

WRITTEN CANDIDACY EXAMINATION IN SOCIAL NETWORKS

October 26th, 2016

For: Student #1

Examination Committee:

Omar Lizardo (chair)

David Hachen

David Gibson

Part I: Instructions

You must answer the question in section A (on network theory) and the question in section B (on key concepts). This last question provides with choices in terms of which concepts to focus on. Answer all parts of each question as thoroughly as possible given the time allotted. Your answers should include reasoned arguments and be informed by empirical research. You have four hours to answer these two questions. Divide your time wisely so you answer each question adequately. Some students find it helpful to make an outline before answering each question. Please include references to the literature — authors' last names and when necessary to distinguish multiple works by the same author, relevant years of publication. You can include titles of articles or books.

Section A: Network Theory

A fundamental premise of the "network revolution" in sociology is that it represents not only a collection of methods and measurement tools, but also a generative "theory" of social structure. Here we would like you to consider whether there is such a thing as a coherent approach that deserves the name of "network theory." If so, what are the fundamental premises of network theorizing? How is it different from the theorizing that about social structure that came before it? How is network theory a better way to approach fundamental sociological topics in sociology than other competitors? What are the strengths and weaknesses of contemporary network theory? What role does formal and mathematical analysis play in network theorizing? Throughout provide examples from the literature on processes, mechanisms and phenomena that have been better explained by network theory. You may close by outlining the key intellectual challenges lying before network theory in the years ahead.

Section B: Key Concepts in Social Network Analysis

Suppose that a beginning graduate student asked you about each of the terms listed below. For four (4) of the following items, briefly state: (a) what it refers to as you might explain it to the student; (b) where it may apply in social network analysis including any possible formalization; and (c) key references where the student might look to learn more about it, (d) key theories informed by that concept.

- reciprocity/mutuality
- transitivity/closure
- strength of weak ties
- social foci/social circles
- homophily/assortativity
- preferential attachment/popularity contest
- hierarchy/linear order
- social distance
- centrality
- multiplexity
- ego network
- role/position
- two mode network
- cognitive social structure
- small world phenomenon
- core/periphery structure
- stochastic actor based model
- complex networks
- social contagion/diffusion
- quadratic assignment procedure
- exponential random graph model
- brokerage/structural holes
- community detection
- balance
- groups/cohesion

WRITTEN CANDIDACY EXAMINATION IN SOCIAL NETWORKS

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Part II: Instructions

You must answer any two (2) of the following four questions. Answer all parts of each question as thoroughly as possible given the time allotted. Your answers should include reasoned arguments and be informed by empirical research. You have four hours to answer these two questions. Divide your time wisely so you answer each question adequately. Some students find it helpful to make an outline before answering each question. Please include references to the literature — authors' last names and when necessary to distinguish multiple works by the same author, relevant years of publication. You can include titles of articles or books.

1 Networks and Culture

One of the most promising avenues for research on social networks concerns the relationship between social networks and culture. There are many ways in which theorists are bringing either culture into our understanding of networks, or networks into our understanding of culture. Some have focused on how cultural objects diffuse through networks, others on how cultural traits impact tie formation and evolution, and still others on how social ties between people can be understood not just as indicators of social interaction but as markers of cultural similarity. Outline at least two ways in which scholars have attempted to theorize the culture/networks linkage. In discussing each framework, lay out what you think are the important claims, the empirical evidence that different scholars draw on to establish their substantive claims, and the research questions about culture and networks that emerge from each framework.

2 Two Mode Networks

While traditional network analysis focuses on the pattern of relations between entities of the same order (e.g. actors or organizations) two-mode (or multimode) network analysis is distinct in dealing with relations across entities of a different order (e.g. actor and events, persons and groups). Beginning with Breiger's (1974) classic article, discuss the theoretical and methodological foundations of two-mode network analysis. What are the analytic advantages of considering the relations between one set of entities as being made up by their overlap via another set? What are fundamental rules (do's and don'ts) of two mode network analysis? What are disadvantages of collapsing two mode networks in their one-mode projections as opposed to analyzing the original matrix? Provide substantive examples from the literature throughout. Finally, discuss the limitations and challenges of two-mode network analysis. How can it be advanced? How can it be combined with other forms of structural analysis?

3 Network dynamics

In the last two and a half decades there has been a good deal of research and theorizing on how networks, including social networks, evolve. Much of this work has focused on tie formation, though there also has been research on tie persistence/decay, with the question of the timing of activation receiving some (limited) attention.

- Compare and contrast what you consider to be the two most important theories/explanations of tie formation. Be sure to discuss empirical evidence for each theory. What do you think are the most important unanswered questions about tie formation?
- Why is it also important to examine tie persistence/decay? What empirical evidence is there that points to the importance of understanding tie decay? Can theories there were developed to account for tie formation be adapted and used to understand tie decay? If so, discuss how two theories of tie formation can be used to understand tie decay. If not, compare and contrast what you consider to be two promising avenues for understanding variation in the longevity of social ties.
- Why is the timing of relationship activation important? How are the answers to certain substantive questions (e.g. regarding diffusion, social capital, and other outcomes) impacted when we ignore the timing of relationship activation in networks? In what ways have network scholars attempted to incorporate timing into their models and theories?

4 Brokerage

Critically review the literature on brokerage in social networks. Identify the network configurations that are most closely associated with brokerage. Is there a single form of brokerage or are there multiple forms of brokerage each subject to distinct network dynamics? What are the critical assumptions of brokerage models,

and how stable overall do you think brokerage configurations are? What is the relationship or tradeoff between brokerage and closure in network systems? How do actors manage these tradeoffs in terms of concerns related to identity, trust, and legitimacy? Where do you see the limits and challenges of current understandings of brokerage processes in network analysis?

WRITTEN CANDIDACY EXAMINATION IN SOCIAL NETWORKS

October 26th, 2016

For: Student #2

Examination Committee:

Omar Lizardo (chair)

David Hachen

David Gibson

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1 Economic Networks

What are the fundamental insights that can be gained from looking at markets as "social structures" from a network perspective? Be sure to elaborate on how a social network perspective on markets produces insights that would not be possible to get from the point of view of traditional economic models. What concepts, measurement tools and sensibilities does a network perspective on markets bring to the table? Preferably you would build your answer around one or more concrete examples, showing how treating this specific markets as a network is more helpful than a traditional individualist approach.

2 Ego Networks

Data on social networks typically is ego-network data or complete network data. What are the strengths and weaknesses of ego-network data? What sorts of questions can be answered with these data? Discuss the different strategies that researchers typically use to elicit ego-network data (e.g. name generators and name-interpreters) with an eye towards evaluating the strengths, weaknesses and theoretical motivation of the different strategies. What do you think are the critical problems with ego-network data? Under what conditions would you not want to use ego-network data to

address your research questions? Give one example of what you consider to be an appropriate use of ego-network data.

3 Network dynamics

In the last two and a half decades there has been a good deal of research and theorizing on how networks, including social networks, evolve. Much of this work has focused on tie formation, though there also has been research on tie persistence/decay, with the question of the timing of activation receiving some (limited) attention.

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- Why is it also important to examine tie persistence/decay? What empirical evidence is there that points to the importance of understanding tie decay? Can theories there were developed to account for tie formation be adapted and used to understand tie decay? If so, discuss how two theories of tie formation can be used to understand tie decay. If not, compare and contrast what you consider to be two promising avenues for understanding variation in the longevity of social ties.
- Why is the timing of relationship activation important? How are the answers to certain substantive questions (e.g. regarding diffusion, social capital, and other outcomes) impacted when we ignore the timing of relationship activation in networks? In what ways have network scholars attempted to incorporate timing into their models and theories?

4 Preferential attachment

The preferential attachment model (or what sociologists call the Matthew effect) that highlights accumulating advantage is a powerful model that is often used to understand how networks, including social networks, evolve.

- Discuss the key ideas and behavioral assumptions of this dynamic model of network growth. Why has this become such a popular model for understanding network evolution? What topological features of networks does this help to explain, and how does this model explain these features? Give an example of research on a social network that shows the importance of preferential attachment processes.
- What do you think are the limitations of this model? How would you develop it further? What alternative models of network evolution do you think should also be elaborated and used? For each model you identify, discuss its assumptions and key ideas, and give an example of a research question you think could be better addressed with this model.

