The Analysis of Economic and Social Networks

Faculty: Matthew Bothner and Linus Dahlander, ESMT
Term: Winter 2012-2013
Time: Thursday mornings, 9:00 AM -12:10 PM. Please note that we start 9 sharp.
Venue: ESMT

The theories and methods of social network analysis have increasingly been harnessed to better understand a diverse array of topics, such as the spread of obesity, the diffusion of innovations, mobility in labor markets, risk-taking behavior in tournaments, and affiliation-based market signaling. This course offers an introduction to the theoretical perspectives and quantitative methods of the network-analytic tradition. A number of key concepts will be introduced, together with opportunities to apply corresponding methods and approaches to measurement using data made available in class. The literature on networks is approached with two goals in mind: (1) to understand the foundations of social network theory and (2) to apply methods.

Course requirements:

Participants must fulfill three requirements: (a) participate in class discussions, (b) complete lab assignments in teacher-assigned small groups, and (c) develop an individual project.

Grading:

Class participation (25%): Participation in class discussions counts for 25% of the total grade. This includes class attendance and informed involvement in class discussions about the assigned readings. We will "cold call" (ask you to speak even if you have not volunteered), so you should come to class highly prepared. Valuable classroom discussions occur when everyone listens attentively, responds directly, and is at all times courteous and professional. Read all assigned readings very carefully and work to understand the idea and the methods used. We take class participation seriously—you will be unable to pass the class if you are unprepared. If you cannot attend a particular session, please email the professor who is teaching that session so we can agree on how you can make up for the missed session.

In-class quizzes and short exams (25%): During several sessions we will distribute quizzes and short exams that will survey you on the required readings.

Individual project (50%): The individual project is designed to develop your skills in formulating an interesting research question, and in thinking carefully about how you would address that question empirically. The question must be network-related, and it will require you to engage in further reading on one of the topics discussed in class. Three parts of the final project are particularly important: (a) an engaging framing that convinces your audience of the importance and high interest of your research question, (b) a focused review of the literature that contribute an answer to your research question, and (c) a description of how you will address and answer your research question empirically. It is voluntary, but we encourage you to collect data and test the hypotheses or propositions you develop. Your final paper should be at most 15 pages (excluding references and tables), single-spaced, using 12-point Times New Roman font, and must be sent to linus.dahlander@esmt.org and matthew.bothner@esmt.org before midnight on February 1, 2013. Please do not exceed stated page lengths.

Literature:

Students are expected to read research papers published in relevant journals. For students interested in a relevant book that links networks to economics, a good starting point is Matthew Jackson’s Social and Economic Networks. We also recommend Stanley Wasserman and Katherine Faust’s Social Network Analysis: Methods and Applications.

There are also other relevant books for those who desire further reading:
Before turning from general literature to specific assigned readings, please note that the readings assigned each week will be subject to relatively minor changes throughout the term if adjustments to the content and/or supply of reading are appropriate.

SESSION OUTLINE

Session 1: Data collection and visualizing networks  
**October 18, 2012**  
Prof. Dahlander

This session provides an overview of what a network is and the history of analyzing networks. We will discuss how networks can be visualized and analyzed. In addition, we will look into data collection issues that become evident for any researchers seeking to understand networks.

Readings:  
Chapter 2-4 (pp. 28-166). Cambridge: Cambridge University Press. [optional]  

Session 2: Tie strength, dyads, triads, and centrality  
**October 25, 2012**  
Prof. Dahlander

This session discusses some of the most basic characteristics of networks, namely dyads, triads, and tie strength. Although quite intuitive to understand, these concepts have far-reaching consequences for the analysis of networks. In the second half of the discussion, we turn to how exactly networks can be analyzed using the statistical software *R*. We will provide data and we will go through how networks can be visualized and how to derive simple measures. In the following sessions with Prof. Dahlander, we will continue to use hands-on examples that we analyzed in *R*.

Please prepare a two minute pitch of the topic that you intend to work on in your individual assignment. We will discuss these ideas briefly in class to help you be on your way of developing something really interesting!

Readings:  
Marsden, P. V. and K. E. Campbell. Measuring Tie Strength.  

Session 3: Using networks to understand new Internet-enabled organizational forms  
**November 1, 2012**  
Prof. Dahlander  
**Guest speaker: Lars Bo Jeppesen, Bocconi University**
This session discusses how networks have been used to understand new organizational forms. The first part discusses how networks unfold in cases when people are distributed geographically and traditional planning mechanisms are absent. This implies that people can choose collaboration partners and tasks to work on in the absence of vertical authority. In the second half of the session, Prof. Jeppesen will provide a presentation that takes a different perspective by looking at how the benefit of joining these organizational forms is shaped by network effects.

Readings:

Session 4: Politics and control
November 8, 2012
Prof. Gargiulo (INSEAD)

This session focuses influence and control processes in intra-organizational networks. It builds on the debate between brokerage and closure elaborated in the work of Ronald Burt and explores how dense networks (i.e., closure) can benefit actors in dependent situations within organizations. The kernel of the argument is that, while network closure is typically detrimental for legitimate players, it actually helps weaker actors to alleviate the negative consequences of their dependent situations. These benefits, however, dwindle as actors move out of dependency situations, creating an interesting paradox for how they can build (and renew) their networks throughout their careers. Dense networks confer power to the weak, but become the weakness of the strong.

Readings:

Session 5: Contagion and peer effects
November 15, 2012
Prof. Dahlander

This session discusses a growing issue in networks, namely the difficulty to distinguish causal effects in networks. We will review some historical work on peer effects that have largely overestimated its impact and turn to some recent advances. We will continue by discussing how one can create research designs that are able to capture causality in networks.

Readings:
Session 6: Status and Factors that Reshape Status Distributions
November 22, 2012
Prof. Bothner

This session introduces Podolny’s original formulation of the role of status in markets and addresses two factors that reshape status distributions: annealing and intervention. Annealing is the process of heating metal, glass—or a social network—and then cooling it in a better configuration. Intervention—and its implications for the “shape” of steady-state status distributions—will be discussed through the metaphor of the “Mark Effect.”

Readings:

Session 7: Conduct and Performance in Tournaments
November 29, 2012
Prof. Bothner

This session examines risk-taking behavior and performance in tournaments. Our substantive goals are to consider (i) the competitive antecedents of accidents in professional stock car auto racing as well as (ii) the effects of status on speed in auto racing and on strokes from par in professional golf. Our professionalization goal is different: we’ll address general principles, as a class, for responding to referee reports. This focus will require you to take the following steps in sequence:

(1) read the draft paper on accidents in NASCAR submitted to Administrative Science Quarterly;
(2) carefully study the editor’s letter and all referee reports;
(3) formulate the steps you would take to respond to at least one of the referees and prepare (with powerpoint slides) a concise presentation of how you would respond to that reviewer’s set of comments;
(4) open the sealed envelope and read the memoranda to the reviewers;
(5) read the published version of the paper;
(6) formulate your opinion of how my coauthors and I responded to the reviews, comparing our response to your own;
(7) make sure you are prepared to engage with other class members as they articulate their views of how to respond to other referees—that is, the reviewers other than the one on which you chose to focus;
(8) read the Organization Science paper on status and performance in tournaments.

Readings:
Letter from ASQ editor and three referee reports.
Our eighth session has two objectives: (1) to summarize sociological issues on status and then (2) to introduce James March's exploitation/exploration duality. By this juncture in the course, the theme will have already surfaced that status is a form of social capital that is quite different from human capital or quality. Using several in-class examples, we’ll build on this basic insight and discuss how status creates advantage for those who have it, and (possibly unfair) disadvantage for those without it. We’ll close by identifying the seductive dangers of status and consider how sociological insights can inform one’s navigation around these dangers. Next, in the second part of class, we'll consider March's justly celebrated distinction between exploiters (those ever-refining an existing competitive, who exploit "old certainties") and explorers (those ever-seeking new competitive advantages, who explore "new possibilities"). We’ll engage in a conceptual discussion of how the types differ, and also consider a survey-instrument designed to locate people (and their colleagues) on the exploiter-explorer continuum. I also look forward to hearing your ideas for future research that builds from March’s contribution.

Readings:
Case on 3M (an exemplary explorer firm) to be distributed.

Session 9: Robust Positions in Social Networks; Network Effects among U.S. Colleges and Universities
December 13, 2012
Prof. Bothner

This session deals with the measurement of robust versus fragile positions in social and economic networks. We’ll take an approach to this topic similar to the one we adopted in session 7: reading a submitted draft, considering reviews and your responses, and discussing strategies. We’ll then turn to new work on peer effects among colleges and universities, creating potential for a link with material covered in session 5.

Readings:
Draft of Bothner, Smith, and White (2011), AJS reviews, and memoranda to reviewers to be distributed.
Note: additional material will be distributed in class.

Session 10: Charisma and Diffusion
January 10, 2013
Prof. Bothner

This session begins with a discussion of an historical trend of interest to social scientists and to business practitioners: From the 1980s to the present, corporate boards have often been transfixed by the possibilities thought to result from hiring a charismatic CEO—that seemingly unique leader whose special qualities invite celebration as a “corporate savior.” We will discuss sources of this obsession and move to a clear picture of the key characteristics of the charismatic leader. We’ll then discuss how charisma can be advantageous, while also drawing attention to its deep dangers (and possible solutions for minimizing these risks). Next, in the second part of class, our focus will be on diffusion. Diffusion is the process by which a “trait” (for example, an innovative technology, an opinion, rumor, or disease)
becomes more prevalent in a “population” (for instance, a set of customers, employees, firms, cities, and so on). We’ll discuss how diffusion works, addressing the factors that can drive the diffusion of a technology or message, while clarifying the competitive advantages of one kind of diffusion process over another.

Readings:

(No class January 17)

Session 11: Selected Topics; Closure and Brokerage
January 24, 2013
Prof. Bothner

The topics for our first part of class are to be determined. Some possibilities include sources of stratification in small groups and the effects of institutions (such as athletic conferences) on outcomes for colleges and universities. My coauthor, Noah Askin, from Chicago, will be joining us, and will be presenting new research. The topics for our second part of class are two alternative kinds of networks—“closure” and “brokerage.” Closure looks like a spider’s web. It refers to a network in which the people you know in turn know each other very well. Brokerage looks like the blades of a windmill. It refers to a network in which you know people who do not know each other well. We’ll begin by debating whether closure or brokerage is better—a debate in which there will be no “right” answer, but where your answer will depend on your objectives. We’ll then highlight the advantages and challenges of closure and of brokerage, and how to “get” the advantages while “managing around” the challenges.

Readings:
Additional material to be distributed

Session 12:
January 31, 2013
Prof. Dahlander

This session looks deeper into where networks come from. A number of papers analyze the outcomes of various kinds of network positions, but less research explains how networks unfold when new ties form and existing ones dissolve. First, we will discuss the assigned literature and review the different explanations for tie formation and persistence. Second, we will go through the Dahlander and McFarland paper in greater detail, explaining how it came about and changed throughout the review process. We will read the first submission, the letter from the editor and the reviewers, and how we responded to their concerns. In the last part of the session, we will have a guest lecture by Adam Tatarynowicz on network dynamics.

Readings:
In the last session, we will turn to the presentations of your individual assignments. The session is outlined as a conference where you have 15 minutes to present your paper, followed by questions and discussion. Time management is important, so please use no more than 15 minutes to cover your paper.