Introduction to Social Network Analysis

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Social network analysis focuses on relationships between social entities. It is used widely in the social and behavioral sciences, as well as in political science, economics, organizational science, and industrial engineering. The social network perspective, which will be taught in this workshop, has been developed over the last sixty years by researchers in psychology, sociology, and anthropology.

The social network paradigm is gaining recognition and standing in the general social and behavioral science communities as the theoretical basis for examining social structures. This basis has been clearly defined by many theorists, and the paradigm convincingly applied to important substantive problems. However, the paradigm requires a new and different set of concepts and analytic tools, beyond those provided by standard quantitative (particularly, statistical) methods. These concepts and tools are the topics of this workshop.

This one-week workshop, from July 31st to August 4th in Ann Arbor, will present an introduction to various concepts, methods, and applications of social network analysis drawn from the social, behavioral, and political sciences. The primary focus of these methods is the analysis of relational data measured on groups of social actors. Topics to be discussed include an introduction to graph theory and the use of directed graphs to study structural theories of actor interrelations; structural and locational properties of actors, such as centrality, prestige, and prominence; subgroups and cliques; equivalence of actors, including structural equivalence, blockmodels, and an introduction to role algebras; an introduction to local analyses, including dyadic and triad analysis; and statistical global analyses, using models such as $p_1$, $p^*$, and their relatives.

The teaching assistant again this summer will be Bethany Wotal, from the University of Illinois.
The workshop will meet for about seven hours each day at University of Michigan, according to the following schedule:

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<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>Morning</td>
<td>Lecture</td>
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<tr>
<td>Early afternoon</td>
<td>Computing and Data Analysis (with Bethany)</td>
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<tr>
<td>Late afternoon</td>
<td>Questions and Discussion</td>
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**Course texts**


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The Wasserman & Faust text will be primary. Prerequisites for this workshop are familiarity with matrix algebra. A background in linear models and categorical data analysis will be helpful, but not required.

Topics to be taught and the relevant chapters from Wasserman and Faust are:

- Chapter 1: Introduction
- Chapter 2: Social Network Data: Collection and Applications
- Chapter 3: Notation for Social Network Data
- Chapter 4: Graphs and Matrices
- Chapter 5: Centrality, Prestige, Prominence, and Related Concepts
- Chapter 7: Cohesive Subgroups
- Chapter 9: Structural Equivalence
- Chapter 10: Blockmodels
- Chapter 13: Dyads
- Chapter 15: Statistical Analysis of Single Relational Networks
Computer Programs

We will be using a number of different social network analysis computer programs. All of these are available in the computer labs. All but UCINET are freely available on the web.

UCINET, available in computer labs and for purchase from Analytic Technologies at: http://www.analytictech.com/

PAJEK, available to download at:
http://vlado.fmf.uni-lj.si/pub/networks/pajek/default.htm

NETDRAW, available to download at: http://www.analytictech.com/

STOCNET, available to download at: http://stat.gamma.rug.nl/stocnet/ (see also http://stat.gamma.rug.nl/snijders/siena.html)

Other Resources

These are some especially useful resources on social networks. Here are a few of them….

The International Network for Social Network Analysis (INSNA) is the international and interdisciplinary professional association for people interested in social network research. Its website (http://www.sfu.ca/~insna/) is a wonderful source of information and resources on social networks, including links to many informative sites and to social network computer programs and data.

The listserv, SOCNET, is the main on-line forum for discussion of current topics on social networks. Information on how to join is available through the INSNA site (see above) or at: http://www.heinz.cmu.edu/project/INSNA/socnet.html.

Connections is INSNA’s newsletter/informal journal. It is available through the INSNA website or directly at: http://www.sfu.ca/~insna/.

Journal of Social Structure is an online journal with many articles of interest to social network researchers. http://www2.heinz.cmu.edu/project/INSNA/joss/index1.html

Centrality is a newon-line journal devoted to relationship capital management. http://blog.visiblepath.com

Steve Borgatti’s web page is a nice source of introductory material and handouts on various topics on social networks. http://www.analytictech.com/networks/

Data examples from Wasserman and Faust are available at the INSNA website.

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