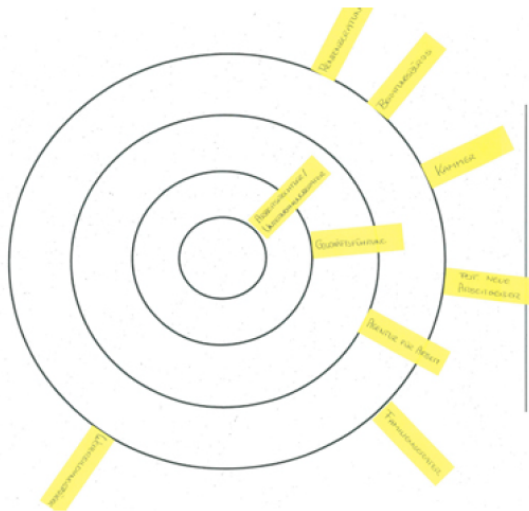
**Combination** of structural and interpretative analysis [Armitage, Bolibar]:  
+ enrichment of the results of formal analysis  
- significant complication of the analysis procedure

# Biographical interviews as a method of data collection

## Additional data

The **quantitative surveys** are followed by **interviews** with all or some of the participants of the network [Armitage, Bolibar].

Special technique of data collection - **network visualizations (maps)**, which are formed before or during the interview and help to concentrate on it.



**Herz, A., Peters, L., Truschkat, I.**  
How to Do Qualitative Structural  
Analysis: The Qualitative  
Interpretation of Network Maps  
and Narrative Interviews // Forum:  
Qualitative Social Research. 2015.  
Vol. 16, No.1, Art.9.

## Main data

Interviews as **key data source**  
[Herz et al., McKether et al.,  
Gradoselskaya et al.]



**Armitage, N.**  
The Biographical Network //  
Sociological Research Online.  
2016. 21 (2), 16.



## Armitage, N.

The Biographical Network // Sociological Research Online. 2016. 21 (2), 16.

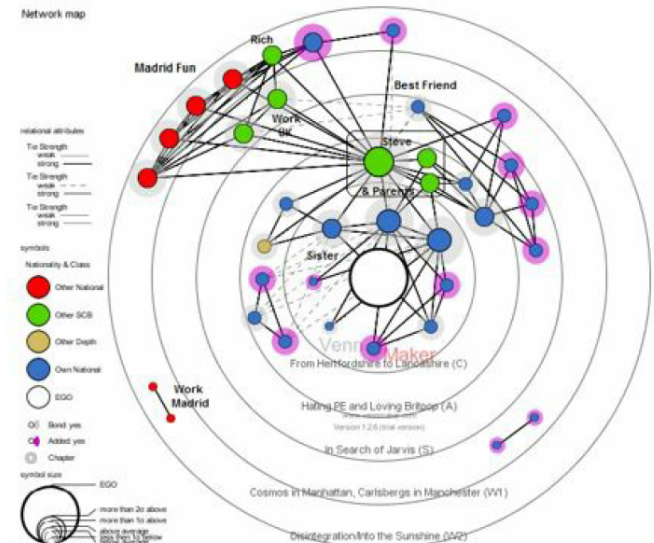
### Analysis of cross-cultural communication practices of the youth

Data collection: biographical network method

- 28 interviews and network visualizations with young adults
- 2 steps: questionnaires with name generators and biographical description (“book about you with chapters”), which were used in interview and network visualizations

Data analysis:

- Formal analysis of 28 ego-networks
- Network dynamics of relations



## Bolibar, M.

Macro, meso, micro: broadening the 'social' of social network analysis with a mixed methods approach // *Quality & Quantity*. 2016. Vol. 50, Issue 5, P.2217–2236.

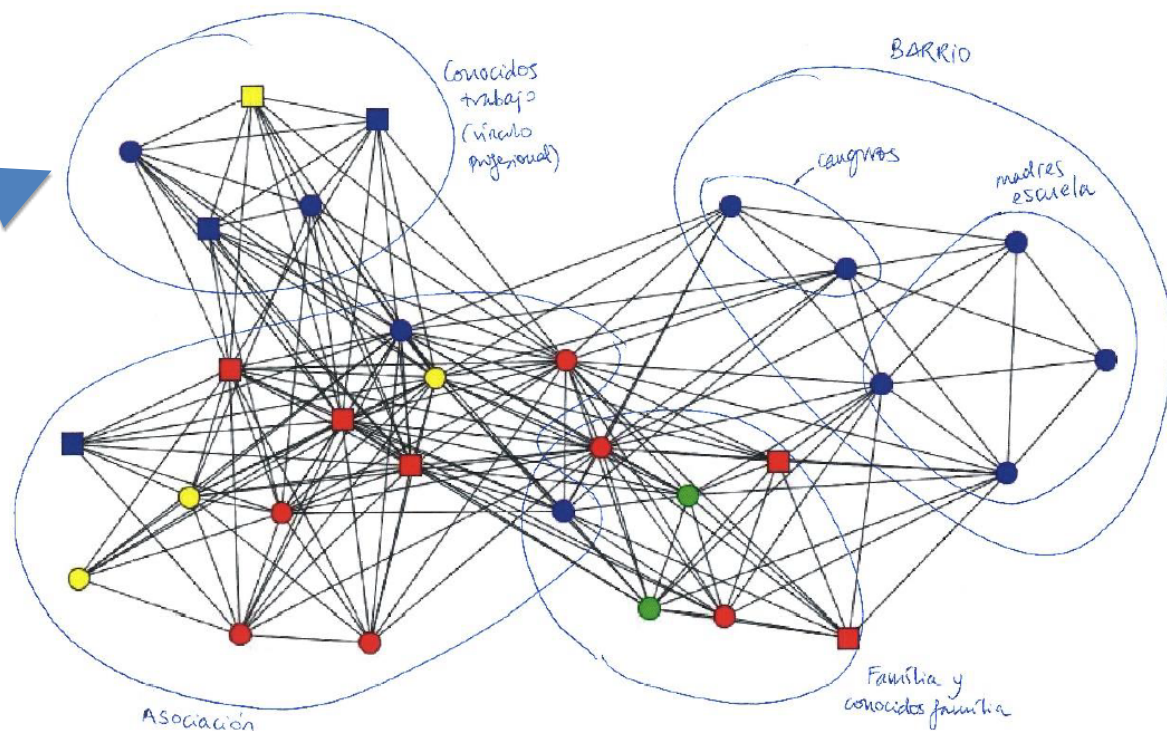
## Social integration of migrants

### Data collection:

- (1) Survey of 153 migrants with name generator;
- (2) Biographical interviews with 18 people commenting visualizations of their personal networks.

### Data analysis:

- Analysis and comparison of 153 ego-networks



# Previous Research

## Data collection:

- Interviews with sociologists
- Extraction of data for network analysis

## Data analysis:

- “Whole network” approach to analysis
- “Actor-artifact” analysis

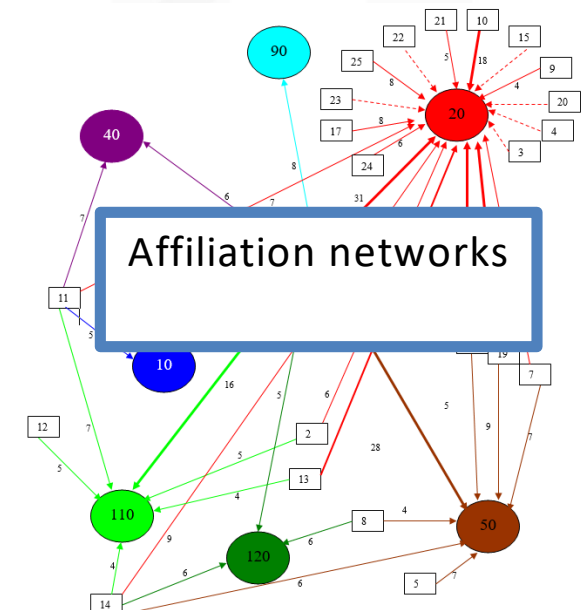
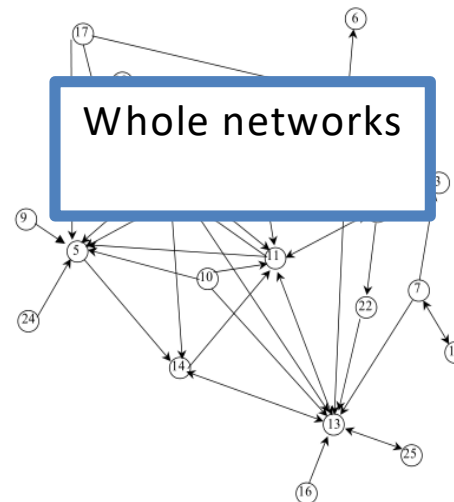
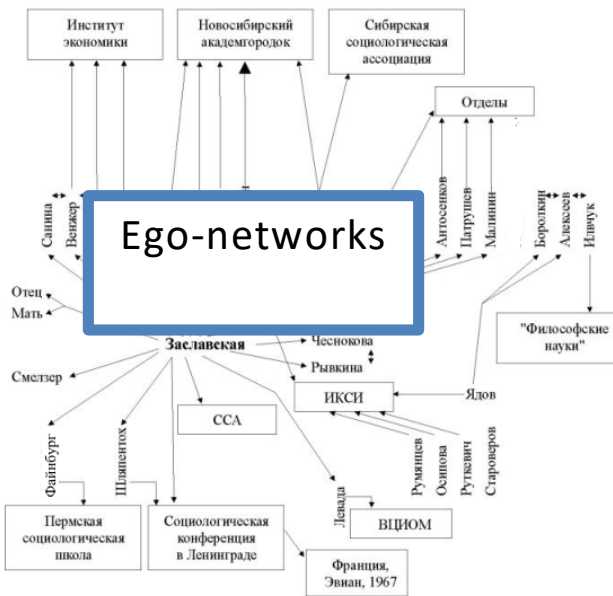
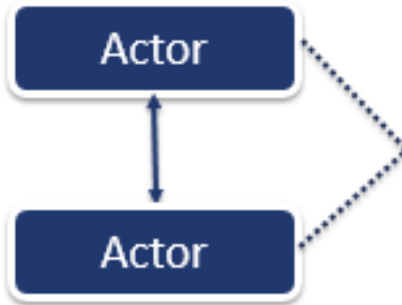


Рисунок 3.

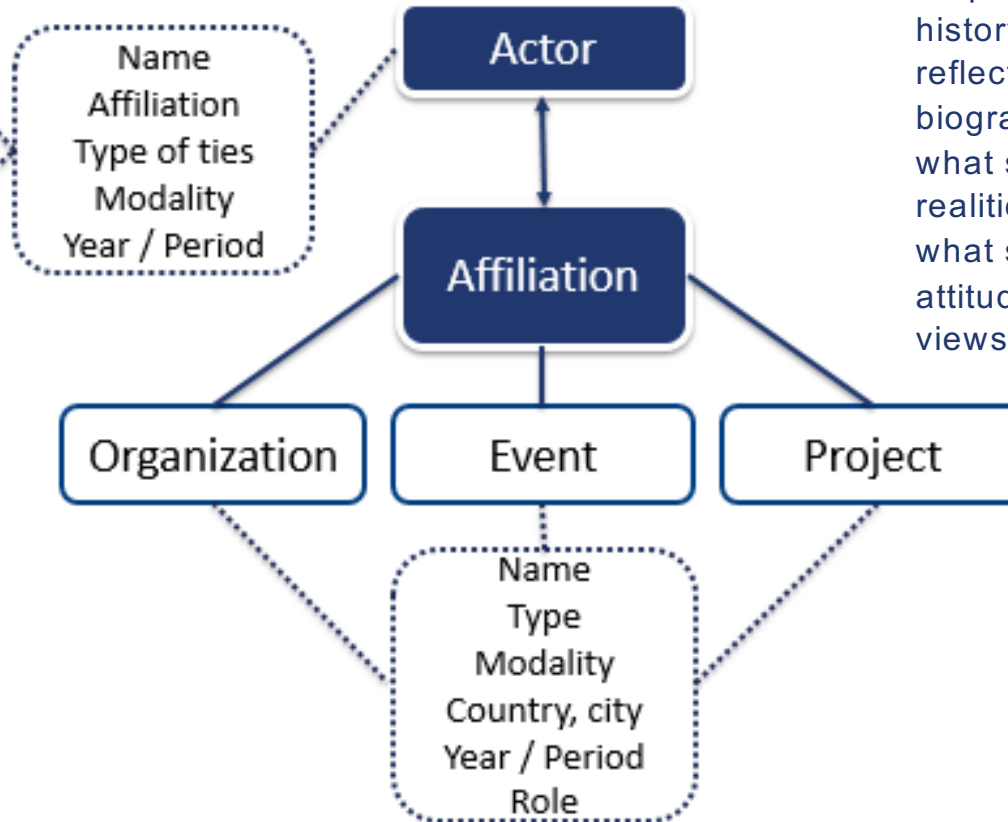
Значение кодов артефактов: 10 – Вуз, 20 – АН, 40 – Печатные органы, 50 – Печатные издания, 90 – Города-научные центры, 110 – Исследовательские проекты, 120 – Официальные научные собрания.

# Data Structure

One-mode network



Two-mode network



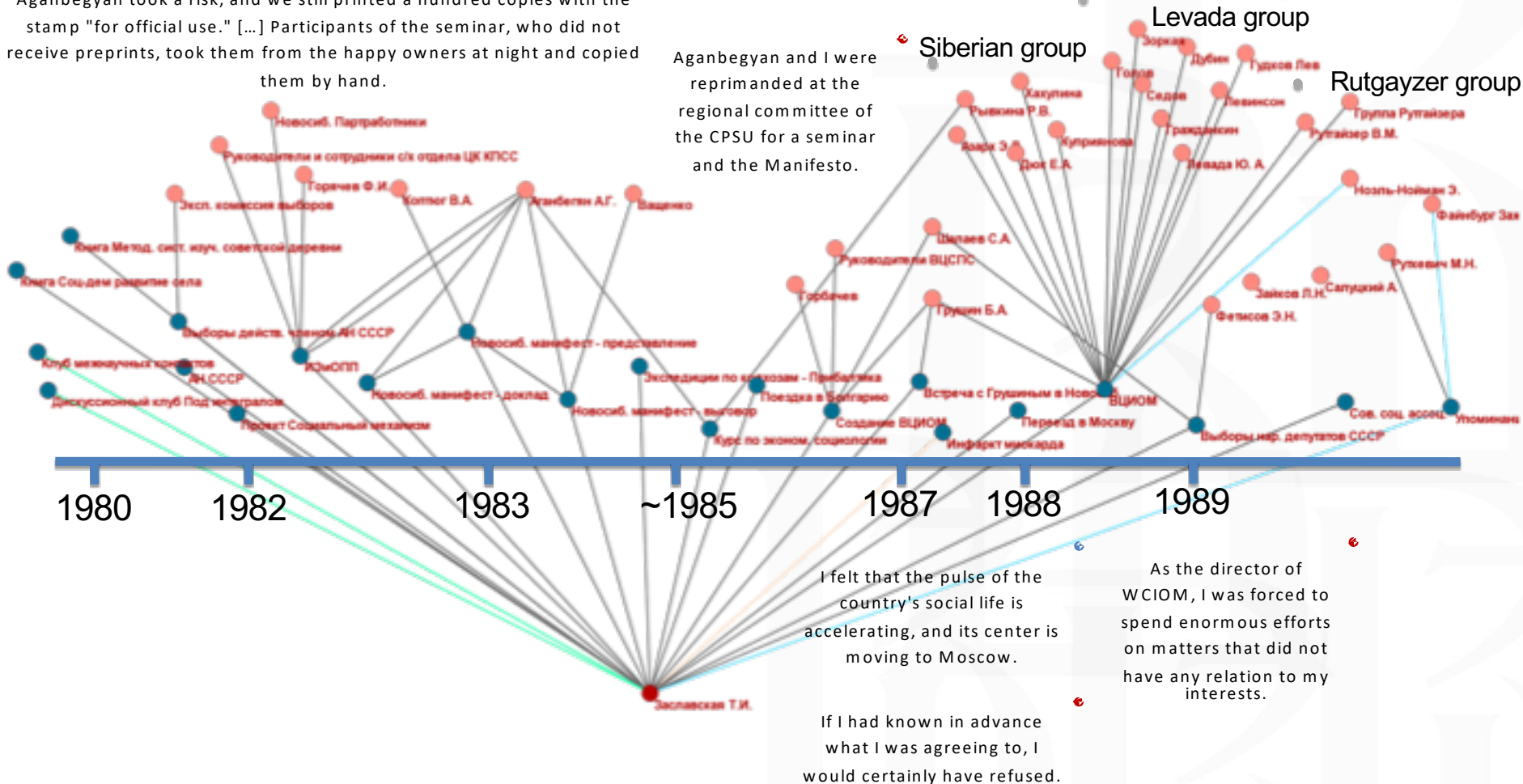
The study of biographies "implies a research of how the history of the country is reflected and presented in biographies of sociologists, what socio-political and other realities determined their life, what shaped their civil attitudes and professional views" [Doktorov, 2016]



# T7: 1980's

... Four days before the seminar censorship prohibited reproduction, Aganbegyan took a risk, and we still printed a hundred copies with the stamp "for official use." [...] Participants of the seminar, who did not receive preprints, took them from the happy owners at night and copied them by hand.

Aganbegyan and I were reprimanded at the regional committee of the CPSU for a seminar and the Manifesto.



# Future Steps for Structural SNA Strand

1. Compute the similarity between biographical profiles of different sociologists
2. Ego networks – > Whole network
3. Compare networks constructed for each time period

## **Techniques:**

- Define coding schema and develop the codebook;
- Search for the software to encode data;
- Check the intercoder reliability.

## **Methodological:**

- Search for a methodological approach for the effective work with biographical and network data
- Compose a model to combine the structural analysis of data with its qualitative characteristics, such as relational contexts, modality of ties and temporality.

# Pros and Cons for Bio+SNA

## Advantages:

- Subjective evaluation of certain events' weight
- Meaningful events
- Blended personal and professional ties explained.

## Pitfalls:

- Secondary analysis of the data not intended for building networks – no standard questions, missings
- Unstructured interviews are a pain, with varying topics and size of the texts
- Thresholds in data collections: expertise required to distinguish between historical organisations and events.

# Conclusions

- „Not all forms of mixed strategies will provide greater insights into particular research problems“ (Lieberman, 2005) + concept misformation, mechanism muddling, and conceptual slippage (Ahram, 2013)
- Alternative strategies to MM: fuzzy set QCA and the Bayesian approach (subjective probabilities)
- For a greater analytical payoff of MM, there should be an interest in both general relationships and explaining individual cases
- Bone of contention across the disciplines: is qualitative part testing causality or not?
- + benchmarks for integrating machine learning and traditional methods of data collection and analysis

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- +there are a few pubs in Russian, see <https://www.hse.ru/org/persons/147253106>

# Thank you!

Daria Maltseva [d\\_malceva@mail.ru](mailto:d_malceva@mail.ru)

Anna Shirokanova [a.shirokanova@hse.ru](mailto:a.shirokanova@hse.ru)