

RPAD 637

Social and Organizational Networks in Public Policy, Management, and Service Delivery: Theory, Methods, and Analysis

Course Number: 15428

Fall 2006

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CLASS MEETING TIME AND PLACE; EXAMS AND PAPER DUE DATES

Mondays, 5:45 PM to 8:50 PM in Draper 303. First meeting: September 11, 2006

Take-home final:	
Distributed:	December 11 in class & on web site
Returned:	December 18 @ 5:00 PM
Empirical Exercise:	December 18 @ 5:00 PM

CATALOGUE DESCRIPTION: The concept of “network” has become central to many discussions of public policy, management, and service delivery. However, use of the term is rarely backed with theoretical and empirical analysis of actual social networks. This course is designed to (1) explore the theoretical underpinnings of the concept; (2) introduce the basic methods needed to collect and analyze network data; (3) familiarize you with the process of initiating and completing a network analysis using real data from real cases; and (4) compare your network findings with results generated using other methods and techniques.

ASSUMED PREREQUISITES: This course assumes that you are (1) familiar with microcomputers and spreadsheet software such as Microsoft Excel; (2) comfortable learning new software packages; (3) familiar with college-level algebra, basic statistical techniques, and probability theory; and (4) comfortable using quantitative analysis to analyze social, political, and policy questions. Being familiar with common sociological concepts and language is also helpful but not required. Similarly, being familiar with calculus, linear regression, and/or maximum likelihood techniques is helpful but not required. If you are a mathphobe I guarantee you that you can gain a lot from this class without too much trauma!

ADMISSION TO THE CLASS: All students must be enrolled in a Ph.D. or Masters program, with preference given to those in Ph.D. programs. Undergraduate students will not be admitted. Students from the Department of Public Administration & Policy are given first priority for slots in the class, which is limited to 20 students. All others will be admitted on a first come, first served basis, until the class maximum is reached.

AUDITORS: Auditors are welcome, up to the room's practical capacity (about 25). However, I expect auditors to have read the assignments and reserve the right to cold-call anyone who is in the room. I also expect auditors to help lead at least one weekly discussion. Auditors who are unprepared or unwilling to contribute may be asked to leave. Because I will get more credit for the Department, I would prefer that students formally audit (i.e., by registering as an auditor with the powers that be), but I will not enforce this policy unless the class is too small to sustain.

OVERVIEW: Social network analysis takes seriously the proposition that the relationships between individual units or "actors" are non-random and that their patterns have meaning and significance. It seeks to operationalize concepts such as "position", "role", or "social distance" that are sometimes used casually or metaphorically in social, political, and/or organizational studies. Network theory views dimly the idea that social behavior may be understood by aggregating individuals. If most "normal" statistics starts with the idea that randomly drawing "observations" from a "population" will lead one to identify population "characteristics," network theory begins with the assumption that randomization obliterates an essential element of a person's or organization's social world: their interconnections. There are many models and methods in social network analysis, but all share an emphasis on the relationships of actors as the basis of social structure.

We will examine two major forms of network data, egocentric and complete. Egocentric data measure the "interpersonal environments" that surround individual "actors." Such designs are more compatible with large-population survey research than some other approaches to network studies. As we shall see, actors may be persons, organizations, groups, countries, or regions. Network analytic ideas may be applied to any group of interconnected social units; they are without a particular scale.

We will devote most of our time to studying analytic methods for "complete network data," which consist of measurements of the social ties linking all actors within some closed population. Included here are spatial models driven by the concept of social distance; graph theoretic models emphasizing connectedness; and models for "positional analysis" (also known as blockmodel analysis) centered on the idea of structural equivalence and its generalizations. Toward the end of the course we will delve into recent developments in statistical modeling of complete network data, including methods appropriate for longitudinal study of networks.

A good deal of the course will focus on methods for describing social structures or locating structural regularities in network data. Toward the end, however, we will examine approaches to assessing network effects.

TEXTS: There are two texts that have been requested at both the UAlbany Bookstore and at Mary Jane's. (I have asked the bookstore to make copies available in the Annex in the cafeteria.)

Wasserman, Stanley and Katherine L. Faust. (1994). *Social Network Analysis: Methods and Applications*. New York: Cambridge University Press.

Burt, Ronald S. (1992). *Structural Holes: The Social Structure of Competition*. Cambridge, Massachusetts: Harvard University Press.

The Wasserman and Faust text provides a comprehensive overview of analytic methods and offers illustrations. It will be the primary source we draw upon during the semester. The Burt book is primarily a substantive study that draws heavily on network theory and methods. They are also available through amazon.com; as of this past week prices listed there were \$36.95 (Wasserman and Faust) and \$22.95 (Burt), plus shipping.

In addition, I recommend the following texts, in part because Steve Borgatti, author of UCINET VI, recommends them:

Scott, J. (2000). *Social Network Analysis*. Newbury Park, California: Sage.

Hanneman, R. (2003). *Introduction to Social Networks*. Harvard, Massachusetts: Analytic Technologies. Online book free on the web at <http://www.analytictech.com/networks.pdf>

Finally, three new texts have come out which are not required for the course but are terrific extensions of everything we will learn in this class:

Carrington, Peter J., John Scott, and Stanley Wasserman (eds). (2005). *Models and Methods in Social Network Analysis*. New York: Cambridge University Press.

De Nooy, Wouter, Andrej Mrvar, and Vladimir Batagelj. (2005). *Exploratory Social Network Analysis with Pajek*. New York: Cambridge University Press.

Burt, Ron. (2005) *Brokerage and Closure: An Introduction to Social Capital*. New York: Oxford University Press.

Throughout the syllabus you will find chapters from the Carrington et al. book. Some Carrington chapters are optional; others are required. If you intend to use social network analysis in your research I highly recommend buying this book. NOTE: Because I cannot legally post all sections of the Carrington book to ERes, I have only uploaded the required chapters.

The De Nooy et al. book is the definitive introduction and guide to Pajek. For this class we will primarily use NetDraw to visualize social networks. However, Pajek is used for visualization and exploratory analysis of larger datasets.

We will read Chapter 5 of Burt's *Brokerage and Closure*. If you are interested in social capital you should buy this book. However, for the class I will put the chapter on ERes (see below).

I have requested that the library purchase and reserve both books, but so far the library has not received their copies. I have copies of both in my office that may be checked out for short periods of time.

READINGS: Additional readings (primarily journal articles) have been/will be placed on ERes. The ERes system may be accessed from the library's home page or from the course web site (see below). To find the readings for R. Karl Rethemeyer, select the PAD637 Fall 2006 option, and use the class password, pad637f06.

At the beginning of each class I will pass out a “Class Note” that summarizes the topics for the class that day and the readings that should be completed by the next class.

SOFTWARE: Many uses of network methods involve substantial manipulation of quantitative data in matrix form. Some of this can be undertaken using Microsoft Excel or elements of standard statistical software packages such as SPSS, SAS, or Stata. These packages often include multidimensional scaling and hierarchical clustering routines. Some models for network effects can be studied using such software, while others require special software. Software packages like GAUSS or SAS PROC IML can be useful for inventive work.

Most of this course will focus on learning to use and manipulate the “industry standard” application for social network analysis, UCINET VI:

Borgatti, Steven P., Martin G. Everett and Linton C. Freeman. (2002). *UCINET for Windows: Software for Social Network Analysis*. Harvard, Massachusetts: Analytic Technologies.

This is the recommended software for the course. The homework will teach you how to use it. UCINET VI runs on Windows computers. Unfortunately, there is no Macintosh version. Public-use copies are available in all student labs across all three campuses. However, no more than 24 students may use UCINET VI at one time, and anyone may boot it up – even those who are not in this class. Analytic Technologies offers this software to students at \$40. If you wish to make an order, contact Analytic Technologies at (phone) 978-456-7372; (fax) 978-456-7373; (email) sales@analytictech.com.

In addition, UCINET VI incorporates NetDraw, Pajek, and Mage – three network visualization tools. We will use NetDraw extensively. I strongly urge you to buy the software.

As of September 10, 2006 here are the current versions of the software:

UCINET: Version 6.136
NetDraw: Version 2.043

Note: *UCINET and NetDraw are often updated. You should check the site regularly to see if an update is available.*

During the Summer of 2006 the ever-industrious Steve Borgatti began developing a new package, E-Net, for the analysis of ego-centric network data. So far, it is in a very rough “alpha” version. If the package progresses sufficiently by the time we do ego-centric data we may use this package as well.

PROBLEM SETS: Problem sets must be handed in at the beginning of class on the day they are due. Late assignments will not receive full credit, in part because the findings will be extensively discussed during the class in which they are due. Students are ***strongly encouraged*** to work in small groups (2 - 4 people) but each student must write up his or her answers separately. Deneen Hatmaker, graduate assistant extraordinaire, will grade the problem sets lightly: If you turn in an answer to each section of the problem set, you will receive 9 out of 10 points. The last point will

be awarded for original, *independent* thought and/or analysis (independent of your group, that is). If you wish to get the additional point, indicate on your problem set what material is your unique contribution. Problem sets and their associated datasets will be distributed through the course website:

<http://www.albany.edu/faculty/kretheme/PAD637/overview.html>

In addition to the regular problem sets there will be a longer Empirical Exercise due at the end of the course. *The Empirical Exercise is to be completed either individually or in pairs.*

The Empirical Exercise is designed to test your ability to make an argument about some phenomenon using network data. I am open to many types of paper proposals, but each must have a data component. Ideally, your paper will rely on data you have collected yourself. However, recent struggles with the Institutional Review Board make original research in the context of a semester-long course difficult. Nonetheless, I encourage you to consider this option. I have put nine data sets on the course web site that you may wish to use in one fashion or another. For instance, you could extend the analysis originally done by the author; you could test a new hypothesis; or you could write a research proposal for a larger study that is motivated by a preliminary analysis that is done using one of these data sets. Victor Asal and I have several very large terrorism datasets that we are willing to share, though if we will have to make some arrangements regarding ownership of the data and publication rights. All students must submit a one or two paragraph paper proposal by October 30.

There will be a take-home exam at the end of the course. It will be distributed on December 11 on the course web site and via the course LISTSERV. A hard copy of your take-home is due in my mail box by 5:00 PM on December 18.

Special thanks to Professor Peter V. Marsden, Department of Sociology, Harvard University for generously sharing his “workshops” and related materials, which are the basis of the problem sets in this course.

GRADING: The final grade will consist of the class participation, problem sets, the Take-Home Final, and the Empirical Exercise, with the following weights:

Class Participation:	15%
Problem Sets:	20%
Take-Home Exam:	25%
Empirical Exercise:	40%

Please note that I have a somewhat higher set of expectations regarding the Empirical Exercise for those students who are in a PhD Program.

Participation will be graded principally on the basis of the class discussion that results when you (or your group, depending on the number enrolled) summarize the weekly readings and lead the

discussion. (See the handout on leading group discussions that will be distributed during the first class.) However, class participation will also be evaluated on the frequency of relevant, constructive contributions that reflect a close reading of assigned materials and thoughtful reflection on the topic.

Because this course requires an empirical paper, I will allow incompletes, provided that (a) you have made substantial progress on the paper during the term and (b) that we agree in writing that the incomplete will be resolved by no later than February 28, 2007. For those who wish to use the Empirical Exercise as a springboard to a dissertation proposal a second option is to enroll in RPAD 777 *Advanced Topics in Social Network Analysis*. For those who select this option, the Empirical Exercise will be due no later than May 11, 2007 and will be counted toward both the RPAD 637 and RPAD 777 requirements. RPAD 777 is taught on an arranged basis.

E-MAIL COMMUNICATION: To reach me, use my personal e-mail address. To subscribe to this list, send an e-mail message to LISTSERV@LISTSERV.ALBANY.EDU with the line `SUBSCRIBE PAD637-F06 <FIRST NAME> <LAST NAME>` in the body of the message and nothing in the subject. You will be asked to confirm your membership in the list by a return message. To send a message to EVERYONE who is subscribed, use the address `PAD637-F06@LISTSERV.ALBANY.EDU`. Please register for this list as soon as possible and check your e-mail regularly for class news and information. If the class must be cancelled on short notice, the announcement will be made through the `LISTSERV`. Also use this `LISTSERV` for sharing common concerns and issues. Please do not use it for discussions or announcements that are not related to the class.

TIME COMMITMENT FOR THIS COURSE: This is a four-credit graduate course taught at the upper Masters/PhD level. Hence you should plan on spending three to five hours per week in class and in the lab plus approximately five to seven hours per week doing the reading and preparing problem sets. Students with strong prior background or experience in computing and/or statistics may spend less time than this. Students with little prior background may have to spend more time than this, especially in the first several weeks. If you discover that you are spending more time than this on the course, please let me know so that we can discuss it.

PLAGIARISM AND CHEATING: Due to the intensive nature of this course, students are expected to form study groups and to work together on assignments. Learn by interacting with one another — support and help one another. However, (a) all students must submit an individually prepared copy of their homework and (b) some work such as the Empirical Exercise must be completed by the individual (or the individual and their approved partner). **As a policy for this course, plagiarism or cheating will result in a failing grade for the whole course.** In addition, I will pursue further disciplinary action at the University level, including suspension and/or expulsion.

For the purposes of this course, the following are taken as evidence of plagiarism or cheating:

- Material reproduced from another source without adequate citation.
- Identical answers being turned in by two or more students on the Take-Home Final.

- A pattern of unusually similar answers being turned in by two or more students on the Take-Home Final.
- Written answers or solutions that a student cannot logically explain verbally.
- Other evidence of unauthorized collaboration between students on the Take-Home Final or Empirical Exercise.

Your work may be subject to computerized analysis to discover whether materials have been taken from on-line sources or to determine statistically whether answers are more similar than random chance would allow. Since this is such an important matter, if you have any questions about this course policy, you should ask me for any clarification that you may need.

SOURCES ON SOCIAL NETWORKS. Because students may have quite diverse reasons for taking this course, I offer the following listing of some sources on the social network orientation for your reference purposes. Many of these will go into more depth on substantive applications than will the bulk of the course. You may find them useful as you develop your projects and areas of interest. Most of them include rather substantial bibliographies that will offer further leads. I make no claim that this is a complete bibliography, but it does include a number of sources that you may find useful.

On-line Resources

The course website contains links to several online resources I have found useful over the years. However, the most useful resource is probably the SOcNET LISTSERV. I strongly encourage you to subscribe to this list. Subscription instructions may be found at www.analytictech.com/connections/socnet.htm. If you find pages that are especially useful, please send the URL to me by e-mail with a sentence or two of description; I will put the references on the web site.

While at Harvard I “harvested” data from nine prominent studies published in paper form. The data is available from the website, along with references and comments on the articles from which the data was originally mined. You may wish to use one or more of these data sets for your Empirical Exercise. In addition, UCINET VI includes 25 datasets from prominent network studies; you may also use these as the basis for your Empirical Exercise.

Periodicals

Social Networks: An International Journal of Structural Analysis (1978-present). Many of the more technical, methods-oriented articles about networks appear here.

Connections (1977-present). Newsletter of the International Network for Social Network Analysis. Online edition available at <http://www.sfu.ca/~insna/indexConnect.html>.

Books providing overviews:

Degenne, Alain and Michel Forsé. (1999). *Introducing Social Networks*. Thousand Oaks, CA: Sage Publications.

Knoke, David. (1990). *Political Networks: The Structural Perspective*. New York: Cambridge University Press.

Knoke, David and James H. Kuklinski. (1982). *Network Analysis*. Beverly Hills: Sage.

Scott, John. (1991). *Social Network Analysis: A Handbook*. Newbury Park, CA: Sage.

Anthologies:

Burt, Ronald S. and Michael J. Minor (eds.). (1983). *Applied Network Analysis: A Methodological Introduction*. Beverly Hills: Sage. [collection of basic methods articles.]

Freeman, Linton C., Douglas R. White, and A. Kimball Romney (eds.). (1989). *Research Methods in Social Network Analysis*. Fairfax, VA: George Mason University Press.

[collection of comparatively sophisticated methods articles from 1980 conference]

Holland, Paul W. and Samuel Leinhardt (eds.). (1979). *Perspectives on Social Network Research*. New York: Academic. [collection of papers from 1975 conference.]

Leenders, Roger Th.A.J. and Shaul M. Gabbay. (1999). *Corporate Social Capital and Liability*. Boston: Kluwer Academic Publishers. [collection of recent articles on social capital in and around organizations, many of which rely on network analyses.]

Leinhardt, Samuel (ed.). (1977). *Social Networks: A Developing Paradigm*. New York: Academic. [collection of relatively early articles cited by those developing the network approach.]

Marsden, Peter V. and Nan Lin (eds.). (1982). *Social Structure and Network Analysis*. Beverly Hills: Sage. [collection of substantively-focused articles from 1981 conference]

Mitchell, J. Clyde (ed.). (1969). *Social Networks in Urban Situations*. Manchester, UK: Manchester University Press [collection of conceptual articles and applications, based on the British social anthropological tradition]

Mizruchi, Mark S. and Michael Schwartz. (1987). *Intercorporate Relations: The Structural Analysis of Business*. New York: Cambridge University Press. [collection of papers on interlocking directorates, class cohesion, etc.]

Nohria, N., & Eccles, D. (1992). *Networks and Organizations: Structure, Form, and Action*. Boston: Harvard Business School Press. [early and complete statement on the relationship between networks and organizations and the theoretical traditions that sees organizations as networks of networks]

Wasserman, Stanley, and Joseph Galaskiewicz (eds.) (1994). *Advances in Social Network Analysis: Research in the Social and Behavioral Sciences*. Newbury Park, CA: Sage Publications. [1990s stock-taking of what has been learned from the network approach in several fields of application.]

Watts, D. J. (2003). *Six Degrees - The Science of a Connected Age*. New York/London: W.W. Norton & Company. [celebrated book by Duncan Watts that extends the theory of “six degrees of separation”]

Weesie, Jeroen and Henk Flap (eds.). (1990). *Social Networks Through Time*. Utrecht, NL: ISOR/University of Utrecht. [collection based on 1988 conference]

Wellman, Barry and S.D. Berkowitz (eds.). (1988). *Social Structures: A Network Approach*. New York: Cambridge University Press. [collection of conceptual and substantive articles which also attempts to establish links between network studies and other forms of “structural” analysis].

TOPIC SCHEDULE AND READINGS

Note: Selections marked with an asterisk () are optional*

1. Introductions, Class Organization, and an Overview of UCINET – September 11

No required readings – bring your *a priori* understanding of social networks and social network methods. We will spend some time getting to know one another and UCINET.

As background, you should read the following web pages on the Hawthorne Studies prepared by Stephen Borgatti, creator of UCINET. The Hawthorne studies produced a classic set of network data which we will use over and over to study different properties of networks. It is helpful to know the background to the studies themselves and the physical layout of the key area studied, the bank wiring room.

<http://www.analytictech.com/mb021/Hawthorne.html> - An overview of the Hawthorne Studies
http://www.analytictech.com/mb021/handouts/bank_wiring.htm - A map of the bank wiring room.

PDF versions of these pages are also available from ERes.

2. Overview of Network Theory – September 18

Wasserman and Faust, chapter 1.

Granovetter, Mark S. (1973). The strength of weak ties. *American Journal of Sociology*, 78(6), 1360-1380.

Granovetter, Mark S. (1985) "Economic Action and Social Structure: The Problem of Embeddedness." *American Journal of Sociology*, 91, 481-510.

Marsden, Peter V. (2000) "Social Networks." Pp. 2727-2735 in Edgar F. Borgatta and Rhonda J.V. Montgomery (eds.) *Encyclopedia of Sociology*. Second edition. New York: MacMillan.

Wellman, Barry. (1983). "Network Analysis: Some Basic Principles." Pp. 155-200 in Randall Collins (ed.) *Sociological Theory 1983*. San Francisco: Jossey-Bass.

*Emirbayer, Mustafa and Jeff Goodwin. (1994). "Network Analysis, Culture, and the Problem of Agency." *American Journal of Sociology*, 99(6), 1411-1454.

*Wasserman, Stanley, John Scott, and Peter J. Carrington. (2005). Introduction. In Carrington, Peter J., John Scott, and Stanley Wasserman (eds.). *Models and Methods in Social Network Analysis* (pp. 1-7). New York: Cambridge University Press.

*Huisman, Mark and Marijtje A. J. van Duijn. (2005). Software for Social Network Analysis. In Carrington, Peter J., John Scott, and Stanley Wasserman (eds.). *Models and Methods in Social Network Analysis* (pp. 270-316). New York: Cambridge University Press.

3. Network Data; Introduction to Graph Theory and Sociometric Notation – September 25

Wasserman and Faust, chapters 3-4.

Marsden, Peter V. (1987). "Core Discussion Networks of Americans." *American Sociological Review*, 52(1), 122-131.

Marsden, Peter V. (1990). "Network Data and Measurement." *Annual Review of Sociology*, 16, 435-463.

No class October 2 – Yom Kippur

4. Data Collection & Social Cognition – October 9

Wasserman and Faust, chapter 2.

Bernard, H.R., Killworth, P., Kroenenfeld, D. & Sailer, L. (1985). The problem of informant accuracy: The validity of retrospective data. *Annual Review of Anthropology*, 13, 495-517.

Brewer, Devon D. (1995). "The Social Structural Basis of the Organization of Persons in Memory." *Human Nature*, 6, 379-403.

Calloway, M., Morrissey, J.P., & Paulson, R.I. (1993). "Accuracy and Reliability Of Self-Reported Data In Interorganizational Networks." *Social Networks*, 15(4), 377-398.

Freeman, Linton C. (1992). "Filling in the Blanks: A Theory of Cognitive Categories and the Structure of Social Affiliation." *Social Psychology Quarterly*, 55(2), 118-127.

Freeman, L.C., Romney, A.K., & Freeman, S. (1987). Cognitive structure and informant accuracy. *American Anthropologist*, 89(2), 310-325.

Kilduff, M. & Krackhardt, D. (1994). Bringing the individual back in: A structural analysis of the internal market for reputation in organizations. *Academy of Management Journal*, 37(1), 87-108.

Krackhardt, D. (1987). Cognitive social structures. *Social Networks*, 9(2), 109-134

Krackhardt, D. (1990). Assessing the political landscape: Structure, cognition, and power in organizations. *Administrative Science Quarterly*, 35(2), 342-369.

Laumann, E. O., Marsden, P. V., & Prensky, D. (1989). The boundary specification problem in network analysis. In L. C. Freeman, D. R. White & A. K. Romney (Eds.), *Research methods in social network analysis* (pp. 61-87). Fairfax, Virginia: George Mason University Press.

Marsden, P.V. (1990). "Network Data and Measurement." *Annual Review of Sociology*, 16, 435-463.

Marsden, Peter V. (2005). Recent Developments in Network Measurement. In Carrington, Peter J., John Scott, and Stanley Wasserman (eds.). *Models and Methods in Social Network Analysis* (pp. 8-30). New York: Cambridge University Press.

*Laumann, Edward O. and David Knoke. (1987). "Appendix A." Pp. 401-500 in *The Organizational State*. Madison, Wisconsin: University of Wisconsin Press. [Skim this data collection instrument from a seminal network-analytic study.]

*Rethemeyer, R. K. (2002). "Appendix C." *Centralization or democratization: Assessing the Internet's impact on policy networks - A theoretical and empirical inquiry*. Unpublished Ph.D. Dissertation, Harvard University, Cambridge, Massachusetts. [Skim this data collection instrument from my dissertation.]

Due in class: *Problem Set #0* – Getting to Know UCINET VI

5. Centrality and Centralization – October 16

Wasserman and Faust, chapter 5.

Bonacich, Phillip. (1987). "Power and Centrality: A Family of Measures." *American Journal of Sociology*, 92, 1170-1182.

Brass, Daniel J. (1984). "Being in the Right Place: A Structural Analysis of Individual Influence in an Organization." *Administrative Science Quarterly*, 29(4), 518-539.

Cook, Karen S., Richard M Emerson, Mary R. Gillmore. (1983). "The Distribution of Power in Exchange Networks: Theory and Experimental Results" *American Journal of Sociology*, 89(2), 275-305.

Emerson, R. M. 1962. Power-dependence relations. *American sociological review*, 27, 31-40.

Fernandez, Roberto M. and Roger V. Gould. (1994). "A Dilemma of State Power: Brokerage and Influence in the National Health Policy Domain." *American Journal of Sociology*, 99(6), 1455-1499.

Freeman, Linton C. (1979). "Centrality in Social Networks: I. Conceptual Clarification." *Social Networks*, 1, 215-239.

Ibarra, Herminia. (1992). "Homophily and Differential Returns: Sex Differences in Network Structure and Access in an Advertising Firm." *Administrative Science Quarterly*, 37(3), 422-447.

Padgett, John F and Christopher K Ansell. (1993). "Robust Action and the Rise of the Medici, 1400-1434." *American Journal of Sociology*, 98, 1259-1319.

Willer, David. (1992). "Predicting Power in Exchange Networks." *Social Networks*, 14, 187-211.

*Everett, Martin and Stephen P. Borgatti. (2005). Extending Centrality. In Carrington, Peter J., John Scott, and Stanley Wasserman (eds.). *Models and Methods in Social Network Analysis* (pp. 57-76). New York: Cambridge University Press.

6. Studying Cohesive Subgroups and Core-Periphery Structures – October 23

Wasserman and Faust, chapter 7.

Borgatti, S.P. & Everett, M.G. (1999). Models of Core/Periphery structures. *Social Networks*, 21(4), 375-395.

Caldeira, Gregory A. (1988). "Legal Precedent: Structures of Communication between State Supreme Courts." *Social Networks*, 10(1), 29-55.

Everett, M.G. and Borgatti, S.P. (1999). Peripheries of cohesive subgroups. *Social Networks*, 21(4), 397-407.

Fershtman, Meir. (1997). "Cohesive Subgroup Detection in a Social Network by the Segregation Matrix Index." *Social Networks*, 19(3), 193-207.

Frank, Kenneth A. (1995). "Identifying Cohesive Subgroups." *Social Networks*, 17(1), 27-56.

Moore, Gwen. (1979). "The Structure of a National Elite Network." *American Sociological Review*, 44, 673-692.

*Rethemeyer, R. Karl. (forthcoming). Policymaking in the Age of Internet: Is the Internet Tending to Make Policy Networks More or Less Inclusive? Findings from Two State-Level Policy Networks. *Journal of Public Administration Research and Theory*.

Due in class: *Problem Set #1* – Connectedness, Centrality, and Centralization

7. Picturing Networks – October 30

- Freeman, Linton C. (2005). Graphic Techniques for Exploring Social Network Data. In Carrington, Peter J., John Scott, and Stanley Wasserman (eds.). *Models and Methods in Social Network Analysis* (pp. 248-269). New York: Cambridge University Press.
- Scott, John. (1991). *Social Network Analysis: A Handbook*. Newbury Park, CA: Sage. Chapter 8.
- Laumann, Edward O. and Franz U. Pappi. (1973). "New Directions in the Study of Community Elites." *American Sociological Review*, 38(2), 212-230.
- Freeman, Linton C. (2000) "Visualizing Social Networks." *Journal of Social Structure*, 1. [This is an electronic journal. Its address is <http://www.heinz.cmu.edu/project/INSNA/joss/>]
- McGrath, Cathleen, Jim Blythe, and David Krackhardt. (1997). "The Effect of Spatial Arrangement on Judgments and Errors in Interpreting Graphs." *Social Networks*, 19(3), 223-242.
- Bartholomew, David. (2002). *The analysis and interpretation of multivariate data for social scientists*. Boca Raton, Florida: Chapman & Hall/CRC. Chapter 3 – MDS.
- *De Nooy, Wouter, Andrej Mrvar, and Vladimir Batagelj. (2005). *Exploratory Social Network Analysis with Pajek*. New York: Cambridge University Press. Chapter 1.

Due in class: *Problem Set #2* – Cohesive Subgroups & Core/Periphery Structures
Paper proposal due.

8. Analyzing and Representing "Two-Mode" Network Data – November 6

- Wasserman and Faust, chapter 8
- Bearden, James and Beth Mintz. (1987). "The Structure of Class Cohesion: The Corporate Network and Its Dual." Pp. 187-207 in Mark S. Mizruchi and Michael Schwartz (eds.) *Intercorporate Relations: The Structural Analysis of Business*. New York: Cambridge University Press.
- Bonacich, Phillip. (1991). "Simultaneous Group and Individual Centralities." *Social Networks*, 13(2), 155-168.
- Borgatti Stephen P and Martin Everett. (1997). Network analysis of 2-mode data. *Social Networks* 19, 243-269.
- Breiger, Ronald L. (1974). "The Duality of Persons and Groups." *Social Forces*, 53(2), 181-190.
- Faust, Katherine. (1997). "Centrality in Affiliation Networks." *Social Networks*, 19(2), 157-191.
- Freeman, Linton C. and Douglas R. White. (1993). "Using Galois Lattices to Represent Network Data." *Sociological Methodology*, 23, 127-146.
- Laumann, Edward O. and David Knoke. (1987). "Introductory Overview." Pp. 3-42 in *The Organizational State*. Madison, Wisconsin: University of Wisconsin Press.
- *Faust, Katherine. (2005). Using Correspondence Analysis for Joint Displays of Affiliation Networks. In Carrington, Peter J., John Scott, and Stanley Wasserman (eds.). *Models and Methods in Social Network Analysis* (pp. 117-147). New York: Cambridge University Press.

Due in class: *Problem Set #3* – Visualizing Networks

9. Blockmodels/Positional Analysis – Fundamentals – November 13

Wasserman and Faust, chapters 9, 10.

Borgatti, S.P. & Everett, M.G. (1992). "Notion of position in social network analysis."
Sociological Methodology, 22, 1-35.

Breiger, Ronald L. (1981). "Structures of Economic Interdependence Among Nations." Pp. 353-380 in Peter M. Blau and Robert K. Merton (eds.) *Continuities in Structural Inquiry*. Beverly Hills: Sage.

DiMaggio, Paul. (1986). Structural analysis of organizational fields: A blockmodel approach. *Research in Organizational Behavior*, 8, 335-70.

White, Harrison C., Scott A. Boorman and Ronald L. Breiger. (1976). "Social Structure from Multiple Networks. I. Blockmodels of Roles and Positions." *American Journal of Sociology*, 81(4), 730-779.

*Doreian, Patrick, Vladimir Batagelj, and Annuška Ferligoj. (2005). Recent Developments in Network Measurement. In Carrington, Peter J., John Scott, and Stanley Wasserman (eds.). *Models and Methods in Social Network Analysis* (pp. 8-30). New York: Cambridge University Press.

Due in class: *Problem Set #4* – Working With Two-Mode Data

10. Blockmodels/Positional Analysis – Implementation and Applications – November 20

Wasserman and Faust, chapter 12.

Bearman, Peter S. and Kevin D. Everett. (1993). "The Structure of Social Protest, 1961-1983." *Social Networks*, 15(2), 171-200.

Doreian, Patrick. (1988). "Using Multiple Network Analytic Tools for a Single Social Network." *Social Networks*, 10(4), 287-312.

Gerlach, Michael L. (1992). "The Japanese Corporate Network: A Blockmodel Approach." *Administrative Science Quarterly*, 37(1), 105-139.

Due in class: *Problem Set #5* – Positional/Blockmodel Analysis

11. Networks, Social Capital, Autonomy, and Achievement – November 27

- Burt, Ron. (1992). *Structural Holes*. Chapters 1-4 at a minimum; try to read the rest. You may wish to read the following before tackling structural holes: Burt, Ronald. (1997). The Contingent Value of Social Capital. *Administrative Science Quarterly*, 42(2), 339-365.
- Burt, Ron. (2005). *Brokerage and Closure*. Chapter 5.
- Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, 94(Supplement), 95-120.
- Burt, Ronald S., Joseph E. Jannotta and James T. Mahoney. (1998). "Personality Correlates of Structural Holes." *Social Networks*, 20(1), 63-87.
- Putnam, Robert. (1995). "Bowling alone: America's declining social capital." *Journal of Democracy*, 6(1), 65-78.
- Lin, Nan. (1999). "Social Networks and Status Attainment." *Annual Review of Sociology*, 25, 467-488.

Due in class: *Problem Set #6* – Abstract Equivalence

12. Statistical Approaches to Networks: p_1 and p^* – December 4

- Wasserman and Faust, chapters 15-16.
- Anderson, Carolyn J., Stanley Wasserman and Bradley Crouch. (1999). "A p^* Primer: Logit Models for Social Networks." *Social Networks*, 21(1), 37-66.
- Skvoretz, John and Katherine Faust. (1999). "Logit Models for Affiliation Networks." Pp. 253-280 in Mark P. Becker and Michael E. Sobel (eds.) *Sociological Methodology 1999*. Boston, MA: Blackwell Publishers.
- Wasserman, Stanley and Garry Robbins. (2005). An Introduction to Random Graphs, Dependence Graphs, and p^* . In Carrington, Peter J., John Scott, and Stanley Wasserman (eds.). *Models and Methods in Social Network Analysis* (pp. 148-161). New York: Cambridge University Press.
- Contractor, Noshir, Stanley Wasserman, and Katherine Faust. (1999). *Testing multi-level, multi-theoretical hypotheses about networks in 21st century organizational forms: An analytic framework and empirical example*. Unpublished manuscript. Urbana, Illinois: Departments of Speech Communication & Psychology, University of Illinois. (URL: <http://www.spcomm.uiuc.edu/users/nosh/manuscripts/pstarpaper.html>).
- Note:* Additional information about p^* can be found at kentucky.psych.uiuc.edu/pstar/

Due in class: *Problem Set 7* – Handling Egocentric Network Data

13. Models for Studying Network Effects & Diffusion and Course Wrap-up – December 11

- Friedkin, Noah E. (1990). "Social Networks in Structural Equation Models." *Social Psychology Quarterly*, 53(4), 316-328.
- Haunschild, Pamela R. (1993). "Interorganizational Imitation: The Impact of Interlocks on Corporate Acquisition Activity." *Administrative Science Quarterly*, 38(4), 564-592.
- Ibarra, Herminia and Steven B. Andrews. (1993). "Power, Social Influence, and Sense-Making: Effects of Network Centrality and Proximity on Employee Perceptions." *Administrative Science Quarterly*, 38(2), 277-304.
- Marsden, Peter V. and Noah E. Friedkin. (1994). "Network Studies of Social Influence." Pp. 3-25 in Wasserman and Galaskiewicz (eds.) *Advances in Social Network Analysis*.
- Morris, Martina. (1994). "Epidemiology and Social Networks: Modeling Structured Diffusion." Pp. 26-52 in Wasserman and Galaskiewicz (eds.) *Advances in Social Network Analysis*.
- Provan, Keith G., & H. Brinton Milward. (1995). A preliminary theory of interorganizational network effectiveness: A comparison study of four community mental health systems. *Administrative Science Quarterly*, 40, 1-33.
- Strang, David and Nancy Brandon Tuma. (1993). "Spatial and Temporal Heterogeneity in Diffusion." *American Journal of Sociology*, 99(3), 614-639.
- Watts, Duncan J. (1999). "Networks, Dynamics, and the Small-World Phenomenon." *American Journal of Sociology*, 105(2), 493-527.

Due in class: *Problem Set #8 – The P* Model*
Take home exam distributed