Program and Abstracts

Sunbelt XXV

International Sunbelt Social Network Conference

Redondo Beach, CA

February 16-20, 2005

Sponsors

International Network for Social Network Analysis
University of California, Irvine
University of California, Los Angeles
University of Southern California

Conference Organizers

Carter Butts
Becca Davis
Katherine Faust
Tom Valente

Student Assistants

Peter Busse, Arul Chib
Kate Coronges, Raquel Fosados
Beth Hoffman, Janet Okamoto
Miruna Petrescu-Prahova
Patty Pumpuang & Darleen Schuster

Sunbelt	Year	Location	Keynote Speaker	Organizers
I	1981	Tampa	no speaker	H. Russell Bernard & Alvin Wolfe
II	1982	Tampa	John Barnes	H. Russell Bernard & Alvin Wolfe
III	1983	San Diego	James Coleman	Douglas White
IV	1984	Phoenix	Harrison White	Brian Foster
V	1985	Palm Beach	Linton Freeman	H. Russell Bernard & Alvin Wolfe
VI	1986	Santa Barbara	J. Clyde Mitchell	Eugene Johnsen & John Sonquist
VII	1987	Clearwater	Everett M. Rogers	H. Russell Bernard & Alvin Wolfe
VIII	1988	San Diego	Charles Kadushin	John Sonquist, Eugene Johnsen, Sue Freeman & Linton Freeman
IX	1989	Tampa	Frank Harary	Jeffrey Johnson
X	1990	San Diego	Mark Granovetter	Everett M. Rogers
XI	1991	Tampa	James Davis	Katie Faust, Jeffrey Johnson, John Skvoretz & Alvin Wolfe
XII	1992	San Diego	Peter Blau	Phillip Bonacich & Sue Freeman
XIII	1993	Tampa	A. Kimball Romney	H. Russell Bernard & Alvin Wolfe
XIV	1994	New Orleans	Barry Wellman	Scott Feld & Jill Suitor
XV	1995	London	Patrick Doreian	Martin Everett & Keith Rennolls
XVI	1996	Charleston	Bonnie Erickson	Katie Faust & John Skvoretz
XVII	1997	San Diego	H. Russell Bernard & Peter Killworth	Pat Doreian and Sue Freeman
XVIII	1998	Sitges	Rolf Zeigler	José Luis Molina, Josep A. Rodríguez, Nuria R. Ávila, Frans N. Stokman, Tom A. B. Snijders, Evelien P.H. Zeggelink, Stephen P. Borgatti, Alain Degenne, & Thomas Schweizer
XIX	1999	Charleston	Nan Lin	John Skvoretz & Katie Faust
XX	2000	Vancouver	Linton Freeman	Bill Richards & Andrew Seary
XXI	2001	Budapest	Martin Everett	Endre Sik
XXII	2002	New Orleans	Philippa Pattison	Ruth Aguilera, Noshir Contractor, Scott Feld, Caroline Haythornthwaite, Shin-Kap Han, Ravi Madhavan, & Stan Wasserman
XXIII	2003	Cancún	Alvin Wolf	Jorge Gil-Mendieta, Narda Alcántra Valverde, Silvia Casasola argas, Jore Castro Cuellar, Alejandro Ruiz León, José Luis Molina, Smauel Schmidt, & Enrique Pérez García
XXIV	2004	Portorož	Frans Stokman	Anuška Ferligoj, Vladimir Batagelj, Andrej Mrvar, Hajdeja Iglič, Andrej Rus, Gregor Petrič, Tina Kogovšek, Matjaž Zaveršnik, Nataša Kejžar, & Darinka Kovačič
XXV	2005	Redondo Beach	Ronald Breiger	Carter Butts, Becca Davis, Katherine Faust & Tom Valente

Sunbelt XXV Keynote Address
Thursday, February 17
4:00 – 5:30
Pacific Peninsula Rooms

Social Networks and the Spinozan Problem of Order

Ronald L. Breiger
University of Arizona

Several major strands of contemporary research and theorizing on social networks claim origins in the classical "Hobbesian Problem of Order," according to which individuals are posited as the wellsprings of action, as egoistic, rational and competitive actors in a minimalist environment, the major analytical question is how social life can establish itself and persist, given these assumptions. Social network analysis has been enriched by these lines of research and theory. I argue nonetheless that network analysts should be articulating multiple "problems of order," so as to encompass and further network research that takes off from distinctive and different paradigmatic commitments and, at the same time, to raise necessary questions about the prospects for unifying social network research across diverse theoretical commitments. One of the first alternative places to turn is the work of Hobbes's fellow seventeenth-century rationalist, Baruch (or Benedict) Spinoza. Spinoza's theory provided a corrective, I argue, against those who (in Spinoza's words) "believe that [the individual] … has absolute control over his actions, and that he is determined solely by himself." Rooted in concepts of multiple networks, a startling anticipation of contemporary balance theory, and profound articulation of the co-constitution of multiple levels of society, Spinoza's theory provides a useful starting point for new modeling efforts. I illustrate the applicability of a Spinozan approach by showing how a conventional multivariate model might usefully be reconceptualized as a model of social networks.

Freeman Award Plenary Lecture
Friday, February 18
4:00 – 5:30
Pacific Peninsula Rooms

Dynamic Social Balance

James Moody
Ohio State University

Where does network structure come from and how does it change over time? This paper provides an endogenous answer to these questions by extending previous work on balance theory. Key to the model is a recognition that people's experience of networks depends on their position in the network. As such, a relational change that makes one actor's social world more consistent will often create inconsistencies for others. Because actors have multiple solutions for such inconsistencies, a general tendency favoring social balance *need not* result in a crystallized equilibrium network. Instead, networks may reach a *dynamic* equilibrium, cycling through loosely connected groups that dissolve and merge to form new groups over time. The proposed triad transition model describes friendship patterns in a national sample of adolescents better than competing balance models in the cross section and over time. Using empirically based simulation models, I show that while strong tendencies toward transitivity crystallize social structures, moderate values result in a dynamic cycle of group formation and dissolution.

THURSDAY 1	A: Redondo 2	B: Bay	C: Redondo 3
	Blockmodels and Data Reduction (Hubbard)	**Inter-Organizational Networks (Rank)**	**On-line Networks (Broch)**
8:00		*Structural Patterns Of Corporate Governance Networks: The Case Of Germany* Olaf N. Rank	
8:30	*Applying Data Reduction Methods Borrowed From Bioinformatics To Social Network Data* Alan Hubbard, Joseph Eisenberg, James Trostle	*The Formation And Evolution Of Interorganizational Experience: Venture Capital And Philadelphia, 1980-1999* Jonathon Mote	*Do Computer-Mediated Communication Technologies (Cmct) Inhibit Integration? Evidence From American Students' Experience In A Swiss University* Cristina Broch, Giuseppe Pagani
9:00	*Two Methods For Finding Image Matrices: Using Random Graphs And Scree Plots To Identify Cut-Off Criteria In Blockmodeling Analysis* Itai Himelboim, Betsy Neibergall Anderson	*The Network Effect On The Pay Norms Evolution In Korea* Dong-Won Sohn	*Formation And Characteristics Of Internet Assisted Friendship And Sex Networks* Sevgi Aral, Divya Patel, King K. Holmes, Betsy Foxman
9:30	The Blockmodel Approach To The Social Support Networks Of Fa Village Liu Jun	*The Network Form Of The Cooperative Organization: The Danish Pork Sector* Kostas Karantininis, Jesper T. Graversen	*Personal Networks On The Internet* Dominik Batorski, Pawel Kucharski
10:00	**Break**	**Break**	**Break**

D: Redondo 1	E: Catalina	F: Marina	G: Esplanade
Social Problems (Card)	**Social Movements (Tindall)**	**Exchange and Competition (Doerfel)**	**Networks in the Developing World (Trostle)**
Children's Intra- and Inter-Gender Perceptions of Aggression and Social Status Noel A. Card, Todd D. Little, Ernest V. E. Hodges, Patricia H. Hawley	*A Network Analysis Of The Environmental Social Movement Organizations In South Korea: Governance, Claim-Makings, And Participation* Hyung Sam Park		*Correlates At Community Levels Among Social Networks In Nine Villages Of Coastal Ecuador* James Trostle, James Scott, William Cevallos, Betty Ayovi, Joseph Eisenberg
Friendship And Delinquency In Early Adolescence. A Study Of Selection And Influence Processes Andrea Knecht, Chris Baerveldt, Christian Steglich	*Are Network Stars Media Stars? The Relationship Between Environmental Activist Ego-Network Characteristics And Media Citations* Todd Malnick, D.B. Tindall	*Assessing The Degree Of Cooperation-Competition With Network Analysis* Marya Doerfel	*Kinship Network And Contraception In Rural Bangladesh* Dr Kaberi Gayen, Dr Robert Raeside
Homelessness, Injection Drug Use, And Involvement In The Street Economy Differ In The Networks Of Youth In Different Stages Of Youth Homelessness Colette L. Auerswald, Md, Ms, Eiko Sugano, Mph, Jonathan Ellen, Md	*Citizen Technoscience: Internet Discussion Networks In The International Grassroots Biodiesel Fuel Movement* Dave Conz	*Exchange Networks With And Without Externalities: A Cooperative Game-Theoretical Approach* Jacob Dijkstra	*Network Change At Multiple Levels: Kinship And Helping Ties In Nang Rong, Thailand* Barbara Entwisle, Katherine Faust, Ronald Rindfuss
The Role Of Social Connections And Social Identity In School Violence Michele Mouttapa, Jennifer B. Unger, Steve Sussman, Tom Valente	*The Structure Of International Knowledge Network* Seung Joon Jun and George A. Barnett	*Resource Variation And Power In Exchange Networks* David R. Schaefer	*Social Network Structure Among Nine Villages In Coastal Ecuador: Individual Characteristics Associated With Degree* James Scott, James Trostle, William Cevallos, Betty Ayovi, Joseph Eisenberg
Break	**Break**	**Break**	**Break**

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THURSDAY 2	A: Redondo 2 Models (O'Madadhain)	B: Bay Organizations (Lezega)	C: Redondo 3 Homophily (Faris)
10:30	*Learning Predictive Models For Link Formation* Joshua O'Madadhain, Padhraic Smyth, Lada Adamic	*Interlocking Directorate And Corporate Performance In The United Kingdom: An Insight Into The Structure Of Directorship Ties* Popov V.	*Homophily Among Bullies: Influence Or Selection?* Robert Faris, Susan Ennett, Karl Bauman
11:00	*New Developments In Random Effects Modeling For Dynamics Of Networks And Behavior* Michael Schweinberger, Tom A.B. Snijders	*Multilevel network analysis: on the relationship between individual and organizational forms of social capital* Emmanuel Lezega, Marie-Thrse Jourda, Vallarie Pierre	*Homophily Of Network Ties In A Distributed Learning Community* Yu Connie Yuan, Helene Hembrooke, Geri Gay
11:30	*Statistical Methods For Analyzing Dynamics Of Non-Directed Networks* Tom A.B. Snijders, Michael Schweinberger, Christian E.G. Steglich	*Stock Repurchases And Inter-Firm Relations - A Case Study* Love Bohman	*Seeking To Emulate As A Factor In Making Friends* Daniel J. Hruschka
12:00-2:00 Halftime Activities		***Workshop: Interactive Exercises for Training Network Concepts* Dan Wohlfeiler** **Bay**	

D: Redondo 1	E: Catalina	F: Marina	G: Esplanade
Sexual Networks (Klovdahl)	**Blogs (Petrescu-Prahova)**	**Neighborhoods and Geography (Faust)**	**Sesión en Español (Saldívar-Garduño)**
Bridge Populations And Pathogen Spread: Men Who Have Sex With Men And HIV Infection Alden S. Klovdahl, Mark L. Williams, Joh S. Atkinson, Sandra C. Timpson	*Blog Network In America* Jia Lin, Alex Halavais, Bin Zhang	*Friendship Circles, Neighbourhoods And Schools: Linking And Disentangling Overlapping Ecological Contexts Of Juvenile Crime* Dietrich Oberwittler	*Redes Sociales Y Comportamiento Preventivo Ante El VIH/SIDA En Mujeres Mexicanas* Alicia Saldívar-Garduño, Carlos César Contreras-Ibáñez
Prevalence Of Clients Of Prostitute Women In North America John M. Roberts, Jr., Devon D. Brewer, Stephen Q. Muth, John J. Potterat	*Blogging For Votes: An Examination Of The Interaction Between Weblogs And The Electoral Process* Remy Cross, Carter Butts	*Neighborhood Networks Of Social Distance: Do They Predict Neighborhood Satisfaction?* John R. Hipp	*Redes Sociales Y Conductas Alimentarias De Riesgo En Adolescentes De México* Ma. Guadalupe Ramírez López, Ma. Guadalupe Ramírez Ortiz, Ramiro Caballero Hoyos
	Mood, Music And Friends: Mapping The Culture Of LiveJournal John Paolillo, Elijah Wright, Sarah Mercure	*Spaced Out: The Spatial Dimensions Of Social Networks* George Tita, Katherine Faust	*Redes Sociales Y Practicas Sexuales De Riesgo, En Un Contexto Escolar De Preparatoria En Guadalajara, Mexico* Jose Ramiro Caballero Hoyos, Maria Guadalupe Ramirez Ortiz, Maria Guadalupe Ramirez Lopez
***Recent Developments in Exponential Random Graph (p*) Models* Martina Morris** **Redondo 1**			

THURSDAY 3	A: Redondo 2 Communication (Butts)	B: Bay Organizations (Vogenbeck)	C: Redondo 3 Personality and Identity (Robinson)
2:00	*Informal Communication Between Police Agencies* Aki Roberts, John M. Roberts, Jr	*Longitudinal Study Of The Changes In Four Nonprofit Communities' Social Network Structure Before And After Civic Service (Americorps) Interventions* Danielle M Vogenbeck	*Structural Predictors Of Identity Blending* Dawn T Robinson, Shirley A. Keeton
2:30	*Patterns Of Informal Consultation Among Primary Care Physicians* Peter V. Marsden, Nancy L. Keating	*The Structure Of Nonprofit Organizational Interactions: Initial Findings And Implications* Harold D. Green, Jr.	*Instrumental Action And Locus Of Control: The Pursuit Of Social Capital* Michael Stefanone, Geri Gay
3:00	*Responder Communication Networks During The World Trade Center Disaster* Carter T. Butts, Miruna Petrescu-Prahova, Remy Cross	*Using Structural Equivalence To Explore Cause-Related Partnerships Between Corporations And Nonprofits* Betsy Neibergall Anderson, Itai Himelboim	*Personality And Personal Networks* Christopher Mccarty, Harold D. Green, Jr.
3:30	**Break**	**Break**	**Break**
4:00-5:30	**KEYNOTE ADDRESS** *Social Networks and the Spinozan Problem of Order* **Ronald L. Breiger**		

D: Redondo 1	E: Catalina	F: Marina	G: Esplanade
Drug Use Networks (Brewer)	**Hyperlinks (Petri)**	**Space and Networks (Tita)**	**Sesión en Español (Contreras-Ibáñez)**
Injection Network Structure And Genetic Relatedness Of HCV In Drug Injectors Devon D. Brewer, Daniel G. Sullivan, David R. Gretch, Holly Hagan, Eileen S. Hough	*A Liberating Potential Of The Information Organization In The Web: A Lost Opportunity?* Gregor Petri	*Connectivity, Compartmentalization And Vulnerability Of Fragmented Landscapes – A Network-Centric Approach* Orjan Bodin, Jon Norberg	*Estableciendo Puentes Entre Pradigmas: Identidad Social Y Estructura De Red En Grupos Deportivos Pequeños* Carlos C. Contreras-Ibáñez, Verónica Zempoaltecatl Alonso
Stigma, Health Issues, And Social Networks: Social Support Or Avoiding A Courtesy Stigma In Namibia Rachel A. Smith, Daniel Morrison, and Kim Witte	*Knowledge Networks And The WWW - A Multi Level Analysis* Peter Van Den Besselaar, Gaston Heimeriks	*Resource Networks Of Secondary School Headteachers In Mukono, Uganda: Implications For Resource Acquisition And School Performance* Julie M. Hite, Steven J. Hite, W. Joshua Rew, W. James Jacob	*Redes Sociales Y Consumo De Drogas Ilegales En Estudiantes De Bachillerato De Estrato Socioeconómico Marginado De Guadalajara México* Ramirez Ortiz Maria Guadalupe, Jose Ramiro Caballero Hoyos, Maria Guadalupe Ramirez Lopez
The Winnipeg Social Network Injection Drug Use Study: Personal Risk Networks And Risk Of Hepatitis C And HIV Infection Lena Shah, Ann Jolly, John Wylie	*The Determinants Of Political Hyperlinking Behaviors: An Exploratory Study* Han Woo Park, Hyo Kim	*Using Asymmetry To Estimate Influence Potential* Waldo Tobler	*Redes Sociales Y Riesgo De ITS/VIH En Migrantes De Dos Contextos Urbanos De México* Jose Ramiro Caballero Hoyos, Teresa Margarita Torres Lopez, Raquel Fosados, Thomas Valente, Alicia Pineda Lucatero, Carlos Navarro
Break	**Break**	**Break**	**Break**
KEYNOTE ADDRESS *Social Networks and the Spinozan Problem of Order* **Ronald L. Breiger**			

FRIDAY 1	A: Redondo 2	B: Bay	C: Redondo 3
	Methods (Hoser)	**Politics and Collective Action (Johnson)**	**Voluntary Associations (Weare)**
8:00	*Analysis Of Bipartite Graphs By Eigensystem Analysis Of A Complex Hermitian Adjacency Matrix* Bettina Hoser, Andreas Geyer-Schulz	*Identifying Communities Of Practice (Cops) In Practice* Marko Pahor, Monika Lisjak, Nataša Zdouc, Matjaž Dlesk	*The Effects Of Email Communications On The Cohesion And Democrat Character Of Local Voluntary Associations: The Case Of Neighborhood Councils In Los Angeles* Christopher Weare, William Loges, Nail Oztas
8:30	*Beyond Triangles: The Importance Of Diamonds In Networks* Katherine Stovel, Christine Fountain, Yen-Sheng Chiang ,	*Analysis Of Voting Patterns In U.S. Supreme Court Decisions* Jeffrey C. Johnson, Stephen P. Borgatti	*Social Capital And Voluntary Actions: Network-Based Approach On Civic Engagement* Joonmo Son, Nan Lin
9:00	*Identifying Social Contexts In Affiliation Networks: Preserving The Duality Of People And Events* Kenneth A. Frank, Sam Field, Kathryn S. Schiller, Chandra Muller, Catherine Reigle Crumb	*Networks Of Collective Practice: Joint Participation Of Notable Conservative Lawyers* In Supreme Court Cases Anthony Paik, Ann Southworth, John P. Heinz	*Social Capital And Voluntary Activity: Cross-National European Variations* Léan Mcmahon
9:30	*Computing Core/Periphery Structures And Permutation Tests For Social Relations Data* John P. Boyd, William J. Fitzgerald, Robert J. Beck	*Social Networks, Wealth Accumulation, And Dispute Resolution In Rural China* Christine Avenarius, Duran Bell, Zhao Xudong, Liang Yongjia	*Untangling The Roots Of Tolerance: How Networks, Voluntary Associations, And Personal Attributes Shape Attitudes Toward Ethnic Minorities And Immigrants* Rochelle R. Côté, Bonnie Erickson
10:00	**Break**	**Break**	**Break**

D: Redondo 1	E: Catalina	F: Marina	G: Esplanade
Trust, Success, and Leadership (Gubbins)	**Blogs (Welsch)**	**Global Networks (D. Smith)**	**Structure of Networks (Bonacich)**
Exploring The Role Of Trust In Social Networks: A Focus On Top Management Teams And Innovation Claire Gubbins, Sarah Maccurtain, Dr. Thomas N. Garavan	*Revolutionary Vanguard Or Echo Chamber? Political Blogs And The Mainstream Media* Peter Welsch, Howard Rosenbaum	*Appraisal And Comparison Of Data Sources In The Study Of Global Inter-City Relations* Ben Derudder, Frank Witlox, Peter J. Taylor	*Social And Economic Exchange Are Opposites, Or Are They?* Phillip Bonacich
Teamdating: Does Speed Dating Generalize To Effective Teams? Ulrik Brandes, Petru Curseu, Gabi Dorfmüller, Marco Gaertler, Patrick Kenis, Jörg Raab	*Social Network Dynamics In The Blogosphere* Susan Herring, Inna Kouper, Sarah Mercure, John Paolillo, Lois Ann Scheidt, Peter Welsch, Elijah Wright	*Changing Contours Of Global Integration Since 1840* Chris Chase-Dunn, Tom Reifer, Shoon Lio, Chris Schmitt, Anders Carlson, Richard Niemeyer	*Balance Theory Revisited: Negative Ties, Social Settings, And Tie Strength* Yuval Kalish, Garry Robins
The Organizational Life Of An Idea: The Role Of Bridges And Alleys On The Creation, Development And Success Of New Ideas In R&D Labs Bob Kijkuit, Jan Van Den Ende	*Social Structure From Free/Open Source Weblogs* Patrick Wagstrom	*Evaluating The Use Of Air Passenger Transport Flows In Assessing The World City Network* Frank Witlox, Ben Derudder	*Ego Networks And Compulsive Gambling* Pierre Mongeau, Johanne Saint-Charles, Jean-François Biron
The Structural Bases Of Leadership In New Product Development Teams Jan Kratzer, R.T.A.J. Leenders, J.M. Van Engelen	*Tracking Information Flow In Blogspace* Eytan Adar, Li Zhang, Lada Adamic, Rajan Lukose	*Globalization—Obeying The World-System Or Changing It?: A Network Analysis Of International Trade, 1965-2000* Matthew C. Mahutga, David A. Smith	*The Development Of First Year University Students' Personal Friendship Networks* Zhigang Wang
Break	**Break**	**Break**	**Break**

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FRIDAY 2	A: Redondo 2	B: Bay	C: Redondo 3
	Statistical Models (Butts)	**Organizations (Cronin)**	**Meaning and Cognition (De Nooy)**
10:30	*Curved Exponential Family Models For Networks* Mark S. Handcock, David R. Hunter	*Profitable Connections? A Longitudinal Study Of The Impact Of Directorate Interlocks On The Profitability Of New Zealand Firms* Bruce Cronin	*Stories, Scripts, Networks* Wouter De Nooy
11:00	*Goodness-Of-Fit Statistics For The p2 Model* Marijtje A.J. Van Duijn, Bonne J.H. Zijlstra	*Technological Base And The Evolution Of Complex Learning Networks: An Agent-Based Simulation* Adam Tatarynowicz	*Structural Comparison Of Cognitive Associative Networks In Two Populations* Kate Coronges, Thomas W. Valente, Alan W. Stacy
11:30	*Power In p-Star: Density And Multiple Covariates* Silvia Swigert, Michael Francis Johnston	*The Dynamics Of Inter-Firm Networks: Effects Of Changing External Conditions networks In Genomics From 1998 To 2003* Maurits De Klepper, Peter Groenewegen, Gerhard V.D. Bunt	*Managing to Connect: The relationship between social network structure and everyday network management tools.* Bernie Hogan
12:00-2:00 Halftime Activities		***Advances in Generalized Blockmodeling*** **Pat Doreian** **Bay**	

D: Redondo 1	E: Catalina	F: Marina	G: Esplanade
Sexual Networks (Remple)	**Science and Research Networks (Matsuo)**	**Global Networks (D. Smith)**	**Art and Culture (Kirschbaum)**
Adolescent Sexual Network Structure And Composition And Risk Of Sexually Transmitted Infections Caroline M. Fichtenberg, Jonathan M. Ellen	*Mining Large-Scale Social Network Of Researcher From The Web* Yutaka Matsuo, Junichiro Mori, Yohei Asada, Koiti Hasida, Mitsuru Ishizuka	*Inter-Urban Links & Flows: The Contemporary Global City Network* David A. Smith, Michael F. Timberlake	*Blockmodeling Jazz Evolution: Style Emergence From 1930 To 1969* Charles Kirschbaum
Sex Differences In Partner Characteristics And STI Risk Among Economically Disadvantaged African American Adolescents Colette Auerswald, Md, Ms, Stephen Q. Muth, Ba, Beth Brown, Ms, Nancy Padian, Phd, Jonathan Ellen, Md	*Scientific Production And Network Structure: A Blockmodel Study Of A Biomedical Research Community In A Teaching Hospital* Americo Cicchetti, Filippo E. Leone, Daniele Mascia	*The Structure Of International Open Source Movement Network* Seung Joon Jun, George A. Barnett	*Small-Scale Network Modeling For Interdisciplinary Collaborative Art Projects* David Birchfield, Miranda Zent, Hari Sundaram
Sexual Contact Networks Of Massage Parlour-Based Commercial Sex Workers Valencia P Remple, Ann M Jolly, Caitlin Johnston, David M Patrick, Mark W. Tyndall	*Where Do Co-Author Networks And Co-Citation Networks Differ?- A Study Of The Evolution Of Social Network Analysis (1990-2004)* Chaomei Chen, Yunan Chen, Jasna Kuljis	*World-System Network Dynamics In The Early Renaissance* Douglas R. White	*Who Chats In A Chatroom?* Valery Yakubovich, Sasha Goodman
	Personal Network Methods **Barry Wellman** **Catalina**		

FRIDAY 3	A: Redondo 2	B: Bay	C: Redondo 3
	Models (Leite)	Social Capital (Keister)	Health and Adjustment (Innes)
2:00	*Multiple Group And Latent Association Models For Ego-Network Data* Omar Lizardo	*Social Capital in Organizations* Nan Lin	*Adaptation To Childhood Diabetes-The Structure And Characteristics Of Parental Social Networks* Joanne Innes, Brendan Bunting, Vivien Coates
2:30	*Scalable Bayesian Networks To Detect Relationships Among Actors using Events Data* Anna Goldenberg, Andrew Moore	*Does Social Capital Fit? Matching Job Characteristics To Social Capital Levels In Chinese Organizations* Martha A. Martinez	*Moving On: The Importance Of Weak Ties For Adjusting To A New Location* Irina Shklovski, Jonathon N Cummings, Robert Kraut
3:00	*Sex, Society, And Association Revisited: A Report On New Research Into Cross-National Variation In Sex Homophily* Matthew E. Brashears	*Social Capital, Intellectual Capital And Promotion: The Mobility From Engineers To Managers In High-Tech Firms* Ray-May Hsung	*Social Support, Social Capital And Access To Information For Parents Of Heavily Handicapped Children* Johanne Saint-Charles, Ginette Brûlotte
3:30	**Break**	**Break**	**Break**
4:00 – 5:30	**FREEMAN AWARD PLENARY** *Dynamic Social Balance* **James Moody**		
5:30	**Software Demonstrations Redondo 1**		

D: Redondo 1	E: Catalina	F: Marina	G: Esplanade
Drug Use Networks (Wylie)	**Science (Gulas)**	**Global (Krempel)**	**Selection and Influence (Baerveldt)**
Correlates Of Needle Sharing Among Winnipeg Injection Drug Users Patricia Sulaiman, Dr. John Wylie	*Science Under Political And Economic Pressure - The Affiliation Network Of The University Councils In Austria* Christian Gulas, Dr. Harald Katzmair	*Poor Countries And Global Tourism* Lothar Krempel	*An Introduction And A Test Of Selection Strategy Theory. The Effect Of Network Configurations On The Way High School Freshmen Choose New Friends* Chris Baerveldt, Ronan Van Rossem, Gerhard Van De Bunt, Marjolijn Vermande, Christian Steglich
Relationships Between Injection Drug User Network Characteristics Among High Risk Youth And Young Adults Cynthia Lakon, Susan T. Ennett	*The Art Of Consensus: The Role Of Networks In Setting Recommendations At The World Wide Web Consortium* Peter Mika, Tom Elfring, Gerhard Van De Bunt	*Routes Into Networks: The Structure Of The English Trade In The East Indies, 1601-1833* Emily A. Erikson, Peter S. Bearman	*Analyzing Network-Behavioral Co-Evolution With SIENA* Christian Steglich, Tom A,B,Snijders, Michael Pearson, Andrea Knecht
The Dynamics Of Injection Drug Users' Personal Networks And HIV-Risk Behaviors Elizabeth Costenbader, Nan Astone, Carl Latkin	*Theoretical Structures In Social Network Research* Zack Kertcher, Benjamin Cornwell		*Social Influence, Social Selection And Gay Men's Behaviour: Do Social Sanctions Play A Role?* Anthony Smith, Murray Couch, Jeffrey Grierson, Marian Pitts, David Wain
Break	**Break**	**Break**	**Break**

FREEMAN AWARD PLENARY
Dynamic Social Balance
James Moody

SATURDAY 1	A: Redondo 2	B: Bay	C: Redondo 3
	Data Collection and Sampling (Corman)	Attainment (Ao)	On-line and Other Networks (Spielthenner)
8:00	*A Reality Show For Network Geeks: Software Factory And The Quest For The Ultimate Dataset* Steven R. Corman, Kevin J. Dooley, John Parsons	*Measuring the degree of homophily of individual social capital* Dan Ao	*Structures Of Power Landscapes By The Example Of A Large Real Data Network. (Austria's Elite Network)* Doris Spielthenner, Max Ruhri, Harald Katzmair, Christian Gulas, Jürgen Pfeffer
8:30	*Comparing Sampling Designs For A Hidden Population* David C. Bell, Tabitha Serrano, Cheryl A. Dayton-Shotts	*Double Jeopardy For Whom?-Intersection Of Gender And Race And Social Capital Inequality In Job Search* Nan Lin, Shanhui Wu	*Online Discussions As Networks: The Relations Between Topic Of Usenet Groups And Their Structure* Itai Himelboim, Shawn M. Lavelle
9:00	*The Social Networks Of Injecting Drug Users In Two Russian Cities: Using Respondent Driven Sampling To Generate Valid Estimates Of A Hidden Population* Casey Borch, Robert S. Broadhead, Douglas D. Heckathorn	*The Influence Of Social Networks On The Employment Of The Elderly* Dr Kaberi Gayen, Dr Robert Raeside	*Social Space In Cyberspace: Social Networking Through Online Communities* Lisa J. Greenman
9:30	*"To Tell The Truth": Measuring Concordance In Multiply Reported Network Data* Jimi Adams, James Moody	*The Role Of Goal-Relevant Social Ties In Changes In Salary And Job Satisfaction Among Graduates* Markku Jokisaari, Jari-Erik Nurmi	*How To Make it Big – Using Multiple Media to Maintain Social Ties and Access Resources* Jeffrey Boase Barry Wellman
10:00	**Break**	**Break**	**Break**

D: Redondo 1	E: Catalina	F: Marina	G: Esplanade
Health (Latkin)	Simulations (Lazer)	Network Dynamics (Roth)	Processes in Networks (Lehmann)
	Congressional Connections: The Diffusion Of An Innovation Among Members Of Congress David Lazer, Allan Friedman	*Dynamics Of Galois Lattices: The Case Of Epistemic Communities* Roth, Camille G., Bourgine, Paul	*A Dynamic Model For Small Worlds* Katharina A. Lehmann, Hendrik Post, Michael Kaufmann
Correlates Of Having Injection Drug Users As Sexual Network Members Carl Latkin, David Leighton Howard	*A Simple Model Of Coalition Formation In Ideologically Heterogeneous Groups* Maren Friesen	*Quantifying Change In And Of Core-Periphery Structures With Correspondence Analysis: An Application To International Trade* Matthew C. Mahutga	*Equilibrium And Evolution In Supply Chain And Social Networks* Mike Pearson
Familial Clustering In Colorectal Cancer: Extension Of Analytic Methods Andrew J. Seary, William D. Richards	*Does Innovation Affect Social Structures? A Study Of The Joint Dynamics Of Networks And Technology Diffusion* Michele Simoni, Adam Tatarynowicz, Gianluca Vagnani	*Constancy: A Measure Of Network Dynamics In Bipartite Graphs* Soong Moon Kang	*Interrogating The Usual Suspects: Social Networks, Education And Voter Turnout* Meredith Rolfe
The HIV Vaccine Preparedness Study Operskalski, Eva, Valente, Thomas, Kovacs, Andrea, Zogg, Jennifer	*Social Capital Management By Means Of Agent Based Simulation Modelling what Is The Best Networking Strategy To Improve One's Position In A Distributed Resource Network?* Harald Katzmair, Juergen Pfeffer	*Sensing Social Network Evolution* Nathan Eagle, David M. J. Lazer, Alex (Sandy) Pentland	*The Origins Of Network Integration: A Simulation Study* Joesph F. Cabrera
Break	**Break**	**Break**	**Break**

SATURDAY 2	A: Redondo 2	B: Bay	C: Redondo 3
	Centrality (Ruhri)	**Alliances and Communities (Mika)**	**Attraction and Friendship (Skvoretz)**
10:30	*Calculating Line Centrality Measures By Transforming Edges Into Nodes* Max Ruhri, Juergen Pfeffer, Harald Katzmair	*A Social Network Analysis Of Alliances In The Enterprise Software Systems Industry* Ramnath Chellappa, Nilesh Saraf	*Attraction Vs. Repulsion As A Basis For Homophily* John Skvoretz
11:00	*Understanding Information Centrality* Daniel Fleischer, Ulrik Brandes	*Expanding Your Horizon: The Impact Of Network Horizon On Network Structure* D.W. Van Liere, O.R. Koppius	*Friendship Among Graduate Students: A Social Network Approach* Miruna Petrescu-Prahova
11:30	*Uniqueness Centrality* Nikola S. Nikolov, Seok-Hee Hong	*Shoulders To Stand On*: *Network Analysis Of The Semantic Web Community* Peter Mika, Tom Elfring, Peter Groenewegen, Yutaka Matsuo	*Gender Differences In Friendship Patterns* Deirdre M. Kirke
12:00-2:00 Halftime Activities		***Panel on Informal Networks within Formal Organizations*** **Charles Kadushin** **Bay**	

D: Redondo 1	E: Catalina	F: Marina	G: Esplanade
Drugs and Disease (Pelude)	**Collaboration and Work (Sardone)**	**Geography (Tita)**	**Community (Hanson)**
Are Drug-Using Networks Formed By Injection Drug Users (IDUs) Truly Random? Linda Pelude, John Wylie, Ann Jolly	*Methods For The Identification Of Communities Of Practice From Email Logs: A Critical Overview* Giuseppe Sardone	*Discrete Choice With Social And Spatial Network Interdependencies* Elenna R. Dugundji, Joan L. Walker	*Assessing The Growth And Structure Of A Community Based Safety Promotion Network* Dale Hanson, David Durreheim, Reinhold Muller.
Preliminary Analysis Of The Contact Structure Of The UK Cattle Herd Matthew C. Vernon, Cerian R. Webb, M. Fred Heath	*Strategies And Efficiencies In Organizational Email Networks* Nathaniel Bulkley, Marshall Van Alstyne	*Teams As Networks In A Connected Organization: The Critical Role Of Geographic Dispersion* Jonathon N Cummings, Tanu Ghosh	*Collective Action And Social Capital In Rural India* Wendy Janssens
Sexually Transmitted Infection Networks In Manitoba, Canada, 2002-2003 Emily Meadows, John L. Wylie, Ann M. Jolly	*Structural Information From Email Networks Enhances The Collaborative Workspace* Danyel Fisher, Paul Dourish	*The Effects Of Physical Space On Social Networks: Correlations Of Sociometric And Geographic Data From Coastal Ecuador* Sarah Bates, James Trostle, William Cevallos, Betty Ayovi, Joseph Eisenberg	*Neighborhood Network Structure Of Social Capital:An Analysis Of The Los Angeles Experiment* Nail Oztas, Ph.D., Chris Weare Ph.D., Julit A. Musso Ph.D
Viszards: Analysis and Visualization of KEDS Networks **Vladimir Batagelj** **Redondo 1**	***Putting Network Theory into Practice to Reduce Transmission of Sexually Transmitted Diseases in California: Successes and Challenges*** **Dan Wohlfeiler** **Catalina**		

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SATURDAY 3	A: Redondo 2	B: Bay	C: Redondo 3
	Methods (Everett)	**Organizations (Danowski)**	**Personal Networks (Jäger)**
2:00	*Irregular Equivalence: Testing For Regularity V. Dispersion On Clusters Of Social Relations* John P. Boyd, Kai J. Jonas	*Organizational Communication Networks And Manufacturing Plant Productivity* James A Danowski, Ken Riopelle, Julia Gluesing, Scott Blow, Mark Ferencz, Fred Hallway	*The Impact Of Personal Core Networks On Attitudes Towards Immigrants In Germany* Angela Jäger
2:30	*Distributions of Contribution to The Social Networks ListServ* Scott Feld, Michael Harrison	*Predicting Organizational Innovation: Social Network Brokerage, Knowledge, And The Tertius Iungens Orientation* David Obstfeld	*Toward An Affective Theory Of Instrumental Ties* Tiziana Casciaro, Miguel Sousa Lobo
3:00	*Why Are Networks The Shape They Are?* Martin Everett, Steve Borgatti	*Social Capital Within The Board Of Directors* William B. Stevenson, Robert F. Radin	*When Institutions Meet Networks: Educational Homogamy In China* Lijun Song
3:30	**Break**	**Break**	**Break**

D: Redondo 1	E: Catalina	F: Marina	G: Esplanade
Add Health Networks (Hoffman)	**Knowledge and Perception (Wang)**	**Sports (Lusher)**	**Trust and Social Capital (Van De Bunt)**
Effects Of Peer Influence, Peer Selection, Ethnicity And Gender On Adolescent Smoking Beth R. Hoffman, Thomas W. Valente	*Knowing Who To Know In Knowledge Sharing Virtual Communities: Use Of Structural Roles Information And Social Network Analysis* Jc Wang, Jong-Chang Ho	*Individual And Team Attitudes Towards Women In Elite Level All-Male Sporting Teams* Dean Lusher, Garry Robins, Peter Kremer	*A Model And Exploration Of Within-Groups Social Capital* Harry J. Van Buren Iii
Friends And Lovers: Racial Homophily In The Social And Sexual Networks Of American Adolescents Anthony Paik, Christabel Rogalin	*Social Structure And Perception Of Informational Diversity* Inga Carboni, Kate Ehrlich, David Millen	*Network Analysis Of Basketball Passing Patterns* Alan Reifman	*The Evolution Of Intra-Organizational Trust Networks: An Empirical Test Of Four Theoretical Trust Mechanisms* Gerhard Van De Bunt, Rafael Wittek, Maurits De Klepper
Network Intergenerational Closure And Academic Achievement Jennifer Glanville	*What You Know Is Who You Know–Patterns Of Relations And Ecological Knowledge Distribution Among Small-Scale Fisherfolk In An East African Village* Beatrice Crona, Örjan Bodin	*Who Passes To Whom: Analysis Of Optimal Network Structure In Soccer Matches* Jegoo Lee, Stephen P. Borgatti, Jose Luis Molina, Juan J. Merelo Guervos	*Toward A Theory Of Trust In Chinese Organizations* Luo, Jar-Der
Break	**Break**	**Break**	**Break**

SATURDAY 4	A: Redondo 2	B: Bay	C: Redondo 3
	Multiplexity (Fonti)	**Economic (Bandelj)**	**Risk Networks (Friedman)**
4:00	*A Multiplex p2 Model* Bonne J.H. Zijlstra, Marijtje A.J. Van Duijn	*How Does Network Centrality Affect Strategic Assets Acquisition? Evidence From Soccer* Daniele Mascia, Vanina Torlò	*Infection discordant injecting dyads and HIV/HCV injecting risk among young drug injectors in New York City and Marseilles* Alan Neaigus, V. Anna Gyarmathy, Anne M. Lovell, Vera Frajzyngier
4:30	*Multiplexity In Network Research* Maurits De Klepper, Gerhard Van De Bunt, Peter Groenewegen	*Networks, Culture Or Politics? Sociological Approaches To Markets* Nina Bandelj	*Risk Networks, Infectious Diseases, Social Norms, Risk Behaviors And Health Activism "Intravention"* Samuel R. Friedman, Melissa Bolyard, Carey Maslow, Pedro Mateu-Gelabert, Milagros Sandoval
5:00	*When One Relationship Is Not Enough: Toward A Theory Of Multiplex Embeddedness* Fabio Fonti	*The Evolution Of New Entrant's Trading Networks In A Market* Otto Koppius	*Marginalized and socially integrated groups of IDUs in Hungary potential bridges of HIV infection* V. Anna Gyarmathy and Alan Neaigus
5:30	*Memorial Tribute for Ev Rogers*		

D: Redondo 1	E: Catalina	F: Marina	G: Esplanade
Learning and Performance in Organizations (Comas)	**Knowledge (Suseno)**	**Global (Barnett)**	**Labor Markets (Nikkilä)**
Learning Cliques: Balancing Exploitation And Exploration As A Network Problem Jordi Comas	*Searching For Answers: Tracing The Paths Of Knowledge In A Dispersed Community* Binz-Scharf, Maria C., Lazer, David	*Corporate Networks And Global Trade Regimes: Fortune 500 Firms In The U.S. Trade Policy Formation Process* Michael Dreiling, Derek Darves	*Brokerage Roles And Job Control* Riku Nikkilä
A Relational Approach To Individual Performance: Evidences From A Study Of An MBA Program Vanina Torlò, Silvia Profili, Alessandro Lomi	*The Relationships Between Social Capital, Knowledge Acquisition And Relationship Outcomes In Professional-Client Networks* Yuliani Suseno, Dr Ashly Pinnington, Dr John Gardner	*Regional Stratification In The "New Economy": Analyses Of The Inter-Regional Venture Capital Investments* Young-Choon Kim	*Extending The Social Ledger: Negative Relationships In Workplace Social Networks* Giuseppe Labianca, Daniel J. Brass, David Krackhardt
Reversing The Flow Of Influence: Networks, Power And Resistance To Organizational Change Susan Lynch, Bjorn Lovas		*The Structure International Conflict-- 1993-2001* George A. Barnett, Jang Hyun Kim	*Hiring On The Internet: Do Referrals Matter?* Valery Yakubovich, Dana Lup

SUNDAY 1	A: Redondo 2	B: Bay	C: Redondo 3
	Methods (Dekker)	**Organizations (Rice)**	**Communities of Practice (Quan-Haase)**
8:00	*Iterative Algorithm For Node Classification In Social Networks* Aram Galstyan, Paul Cohen	*Individual Work Styles, Intra-Organization Networks, And Perceived Work Place Satisfaction* Dr. Mahbub Rashid, Dr. Craig Zimring	
8:30	*Measures For Simmelian Broker Positions* David Dekker	*Organizational Cross-Unit Communication: The Influence Of Media Choice And Unit Network Position On Communication Satisfaction, Timeliness And Effectiveness* Ronald E. Rice, Jennifer Lehr	*Going The Extra Mile: Engaging In Voluntary Knowledge Sharing In Communities Of Practice* Ines Mergel, Maria Christina Binz-Scharf, David Lazer
9:00	*Measures Of Closeness Amongst Toronto Injection Drug Users* Naushaba Degani, Dr. Peggy Millson	*The Indirect Effect Of Leadership Style On The Task Dependency Network And Group Performance* Craig Schreiber, Kathleen M. Carley	*How Computer-Mediated Hyperconnectivity And Local Virtuality Foster Social Networks Of Information And Coordination In A Community Of Practice* Anabel Quan-Haase, Barry Wellman
9:30	*Significant And Stable Role Assignments* Juergen Lerner, Ulrik Brandes	*Towards An Extensible, Consistent Semantics Of Social Network Data* Maksim Tsvetovat, Kathleen M. Carley	*Supporting Communities Of Practice With Social Network Analysis* Doug Rush
10:00	**Break**	**Break**	**Break**

D: Redondo 1	E: Catalina	F: Marina	G: Esplanade
Health (Haines)	Representations and Visualizations (Lloyd)	Terrorists and the Military (Bienenstock)	Diffusion (Valente)
	Design Team Interaction: Toward An Actor-Discourse Network Representation Ben Shaw	*Operationalizing Terror In The Name Of God: Using Two-Mode Networks To Link Terrorism To Islamic Institutions* Elisa Jayne Bienenstock, Marc Sageman	*Linking Networks And Cognition: An Automated Structural Approach To Assessing Teams Cognition* John Graham, Kathleen M. Carley
Social Capital And Self-Reported Health Valerie A. Haines, John J. Beggs, Jeanne S. Hurlbert	*Social Network Visualizations Of Usenet Newsgroups* Marc A. Smith, Danyel Fisher	*A Methodology For Analyzing Complex Military Command And Control Networks* David Jarvis	*Like Text To Likes: Diffusion-Networks In Mobile Communication* Sebastian Schnorf
Improving Personality Disorder Assessment Through Social Network Analysis Allan Clifton, Eric Turkheimer, Thomas F. Oltmanns	*Network Dynamics of Organizational Routines* Daniel A. McFarland, Skye Bender-deMoll	*Revealing And Comparing The Organizational Structure Of Covert Networks With Network Text Analysis* Jana Diesner, Kathleen M. Carley	*The Assist Intervention: Successfully Harnessing Informal Social Networks To Reduce Adolescent Smoking* Jo Holliday, Laurence Moore, Rona Campbell, Fenella Starkey, Suzanne Audrey, Nina Parry-Langdon
Network Patterns In HIV/AIDS Prevalent Communities: Oshikuku, Namibia Arul Chib, Kim Witte, Rachel Smith	*Visualizing Signed Networks: An Exploration With Correlations In Voting On UN Resolutions* Paulette Lloyd, Jim Blythe, Jan de Leeuw, and Cathleen Mc Grath	*The March 11Th Terrorist Network: In Its Weakness Lies Its Strength* Josep A. Rodriguez	*USC School Of Dentistry Workflow Project* Thomas Valente, Peter Busse
Break	**Break**	**Break**	**Break**

SUNDAY 2	A: Redondo 2	B: Bay	C: Redondo 3
	Methods (Snidero)	**Organizations (Hillmann)**	
10:30	*Estimating The Number Of Foreign Bodies Injuries In Childhood With The Scale-Up Method* Silvia Snidero, Bruno Morra, Roberto Corradetti, Dario Gregori	*Emergent Role Structures In Economic Networks: Evidence From Overseas Trade Investment In Early Modern England* Henning Hillmann	
11:00	*Social Network Measures For "Nosduocentered" Networks, Their Predictive Power On Performance* Lluis Coromina, Jaume Guia, Germa Coenders	*Entrepreneurship In The Knowledge Society: Analysis Of Entrepreneurial Network Evolution* Tobias Mueller-Prothmann	
11:30		*Social Network Analysis As A Tool For Intra Organizational Development In An Aerospace Project Team Over Time And Role Commitment* Kristie Hansen, Dimitris Assimakopoulos	
12:00-1:00	**INSNA Business Meeting**		

D: Redondo 1	E: Catalina	F: Marina	G: Esplanade
Health (Mendel)	**Diffusion (Still)**	**Teams (Ruediger)**	**Network Structures (Galaskiewicz)**
Cross-Sector Networks Of Care For Multiple Health Morbidities: Service Landscapes For Persons With HIV And Severe Mental Illness In Los Angeles And New York Peter Mendel, Gery Ryan, Devon Brewer, Paul Koegel	*Spreading Disparate Ideas Among The American Business Community: How, When And What Kinds Of Networks Matter* Mary C. Still	*Career Affiliation Networks And Industry Evolution: The Emergence Of Self-Sustaining Biotechnology Clusters* Steven Casper	*Studying The Shifting Ecology Of Consumption: A Study Of Youth Services In Phoenix-Mesa From Sunup To Sundown* Joseph Galaskiewicz, Olga Mayorova, Beth Duckles
Mediating Role Of Network Density On The Effectiveness Of A Satellite TV Training Program Valente, Thomas, Pentz, Mary Ann, Chou, Chih-Ping	*What Are We Talking About? Multiplex Network Relationships In The Diffusion Of E-learning Practices* Ines Meregl	*The Social Construction Of Public Policies And The Role Of Elites And Governmental Spaces In The Definition And Effectiveness Of Public Agendas* Marco Aurelio Ruediger	*Elite Women: An Analysis Of The National Network Of Interlocking Directorates* Olga Mayorova, Gwen Moore
			Groups: Surface And Deep Structure Kathleen M. Carley, Terrill Frantz, Jana Diesner, George Davis
INSNA Business Meeting			

Workshops

Introduction to the Analysis of Network Data via UCINET and NetDraw

Stephen Borgatti, Martin Everett

A beginners tutorial on the concepts, methods and data analysis techniques of social network analysis. The course begins with a general introduction to the distinct goals and perspectives of network analysis, followed by a practical discussion of network data, covering issues of collection, validity, visualization, and mathematical/computer representation. We then take up the methods of detection and description of structural properties such as centrality, cohesion, subgroups, cores, roles, etc. Finally, we consider how to frame and test network hypotheses. An important element of this workshop is that all participants are given a demonstration version of UCINET 6 for Windows and the Netmap visualization software, which we use to provide hands-on experience analyzing real data using the techniques covered in the workshop. In order to participate fully in the workshop, participants should bring laptop computers so that they can run the analyses on their machines at the same time as they are being demonstrated by the instructors.

The Analysis of Longitudinal Social Network Data

Tom Snijders

Longitudinal social network data are understood in this workshop as two or more repeated observations of a directed graph on a given node set (usually between 30 and 100 nodes, sometimes up to a few hundreds). In other words, this workshop is about statistical modeling of the dynamics of complete networks. The workshop teaches the statistical method to analyze such data, as described in Sociological Methodology - 2001, p. 361-395, and implemented in the SIENA program. The statistical model used for the network evolution allows various network effects (reciprocity, transitivity, cycles, popularity, etc.), effects of individual covariates (covariates connected to the sender, the receiver, or the similarity between sender and receiver), and of dyadic covariates. One interpretation of this model is an actor-oriented model where the nodes are actors whose choices determine the network evolution. Further information about this method, including references and a JAVA demo, can be found at website
http://stat.gamma.rug.nl/snijders/siena.html. The statistical analysis is based on Monte Carlo simulations of the network evolution model and therefore is a bit time-consuming. The computer program SIENA is included in the package StOCNET which runs under Windows. The workshop will demonstrate the basics of using StOCNET and SIENA. Attention will be paid to the underlying statistical methodology, to examples, and to the use of the software. The morning session will focus on the intuitive understanding of the model and operation of the software. The afternoon will continue this, and also present some further mathematical background. Special attention will be paid to a recent development: models for the simultaneous dynamics of networks and behavior. Participants are requested to check website http://stat.gamma.rug.nl/snijders/siena.html in the week before the workshop to download the workshop materials.

Pajek Workshop: Analysis of Large Networks

Vladimir Batagelj, Andrej Mrvar, Wouter de Nooy

The workshop consists of three parts. In the first part we will give an introduction to the use of Pajek based on our textbook on social network analysis 'Exploratory Social Network Analysis with Pajek'. In the second part we will explain how to use multi-relational networks (new in Pajek 1.02, November 2004) and present

some efficient approaches (valued cores, triangular and short cycle connectivity, citation weights, pattern search, generalized blockmodeling, islands) to analysis and visualization of real-life large network (genealogies, collaboration networks, citation networks, Internet networks, dictionary networks, 2-mode networks). We will also discuss the 'fine-tuning' of Pajek's layouts (pictures) and combining Pajek with statistical program R.

In the last part participants will have an opportunity to discuss about the use of Pajek (questions, suggestions, analysis of specific data...). Jurgen Pfeffer, from FAS.research, Vienna will present his program Text2Pajek that converts excel/text file datasets into Pajek format.

To actively follow the workshop bring your laptop with you. Program Pajek is available at
 http://vlado.fmf.uni-lj.si/pub/networks/pajek/.

Networks for Newbies

Barry Wellman

This is a non-technical introduction to social network analysis. It describes the development for social network analysis, some key concepts, and some key substantive methods and findings. It is aimed at newcomers to the field, and those who have only seen social network analysis as a method.

MultiNet

Andrew Seary, Bill Richards

MultiNet is an interactive computer program for the analysis and display of discrete and continuous network data. It simultaneously examines characteristics of links and nodes. The program is menu-driven, it has context-sensitive, interactive, on-line help, and always presents a color graphic representation of the data or the results of analysis as well as a textual report. The program does univariate descriptive statistics, crosstabulation, analysis of variance, regression, correlation, p*, and eigen analysis. It has powerful and flexible data manipulation capabilities. It performs continuous and discrete transformations, such as ordination, quantiles, recategorization; linear, log, power, and z transforms. New variables can be created by transforming or combining existing ones in any manner describable by algebraic equations. The program also provides file viewing and editing.

Part 1. Managing complex data: MultiNet is a program designed for exploring many types of relationships in complex network data. We discuss the univariate and multivariate methods currently available for exploring both attribute (node) and network (link) variables. These include discrete and continuous data recoding and bivariate and trivariate methods applied to node and link variables by themselves, as well as within networks. These methods will be demonstrated on real network data.

Part 2. Spectral Analysis: MultiNet does four types of eigen decomposition for spectral analysis of networks with up to 5,000 nodes with interactive graphical display of results in 1, 2, or 3 dimensions. We will demonstrate the analytic procedure; explain the various options available for interactive display of results; and show how the results from this procedure are integrated with the rest of the program and how both coordinates in eigen space and partitions can be used as variables in any other subsequent analysis.

Part 3. Hybrid methods: We describe hybrid methods which allow creating node variables from networks, such as eigenvectors, partitions, and various centrality measures. We also describe methods for creating link variables from node attributes, and groupings of link variables. Part 4. p* in MultiNet: We describe the implementation of p* in MultiNet, and discuss various aspects of p* fitting with special types of data: large; symmetric; bipartite; multiple network. Since the current version can handle up to 5,000 nodes and 256 parameters, managing the displays and reports can be quite complex. We demonstrate how this implementation may be applied to some moderately large datasets.

Part 5. MultiNet in action: We apply topics covered in the proceeding parts to analyse moderately large, complex datasets from medicine. Topics applied include eigenspaces, hybrid data creation and recoding, bipartite p* fitting, and network crosstabs.

Thursday 1 Morning: 8:00-10:00

A: Redondo 2

Blockmodels and Data Reduction
(Hubbard)

Applying Data Reduction Methods Borrowed From Bioinformatics To Social Network Data

Alan Hubbard, Joseph Eisenberg, James Trostle

This paper presents novel applications of techniques developed for studying genomic to a network study. Specifically, we apply a hierarchical clustering method (hierarchical ordered partitioning and collapsing hybrid – HOPACH – developed by van der Laan and others (2003) to examine the network structure of villages in northern coastal Ecuador. The ultimate goal of this study is to examine individual and group characteristics and their association with various disease outcomes. HOPACH is an hierarchical extension of Partitioning Around Medoids (PAM), a simple method for partitioning objects provided any arbitrary distance matrix (e.g., network distances). The clusters are defined, not by summary statistics, but by actual objects (people in our case) which are chosen to minimize the average distance of a person to their assigned cluster. Besides the selection of medoids and cluster assignment, PAM also returns a statistic providing the quality of cluster assignment by individual, referred to as the silhouette. HOPACH makes use of the algorithm of PAM and the silhouette statistics to successively re-split the sample. It also uses the clustering results to re-order the data set for visualization. The results appear very useful for 1) visualizing structure in the data (number of clusters defined by network, overlap of clusters, etc., 2) reporting the center of the cluster, the medoid, identifies, community members who might have disproportionate potential to spread infectious disease, 3) assigning individuals to clusters implied by their network connections and the silhouette providing the strength of that assignment. We present an application of HOPACH (using the open-source statistical software, R, to network distance matrices returned from UCINET) to data collected from nine villages in coastal Ecuador during the summer of 2003.

Two Methods For Finding Image Matrices: Using Random Graphs And Scree Plots To Identify Cut-Off Criteria In Blockmodeling Analysis

Itai Himelboim, Betsy Neibergall Anderson

Blockmodels are frequently used in network analysis to reduce big networks into fewer, similar, subgroups called blocks or positions. A crucial stage in this process is creating image matrices, which dichotomize relations between positions, into strong ("oneblocks") and weak ("zeroblocks") ties. Although scholars acknowledge that cut-off points are chosen arbitrarily, and that "much more work needs to be done before there are any strong guidelines to define á in blockmodeling" (Arabie, 1984, 392), this critical point of the blockmodeling process is yet to be discussed or justified theoretically and methodologically. This essay suggests two methods to address this methodological "hole" in creating image matrices. First, a block's density is compared with the density of the corresponding block in a random graph. A conventional null hypothesis in graph theory, against which observed graph properties are tested, is a random graph. Accordingly, only if a block's observed density is higher than the random (expected) density, it will become an oneblock. The second approach suggests comparing densities of blocks to one another. I propose to dichotomize blocks into strong and weak ties based the scree plot. The plot is constructed simply by ordering blocks according to their observed densities, and the cut-off point is set based on the observed change in slope. I reanalyzed Knoke's (1999) and Wholey et al. (2004) datasets. The findings show that the two approaches complement one another. The random graph approach identifies statistically significant values, and the scree plot gives more flexibility for researchers to create alternative image matrices. Overall the analyses suggest that scree plots produce more conservative results than the random graphs. Creating an image matrix is described here as a process of creating and evaluating variety of justified cut-off criteria. The best choice is for the researcher to choose, and is theory derived.

The Blockmodel Approach To The Social Support Networks Of Fa Village

Liu Jun

The purpose of this research is to analyze the whole network structure of a small village in Heilongjiang Province in China. Until now, social support research mainly deal with ego network. The whole network structure of a community is not considered seriously. we could not get a clear map of support relations without a complete network survey. In consideration to this idea, Blockmodel, a powerful model in social network analysis, is introduced and employed to examine the holistic characteristic of social support networks of Fa village of Hei longjiang province. The results indicate that there are four subgroups both in labor network and in kin-friend network. Blockmodel method can also be employed to examnine the whole structure of a variety of social phenomina. The sociological meaning of blockmodel method is addressed in the end.

B: Bay

Inter-Organizational Networks
(Rank)

Structural Patterns Of Corporate Governance Networks: The Case Of Germany

Olaf N. Rank

Systems of corporate governance have frequently been conceptualized as interorganizational networks. Within such networks, firms are interlinked by numerous relational ties arising from financial investments in equity stake (ownership ties) as well as from the election of a member of the management board of one firm to the supervisory board of another firm (interlocking directorates). While several authors have investigated these two relational networks separately by the means of network analytical tools leading to the comparison of the structures of ownership networks and interlocking directorates, the question about the underlying structural patterns of the multirelational corporate governance network still wants further research efforts. In our paper, we conceptualize national systems of governance as bivariate networks, in which a nations major companies form the set of networks actors being linked by ownership ties and interlocking directorates. We propose that ownership ties and interlocking directorates are regarded to represent distinctive modes of governance. Hence, firms will base their decisions on exerting control over other firms by building and maintaining governance ties on their own structural embeddedness into both dimensions of the governance network as well as the embeddedness of their respective target of control. On an aggregate level, we assume that the interdependencies existing between both relations form the basis of the underlying structural patterns of the governance network. To examine these underlying structural patters of both partial networks (ownership network and interlocking directorates) simultaneously, we employ a class of bivariate p* models, originally proposed by Wasserman and Pattison (1996; 1999). We gather empirical data for the German corporate governance system. The set of actors comprises firms being listed in the DAX 100 stock index. Due to the high relevance of financial firms in the German governance system, the twenty largest banks as well as the twenty most important insurance companies are added. Because some of the financial firms are already listed in the DAX 100 index, the set of actors comprises 133 firms. Particular emphasis is devoted to three research questions: Firstly, which structural interdependencies may be identified within each of the two relations? Secondly, which interdependencies exist between ownership ties and interlocking directorates? And thirdly, do the two relational components of the network display complementary characteristics or are they regarded as alternative modes of governance (substitutive character).Our study reveals a number of interesting findings. We find support for the notion that the entire governance structure may be decomposed into dominant subconfigurations of specific types (e.g., in- and out-stars, transitive triads). By applying a bivariate version of p* to systems of corporate governance and hence by investigating both governance dimensions simultaneously, our results reveal several interdependencies existing between ownership ties and interlocking directorates. Moreover,

both relations display complementary as well as substitutive characteristics. Overall, the results allow for a detailed explanation of the structural patterns underlying the governance network and hence for the deduction of further insights into the functioning interfirm corporate governance.

The Formation And Evolution Of Interorganizational Experience: Venture Capital And Philadelphia, 1980-1999

Jonathon Mote

This paper explores interorganizational linkages among venture capital firms and companies receiving venture capital investments in the Philadelphia region from 1980 to 1999. While most analyses have focused on the existence and rationale of interorganizational linkages, relatively little work has been done on their formation. As Gulati and Gargiulo (1999) discuss, the formation of interorganizational linkages is often a result of past or existing network relationships. But there is little understanding on how such linkages might arise in new environments with few existing networks. This analysis utilizes an extensive database consisting of venture capital disbursements and investments in the Philadelphia region from 1980 to 1999. The data allows a comprehensive examination of the emergence of interorganizational linkages and networks (specifically investment syndicates) during the initial growth phase of venture capital investing within a specific region.

The Network Effect On The Pay Norms Evolution In Korea

Dong-Won Sohn

This study examines the role of social networks in the pay norms evolution in Korean industries. Dominant pay norms in Korea have been the seniority-based norms (K-norms) for a long time, but new performance-based norms (U-norms) have competed with the dominant norms since the middle of 1990s. The distribution of firms adopting either of the two rival norms in Korea is likely to determine the survivor of the evolutionary battle. Data on the pay strategy transformations of 620 Korean chaebol firms during 1988-2003 suggest that norms are highly diffused as the number of actors adopting the particular norms gets increased. The imitation of successful neighbors is a major mechanism of the norms diffusion, implying the significant role of network effect in the evolution of norms. This study also distinguishes between pipes and channels as the conduits transferring the network effects, following the Owen-Smith and Powell (2004). Pipes are closed networks designed to influence the specific parties, while channels are open networks facilitating information spillovers that benefit unspecified actors within the network. The data imply that their network effects are transferred through channels rather than pipes. Korean chaebol firms are likely to choose the successful firms as models for imitation of pay strategy, and the models being imitated are often beyond the same chaebol umbrella. The specific chaebol umbrella functioned similar to closed pipes in the past, but information on pay strategy has diffused among nodes in a more open manner so that benefits also transferred to unspecified actors. In sum, network effect is important in the evolutionary process of pay norms in Korea, and the network effect is transferred to the unspecified actors in general through weak-tied channels.

The Network Form Of The Cooperative Organization: The Danish Pork Sector

Kostas Karantininis, Jesper T. Graversen

We contribute to the discussion over the success (or failure) of the Danish farm cooperative system. We chose to examine the Danish pork sector, since it is one of the prime examples of a success story. We focus on the organizational aspect of the system and propose a network approach. We argue that a great deal of the success of the Danish cooperative system today is precisely the fact that it is organized as a "system" – more specifically as a very tight network of several cooperative organizations. The various organizations

within the network are linked either through direct ownership (subsidiaries and "daughter" companies) or via umbrella organizations. These organizations are embedded in a larger network of the organizations of the agricultural sector at large, such as dairy cooperatives, farm input suppliers, farmers' union, etc. These organizations are linked through four different forms: I. Ownership structures (hierarchies); II Federated structures (macro-hierarchies); III. Through Board interlocks; IV Through co-participation in higher level organizations ("meta-hierarchies" ?). We present some evidence of the existence of all four forms in the Danish pork industry. Finally, we examine the question of over-embeddedness.

C: Redondo 3

On-line Networks
(Broch)

Do Computer-Mediated Communication Technologies (Cmct) Inhibit Integration? Evidence From American Students' Experience In A Swiss University

Cristina Broch, Giuseppe Pagani

In this paper we assess the extent to which the adoption of communication technologies such as instant-messaging devices affects processes of group integration in unfamiliar context. We address this issue using survey based data that we have collected. The sample includes 31 students coming from an American university visiting a Swiss university during a four month period. We collected four waves of data on a number of relationships among American students and with 22 Swiss students at the beginning of each of the four months. In previous experiences with similar groups of students we observed that American students spent a significant amount of time cultivating their relationships with friends overseas trough instant-messaging devices. Together, the level of integration of these students in the new environment appeared to be rather low. These observations led to the hypothesis that the more time a person spends using technology-mediated communication devices with distant acquaintances, the less likely (s)he is to get integrated into a new environment. The preliminary evidence that we report provides limited support to this hypothesis. The final wave of observations still provides a pattern of relationships, which shows two distinct clusters of people: the American students' group, on the one side, and the Swiss students' group on the other. Together, the use of communication technology appeared from this survey to be less intense than it was assumed. This tremendously restricts the hypothesized influence of instant-messaging devices on the formation of social ties. Instead, such integration pattern appears to be profoundly affected by previously established relationships. Social ties these students had already created in their own native academic environment can actually be appointed as the main rationale explaining the emergence of the two clusters of students.

Formation And Characteristics Of Internet Assisted Friendship And Sex Networks

Sevgi Aral, Divya Patel, King K. Holmes, Betsy Foxman

Background: Technological changes may affect the size and nature of friendship and sex partner networks. Use of the internet for the recruitment of friends and sex partners represents an important technological change.Objectives: To describe age, gender and race differentials in the use of the internet in recruiting friends and sex partners and characteristics of internet based sex networks in a representative sample of the general population.Methods: In late 2003 early 2004, 919 sexually active persons 18 to 39 years of age participated in a random digit dialing survey (RDDS) in Seattle, Washington. The cooperation ratio (number of completed interviews/completed + partially completed + refusals) was 81.9%. Interviews averaged 24 minutes. Sexual orientation was assigned by reporting of only same (homosexual), opposite (heterosexual) or both same and opposite sex (bisexual) partners. Results: The proportion of people who sought friends or sex partners through the internet increased consistently and monotonically by age from 18% for 18 to 19 year olds to 32% for 35 to 39 year olds; it was highest among self identified homosexuals (59%) followed by bisexuals (45%) and heterosexuals (21%). Thirty-two percent of men but none of the

women; 24% of White Americans (WA) and 33% of African Americans (AA); 44% of homosexuals and 33% of bisexuals but none of heterosexuals who recruited sex partners through the internet reported having sex within one day after connecting on the internet. Over the past 12 months 8.9% of men and 3.8% of women; 6.9% of WA but none of AA; 11% of homosexuals, 14% of bisexuals and 3% of heterosexuals met 10 or more friends or partners over the internet. Nine percent of men and 4.8% of women; 5.8% of AA and 7.3% of WA; 34.4% of homosexuals, 15.4% of bisexuals and 4.2% of heterosexuals met their internet contact in person. 6.3% of men and 2.1% of women; 5.8% of AA and 4% of WA; 28.1% homosexuals, 10.3% of bisexuals and 2% of heterosexuals had sex with an internet contact over the past 12 months.Conclusions: The internet constitutes an important mechanism through which friendship and sex networks are formed. Large and fast forming networks are reported particularly by White Americans, men and homosexuals.

Personal Networks On The Internet

Dominik Batorski, Pawe Kucharski

The most crucial question concerns the patterns of social relations and personal networks structures on the internet. The point of interest is whether we witness the new communities – virtual communities – groups that are densely knit or whether the social relations have rather the character of sparsely knit networks created by individuals, whose social behavior might be defined as network individualism. Do cliques and clusters tend to form, and if so, on what principles? </p><p>Our research had identified structural patterns of relations among 3 millions of users of Gadu-Gadu – the most popular Instant Messenger in Poland. This kind of computer-mediated communication is used mainly to communicate with people known from off-line world and everyday life and to maintain ties with relatives, friends and coworkers. Instant Messaging is a convenient way to see when friends and family are online and to communicate with them in real time. Our social network data consist of two relations – relations from buddy lists and communication between users. The number of registered relations exceeds 75 millions. In the analysis we used data from the whole network. </p><p>The key analysis was based on examining the density and local components in personal networks. We analyzed also mutuality and balance in these local networks (dyad and triad census). This analysis allowed us to answer the question to what extent the users function in bounded and tightly knit communities or to what extent they perform as network individuals creating loosely knit, broad networks. We examined also how variability in various network properties is related to other characteristics of users – their gender, age and place of living.

D: Redondo 1

Social Problems
(Card)

Children's Intra- and Inter-Gender Perceptions of Aggression and Social Status

Noel A. Card, Todd D. Little, Ernest V. E. Hodges, Patricia H. Hawley

Little prior research has examined children's interpersonal perceptions using analytic techniques that model the complexity of these perceptions. This study utilized the Social Relations Model (e.g., Kenny, 1994) to examine these interpersonal perceptions, with a focus on identifying similarities and differences in intra- and inter-gender perceptions. Specifically, mean levels of perceptions (i.e., network densities), degrees of actor and partner variances (i.e., individual differences in outdegree and indegree), and generalized and dyadic reciprocities (i.e., correlations between outdegrees and indegrees and between transmission and receipt of perceptions with particular peers) were determined from peer nominations of various aspects of aggression and social status among 351 sixth graders in 17 classes. Results indicate significant actor and partner variances for all measures, suggesting that processes of both assimilation and consensus operate within children's peer groups. There was also evidence of generalized reciprocity in social status perceptions, indicating that children who are viewed by others as high in status tend to view others as high

in status. Dyadic reciprocity was evident for some variables, such that children who are viewed in a certain way by a particular peer also tend to view that particular peer in the same manner. Clear gender differences were noted in rates of nominations (i.e., means), such that more same-sex than cross-sex nominations were generally given for both positive and negative aspects. This finding supports recent theories of the development of gender differences (Maccoby, 1998) and is in contrast to traditional ingroup / outgroup paradigms in social psychology. There was less evidence of gender differences in the variance partitioning and reciprocity correlation estimates, however, despite adequate statistical power to detect such effects. We conclude that children's interpersonal perceptions of aggressiveness and social status are largely segregated by gender, but similar processes seem to account for both within- and between gender perceptions.

Friendship And Delinquency In Early Adolescence. A Study Of Selection And Influence Processes

Andrea Knecht, Chris Baerveldt, Christian Steglich

A common finding of earlier studies on friendship and delinquent behavior of adolescents is that delinquent behavior tends to be more similar among friends. Network literature and sociological and criminological theories offer two explanations of similarity: delinquency-based selection and influence. First, adolescents who are behaving similarly have selected each other as friends, or second, friends adjust their behavior to become more similar. Studies that compare those two processes are rare. From September 2003 until June 2004, longitudinal network and behavioral data (four waves) were gathered in 100 first grades in Dutch secondary schools. The pupils filled in questionnaires about their social relationships with classmates, and about their own delinquent behavior. We used SIENA modeling to analyze the strength of selection and influence processes and will present the results.

Homelessness, Injection Drug Use, And Involvement In The Street Economy Differ In The Networks Of Youth In Different Stages Of Youth Homelessness

Colette L. Auerswald, Md, Ms, Eiko Sugano, Mph, Jonathan Ellen, Md

Background: Homeless youth differ in their rates of risky behaviors, perhaps due to differences in rates of homelessness and risky behaviors in their social networks. Theoretically-based differences among homeless youth may correlate with differences in social network composition. We have proposed a qualitatively-based model for the life cycle life cycle of youth homelessness with 5 stages: first on the street, initiation, stasis, disequilibrium (crisis) and extrication (attempting to leave the street). The objective of this study was to describe differences in prevalence of homelessness, involvement in the street economy, survival sex and injecting practices in the networks of homeless youth by life cycle stage. Methods: Participants were 215 15 to 24 year old youth recruited primarily from street venues (n=174) and two transitional programs (n=41). Eligibility criteria included having a history of homelessness in the previous six months. Demographic and behavioral data were collected using ACASI technology; social network data was collected by interviewers. Life cycle was measured by a five-item measure. Youth enumerated the individuals with whom they spent time, injected, had sex, or pooled money. They reported rates of homelessness, injection drug use, survival sex and involvement in the street economy for each network member. We coded youth in transitional programs and street-recruited extricating youth separately. Results: Youth in initiation and in transitional programs had significantly lower rates of homelessness among their contacts than youth in stasis, disequilibrium, and street-based extrication. Youth in disequilibrium had the highest prevalence of injection drug use among network contacts. There were no differences in rates of survival sex by stage. Conclusion: These data suggest that youth new to the street or who have physically left the street have the least risky networks. Youth who are more integrated to the street have riskier networks. Youth in disequilibrium may have the highest risk networks.

The Role Of Social Connections And Social Identity In School Violence

Michele Mouttapa, Jennifer B. Unger, Steve Sussman, Tom Valente

School violence among adolescents is prevalent and a salient concern among youth and the scientific community. Previous studies suggest that characteristics of the friendship network of classmates are associated with violence. For example, victims tend to have few reciprocal friends, and violent students tend to have several violent friends. Other research suggests that violent students tend to identify with high-risk peer groups, for example, "gangsters" and "burnouts." Since no known studies have assessed social network characteristics and peer group self-identification together, the relative association of each of them with violence is not known. This longitudinal study examined whether 8th grade perpetrators, victims, and aggressive victims (those who are both perpetrators and victims) differed on earlier assessments of classroom social network characteristics and rates of self-identification with high-risk peer groups, namely, "rockers", "skaters", "gangsters", and "immigrants." Participants were 2,292 Southern Californian middle school students who completed a self-report survey in the 6th, 7th, and 8th grades as part of longitudinal study of smoking prevention strategies. The sample was over half (52.3%) female and predominantly Latino (60.2%) and Asian American (23.5%). Logistic regression analyses were performed to determine whether network characteristics and self-identification with high-risk peer groups were associated with each of the outcome variables after adjusting for covariates. Unique patterns were found among perpetrators, victims, and aggressive victims. Eighth grade perpetrators had a higher proportion of aggressive friends, and victims received fewer friendship nominations. Aggressive victims more often identified with high-risk peer groups and received a higher proportion of friendship nominations. The findings suggest that perpetration, victimization, and aggressive victimization may be most effectively reduced if characteristics of each of these three groups are considered in violence prevention programs.

E: Catalina

Social Movements
(Tindall)

A Network Analysis Of The Environmental Social Movement Organizations In South Korea: Governance, Claim-Makings, And Participation

Hyung Sam Park

Debates on the rise of new social movements ("NSMs" below) in social sciences have centered on the questions of "what's new" and whether NSMs are a product of the shift to a postindustrial economy (Pichardo, 1997). In answering these questions, theorists have examined ideology/goals, tactics, structure, and participants in NSMs and the relationships between the state and civic sphere (see works of Cohen, Laclau, Mouffe, and Offe). This paper develops a theoretical framework to analyze and present the structural organization of ideology and goals ("claim network"), among others above, in the NSMs and discuss the relationships of the claim network to governance structure ("governance network") and participation structure ("participation network") of the environmental social movement organizations ("SMOs" below) in South Korea. Specifically, this paper aims to answer a series of questions as follows: i) what are the characteristics of the structural organization of ideology and goals (network of supportive and oppositional claims) of environmental SMOs in South Korea? ii) what is the role of governance structure in forming the structural characteristics of the movement claim structure? iii) under what conditions of claim structure and governance structure do environmental SMOs participate in collective events? To develop a theoretical framework, this paper examines the relationships between structure and identity and the relationships between structure and behavior. In an empirical analysis, this paper analyzes relational ties of key personnel, expressed supportive/oppositional claims, and participation in collective events of environmental SMOs in South Korea.

Are Network Stars Media Stars? The Relationship Between Environmental Activist Ego-Network Characteristics And Media Citations

Todd Malnick, D.B. Tindall

This paper examines the social network of environmental activists in British Columbia. It investigates the relationships between several network measures (e.g. degree centrality, structural equivalence) and frequency of citation in the print media.Data for this study were obtained through two studies. The first source is social network tie data for individuals active in the old-growth forest conservation/preservation movement in the Vancouver and Victoria, British Columbia region in 1992. The second sources consists of a database containing citations, culled from local, regional and national print news articles, which mentioned environmental movement frames relating to the old-growth/conservation issue in western B.C.'s rainforests, covering the time-period 1986 to 1992.Results show that frequency of media citation is positively associated with structural location. Activists with high degree centrality are cited more frequently. Activists who are positioned in the "core" as determined by blockmodel analysis are also cited more frequently.Theoretical and methodological implications of this research are discussed.

Citizen Technoscience: Internet Discussion Networks In The International Grassroots Biodiesel Fuel Movement

Dave Conz

This study uses SNA to analyze patterns of collaboration among biodiesel fuel "homebrewers" on internet discussion forums. Biodiesel, I develop the term "citizen technoscience" (CT) to describe an understudied, emerging social phenomenon marked by a growing number of amateur hobbyists worldwide. These bricoleurs (tinkerers) produce new knowledge that might not otherwise be produced. While they sometimes interact with mainstream scientists, they operate almost exclusively outside of institutional science, yet much of what they do resembles academic scientific research. In other ways, their activities resemble a social movement. Their communications accelerated via internet forums, citizen technoscientists (CTs) develop and share research ensembles - arrangements of tools, technologies, and techniques scientists use to conduct research (Hackett, et al, 2004) to settle disputes, vie for credibility, socialize new members, and cope with and influence policy changes.Biodiesel fuel was chosen as a strategic research site for several reasons: First, it crosscuts matters of scientific, technological, economic, environmental, and political importance. Second, membership is increasing worldwide in developing and post-industrial nation-states. Third, while these regions vary in terms of local resources, policies, and environmental conditions, their CTs collaborate internationally, via the internet, often in opposition to local regulations. Furthermore, the longitudinal, textual data available from internet discussion forums provides a rich record unavailable in most cases.

The Structure Of International Knowledge Network

Seung Joon Jun and George A. Barnett

Using network analysis, this paper examines the structure of the international knowledge flow as global communication system. About 93000 of patents transferred among 63 nations were traced using data gathered from the U.S patent database. The result indicated that the U.S is the most central nation in the global knowledge network, followed by German, U.K, Japan and France. The most peripheral are Latvia, Lithuania, Peru, Russia, Vietnam and Azerbaijan. A cluster analysis found a single group centered about the U.S. The network shows high correlations with education level, literacy, urbanization and GNP level, indicating the national level of modernization determines the global structure of knowledge trade. The results are discussed in terms of world system theory, globalization and modernization.

F: Marina

Exchange and Competition
(Doerfel)

Assessing The Degree Of Cooperation-Competition With Network Analysis

Marya Doerfel

This study reviews the literature on cooperative-competitors from the perspectives of inter organizational network structure and interpersonal relationship management. Past literature operationalizes cooperative-competitive relationships in normative ways and overlooks organizational perceptions based on historical relationships in a system. That is, most research vaguely describes the nature of the cooperative-competitive system (e.g., 'the system is generally cooperative'). This paper develops and assesses a new survey designed to more precisely measure cooperation-competition relationships among organizations. The proposed measure includes questions that reflect various underlying characteristics of cooperation-competition such as trust/deceit, supportiveness/lack of supportiveness, usefulness/lack of information, and shared/competing goals. An initial test of the survey is based on an inter-organizational system of civil society organizations in Croatia. Results of an exploratory factor analysis identify two dimensions, cooperation and competition. The discussion addresses the theoretical and pragmatic utility of the survey in social networks research.

Exchange Networks With And Without Externalities: A Cooperative Game-Theoretical Approach

Jacob Dijkstra

The aim is to develop one overall theoretical framework that can handle both network exchange situations with and without externalities. An externality is present in an exchange network whenever the well-being of an actor is affected by an exchange in which the actor is not herself involved. Externalities of exchange are found in for instance collective decision making, when more than 2 actors are involved. If a decision has to be made on two or more issues, 2 actors might decide to exchange their positions on these issues, so as to both benefit. As this shifts the expected outcome of the decision procedure, the other actors involved will experience an externality. Externalities of exchange also occur in other contexts, such as households (e.g., one household member exchanges with an actor outside the family, thereby using the family budget) or labor-management negotiations (e.g., one union striking an agreement with the employer influences the expected outcomes for other unions and labor organizations involved). In all these cases a number of actors in the network share a resource, event or outcome. Exchanges of one of these actors involving this resource, affect all others.There are several theories that predict outcomes in exchange networks without externalities, but they do not deal with exchange with externalities. In the present paper we demonstrate how externality conditions can be derived from one mathematical function. Moreover, we show how cooperative game theoretical solutions such as the Core, the Bargaining Set and the Kernel can be fruitfully adapted and applied to exchange networks, to deal with situations with and without externalities alike. Applying the solution concepts to both network exchange situations with and without externalities it is predicted that the introduction of positive or negative externalities has a large effect on bargaining and outcomes of exchange networks.

Resource Variation And Power In Exchange Networks

David R. Schaefer

Network theories often rely on the assumption of unobstructed diffusion of information across a network and identify positions of power based on this assumption. However, in reality, information does not always diffuse completely through a network. Social exchange theories can help to identify the conditions that hinder or facilitate the exchange of resources and the mechanisms that lead to power use. Applying

exchange theories to resources such as information reveals they do a poor job of identifying positions of power in information exchange networks. Exchange theories do not distinguish among resource types, claiming to apply to any resource that meets their scope conditions, but their empirical evaluations have relied on a limited range of resources, ignoring resources that move across a network in the manner that information moves. This theoretical investigation focuses on resource characteristics and identifies the dimensions which distinguish resources such as information from the more social, relational resources typically considered by exchange theories. The types of power and mechanisms that produce power under different resource conceptualizations are identified and, with the assistance of simulations, predictions for patterns of power use across networks with different resource types are made.

G: Esplanade

Networks in the Developing World
(Trostle)

Correlates At Community Levels Among Social Networks In Nine Villages Of Coastal Ecuador

James Trostle, James Scott, William Cevallos, Betty Ayovi, Joseph Eisenberg

Sociometric network studies have rarely been undertaken in multiple sites at once. This paper describes the role network analysis plays in a five-year study investigating social development and health changes in 21 villages variously impacted by a new road in northern coastal Ecuador. Using data from nine village networks collected in the summer of 2003, we will present analyses that examine similarities and differences among these villages with regard to network attributes. Additionally, we will present associations between village remoteness and these same network attributes. Methods: In this preliminary analysis we focus on one affective and one task network, where individuals were asked to list people from their village with whom they pass time and with whom they share food respectively. UCINET software was used to construct network diagrams and to compute network attributes. An index for village remoteness was calculated based on the amount of time and money it takes to reach the village from a nearby city. Results: Villages ranged in size from 84 to 879. Network attributes (i.e. average degree, remoteness, density, clustering coefficient, etc.) varied substantially between villages for both 'passing time' and 'food sharing' networks (e.g. average degree varied from 2.54 to 8.05 and from 0.07 to 3.84 for 'passing time' and 'food sharing' networks respectively). A wide range of correlations between village network attributes and remoteness and average degree were identified; e.g., the correlation between average degree in 'passing time' networks and remoteness was 0.69; there was no association between average degree and network size (r = -0.03). Conclusions: Village networks in this area of Ecuador exhibit a surprisingly large amount of heterogeneity despite their relative proximity to one another and similar make-up.

Kinship Network And Contraception In Rural Bangladesh

Dr Kaberi Gayen, Dr Robert Raeside

The fall of TFR in Bangladesh from 7 children per family in 1970s to around 3.3 in 1997-1999 without a substantial improvement in socio-economic status, health conditions and other factors thought to be essential for fertility decline has shifted the interest to explain fertility transition in Bangladesh from economic theories to ideational change in enhancing the desirability of small families through contraception and the role of communication in it. Due to low literacy rate and scant exposure to mass media among village women attention has been given to interpersonal communication and social interaction for contraceptive practice via ideational change in this paper. 724 married women of reproductive age were interviewed from six rural villages, one from each of the six administrative divisions of Bangladesh. Full network data were collected using a structured questionnaire in that one currently married woman with at least one child from each household of the entire village was interviewed. Various centrality measures, clique patterns and actors positions in the networks were analysed in relation to contraceptive use from the collected sociometric data arranged in squired matrix using UCINET-6. Created variables from centrality measures using social network analysis were then used in a logistic regression

model while controlling for other socio-economic-cultural and demographic variables. The result confirms the influence of social networks in contraceptive use in rural Bangladesh and 76 per cent of the referred ties were family relations, mainly ja-s (wives of husbands' brothers). This paper recommends utilising the central actors in these kinship networks as intervention points to disseminate ideas on family planning for further family planning programme success.

Network Change At Multiple Levels: Kinship And Helping Ties In Nang Rong, Thailand

Barbara Entwisle, Katherine Faust, Ronald Rindfuss

This paper examines the stability of two relations over a six year period. We use data on help with the rice harvest and sibling ties between households in 51 villages in Nang Rong, Thailand to investigate network change between 1994 and 2000. The fact that we have networks measured in multiple villages allows us to examine changes in network structure at a number of different levels. Specifically, we study change in the presence of ties between pairs of households, the positions of households in village networks, and aggregate village-level properties of networks. Our research also tackles the problem of studying networks with changing composition (households merge and split, and join or leave villages).

Social Network Structure Among Nine Villages In Coastal Ecuador: Individual Characteristics Associated With Degree

James Scott, James Trostle, William Cevallos, Betty Ayovi, Joseph Eisenberg

Variability in correlations between individual attributes and social network position and structure cannot easily be examined in most network studies. We present analyses that describe the variability among nine Ecuadorian villages. Sociometric data was collected in the summer of 2003 from nine villages; this data collection was part of a larger five-year study investigating social development and health changes in 21 villages variously impacted by a new road in northern coastal Ecuador. Methods: In this preliminary analysis we focus on one affective and one task network, where individuals were asked to list people from their village with whom they pass time and with whom they share food respectively. UCINET software was used to construct network diagrams and to compute network attributes. Individual characteristics investigated were age, time spent in village, years of education, race, origin, and gender. We calculated degree distributions across villages and identified individual characteristics associated with degree; i.e., we identified who (age, gender, ethnicity, years of residence, household i.d., SES) is likely to play a role as a high-degree versus 0-degree inhabitant. Results: Associations between individual characteristics and degree were not consistent across villages and were not always in the same direction. For example, correlations between degree and years of education in the 'passing time' network ranged from –0.29 to 0.10. Conclusions: While the villages under study appeared to be similar both geographically and culturally, individual factors related to degree were not the same for all villages.

Thursday 2 Morning: 10:30-12:00

A: Redondo 2

Models
(O'Madadhain)

Learning Predictive Models For Link Formation

Joshua O'Madadhain, Padhraic Smyth, Lada Adamic

We present a framework for learning models for link formation. These models can be used to calculate the probability that local conditions in a network promote the formation of a link (relationship) between a specified pair of entities. We create these models by estimating the conditional probability of the presence

or absence of a link given observations of various features (such as network distance, structural similarity, geographic proximity, and similarity of individual characteristics between the two entities) for a subset of the entity pairs in the network. We can then predict the probability of the formation of a link connecting a given entity pair by combining the conditional probabilities for each of its features.This framework has potential applications to a number of different problems relating to social networks, including identifying missing links, predicting future collaborations, recommending relationships, and ranking known relationships. We present experimental validations of the framework for multiple large data sets (including co-authorship networks, email networks, and co-occurrence networks) as well as some results for link prediction, and discuss directions for further research.

New Developments In Random Effects Modeling For Dynamics Of Networks And Behavior

Michael Schweinberger, Tom A.B. Snijders

We consider modeling actor-driven network and behavior dynamics, and in particular, how doubtful homogeneity assumptions with respect to the preferences of actors can be dropped.While observed actor-bound covariates can be used to account for some actor heterogeneity, there is, due to limited financial resources and limited prior knowledge about what covariates should be collected, more often than not unobserved actor heterogeneity which is not accounted for by the observed covariates.To throw open the gates to a model universe which accounts for both observed and unobserved actor heterogeneity, actor-dependent random effects are introduced, so that the model mirrors the conditions and mechanisms underlying the real-world network and behavior dynamics with enhanced sharpness.To estimate models with actor-dependent random effects from observed data, maximum likelihood and hierarchical Bayesian methods are considered.Since the additional computational burden to estimate models with actor-dependent random effects is non-neglectible, it is desirable to have some decision criteria helping to decide whether or not actor-dependent random effects are needed to account for unobserved actor heterogeneity.Two tentative decision criteria are explored, and applied to real-world data.

Statistical Methods For Analysing Dynamics Of Non-Directed Networks

Tom A.B. Snijders, Michael Schweinberger, Christian E.G. Steglich

For the statistical analysis of observed dynamics of non-directed networks, it is desirable to utilize models that can incorporate a large variety of endogenous network effects as well as covariate effects. Various actor-driven and tie-driven models are proposed. In all these models the network changes by successive "micro-steps", in which "decisions" are made to create one tie, drop one tie, or keep the network unchanged. In actor-driven models the actors are assumed to have a utility function, or objective function, which is used in random utility decisions governing these micro-steps. Three types of actor-driven models are considered: 1. conjunctive models, where both potential partners must agree to create a tie; 2. forcing models, where one partner can unilaterally force a tie upon another;3. compensatory or additive models, where the utility that a tie would have for either partner is added to determine whether the tie will be created.Tie-driven models are based on a potential function at the network level, which determines the probabilities for the outcomes of the micro-steps. Under some simplifying assumptions, tie-driven models are equivalent to additive actor-driven models. Parameters of such models can be estimated by the method of moments, implemented by stochastic approximation procedures similar to those used in actor-driven models for the dynamics of directed networks. These estimation models will be made available in the SIENA program. Some examples are given where these diverse models are fitted to the same data set.

B: Bay

Organizations
(Lezega)

Interlocking Directorate And Corporate Performance In The United Kingdom: An Insight Into The Structure Of Directorship Ties

Popov V.

This study aims to contribute to research on interlocking directorate and performance by examining some aspects of the structure of directorship ties in British industries. In particular, it addresses the hypothesis whether largest UK companies have more extensive directorate interlocks with other large companies. The second target of this study is to compare centralities of financial corporations in data sets of companies with different turnovers. The data set for this study comprised UK registered firms in 2004. Information on the directors was drawn from the Bureau van Dijk FAME database. Five groups of companies with turnover from £250 million to over £1,500 million were studied. Density, degree centrality and betweenness were calculated for each of the groups and then compared. Our findings show that British largest firms do not have many directorship ties with similar size firms. On the contrary, density of ties in the group of largest companies is relatively small. The network is getting denser when smaller size companies are included. The second funding is that financial corporations seem to be not as central in the data set of largest firms as they are in the data set of middle size companies.

Multilevel network analysis: on the relationship between individual and organizational forms of social capital

Emmanuel Lezega, Marie-Thrse Jourda, Vallarie Pierre

This paper presents an exploratory and combined analysis of two kinds of networks: an inter-organizational network and an inter-personal network. Individuals in the inter-personal networks belong to the organizations in the inter-organizational network, so membership creates a multi-level dimension of this system. We describe the resources circulating at each level and evaluate their complementarity. Using two-mode extensions, we then look at the extent to which members create inter-personal ties that do not overlap with ties existing between their respective organizations. A "diversification index" is proposed and applied to the dataset in order to explore the reltionships between individual and organizational forms of social capital. Our site is a case study of French cancer research in 1996-1998: various networks between 82 labs and between 128 members of the elite of cancer researchers (belonging to these labs) were reconstituted based on interviews, and analyzed from that perspective.

Stock Repurchases And Inter-Firm Relations - A Case Study

Love Bohman

This paper studies the importance of inter-organizational relations for the stock repurchases made by firms listed on the Stockholm Stock Exchange during the years following the beginning of 2000, when an alteration in the act made stock repurchases legal in Sweden. Building on theory of social influence, the main argument is that stock repurchases not only should be seen as due to specific economic characteristics of the repurchasing firm, but that interlocking directorates are a crucial part of understanding the behaviour of firms in the studied context. The study makes use of parametric survival analysis, and is performed on all firms listed on the Stockholm Stock Exchange during at least January and June in one of the examined years. The result suggests that the decision to repurchase stocks is dependent on both the firms' economic

settings and their social embeddedness in terms of board interlocks. The paper also considers ownership relations between firms, and although interlocking ownership accounts for a quite big part of the relation between interlocking directorates and the propensity to repurchase stocks, the argument that the latter type of inter-firm relations are important for understanding firm behaviour regarding stock repurchases still holds true.

C: Redondo 3

Homophily
(Faris)

Homophily Among Bullies: Influence Or Selection?

Robert Faris, Susan Ennett, Karl Bauman

Bullying is a common problem among adolescents, affecting millions of school-aged children and teens in the United States. Much research has been devoted to understanding individual predictors of bullying, yet relatively little is known about how the networks of students influence their aggressive behavior. There is evidence that aggressive youths tend to be friends with other aggressive youths. However, it is unclear whether this association is the result of influence or selection, or both. This analysis uses the StOCNET program to model influence and selection processes for bullying behavior. The data are from The Contexts of Adolescent Substance Use, a longitudinal survey of middle school students in North Carolina that includes global friendship network data for over 5,000 students. The present analysis uses three waves of network data from 8th graders at a single school.

Homophily Of Network Ties In A Distributed Learning Community

Yu Connie Yuan, Helene Hembrooke, Geri Gay

The research studied homophily of network ties in a distributed learning community. While traditional homophily research mainly focuses on demographic homophily (Monge & Contractor, 2003), recent research reveals that location and organizational membership (M. McPherson et al., 2001) are all important contextual factors influencing the emergence of homophilous ties. In the current research homophily of network ties was examined by both demographic and social factors, including gender, race, geographic location and group assignment. Given that networks of different contents may possess different properties, we examined homophily of network ties in two different types of networks – task-related instrumental networks and non-task related expressive networks. Social network data were collected from 32 students that were enrolled in a distance learning class from two universities. MRQUAP regression analysis showed that in distributed learning conditions neither homophily in gender nor in race had any significant impact on the development of either instrumental or expressive ties. In instrumental networks, both homophily in group assignment and in location had significant impact on the development of network ties. In expressive networks, homophily in location still had significant impact on the development of network ties, but the impact of homophily in group membership was only marginally significant (p = .06). A follow-up analysis was conducted to investigate the possible existence of significant interaction effect between co-location and co-membership. MRQUAP regression results showed that the interaction term created via multiplying location homophily and group assignment homophily matrices did not have any significant impact on the development of network ties in either instrumental or expressive networks. An overall homophily measure was also created by summing up the four homophily matrices. The significant MRQUAP regression coefficient showed that network ties were more likely to emerge when people shared more commonalities, and the effects were significant in both instrumental and expressive networks (300 words).

Seeking To Emulate As A Factor In Making Friends

Daniel J. Hruschka

This paper assesses the prestige imitation hypothesis that individuals will attempt to form relationships and to increase social proximity with individuals they hope to emulate. Analyses of 2 waves of social network data from Coleman's Adolescent Society study (N=9,702, schools = 10) reveal that students were more likely to cultivate new mutual relationships with individuals who they had "most wanted to be like" earlier in the school year. This result was consistent among males and females and across each of 10 schools in the study. The association also remained when controlling for initial social proximity. These findings suggest that theories of friendship selection and influence which normally treat the two processes as distinct though interacting phenomena need to incorporate two considerations. First, individuals may cultivate relationships based on a prior desire to be influenced by a person. More broadly, the processes by which one person influences another can begin operating before the formation of social ties. Second, focusing on the particular needs and wants of individuals (rather than general tendencies such as homophily) may provide valuable clues to people's social choices as well as the long-term development of social networks.

D: Redondo 1

Sexual Networks
(Klovdahl)

Bridge Populations And Pathogen Spread: Men Who Have Sex With Men And Hiv Infection

Alden S. Klovdahl, Mark L. Williams, Joh S. Atkinson, Sandra C. Timpson

Some populations are at high risk of infection with diseases transmitted by close or intimate personal contact (such as HIV). One of these consists of men who have sex with men (MSM). Members of this group may or may not interact (sexually) with men only; they may or may not self-define as gay. To the extent 'risky' behavior (unprotected sex, needle-sharing) occurs, others - not only within the MSM group but also in the general population - are at greater risk of infection. Here we consider some characteristics of an MSM population in Houston, TX. The particular focus is on factors that contribute to bridging, between different segments of the MSM network and beyond to otherwise low risk populations connected by network ties to the MSM network region.

Prevalence Of Clients Of Prostitute Women In North America

John M. Roberts, Jr., Devon D. Brewer, Stephen Q. Muth, John J. Potterat

Street prostitution is often associated with illegal drug markets, crime, violence, other negative impacts on neighborhoods, and sexually transmitted disease. Despite the relationships between prostitution and public safety, order, and health, there is little good empirical evidence on the prevalence of clients of prostitute women. Previous methodological studies indicate that in surveys men substantially underreport patronizing prostitute women. To avoid this problem, we analyzed data on men observed patronizing prostitutes (from arrest records, community group observations, and prostitute reports) to derive prevalence estimates. The data come from 9 states in the USA and 6 North American cities, and cover up to the last 35 years. In our analyses, we apply a capture-recapture model suited for sparse data that incorporates arrest timing, exits from the population, and estimates of the deterrent effect of arrest on arrestees' subsequent patronizing. Analyses of arrest data from two cities (Indianapolis and Kansas City) indicate a two-year prevalence of clients in urban areas in the US of 1-7% during the 1980s and 1990s. Client prevalence appears to be markedly lower in one Canadian city (Vancouver). After appropriate adjustments to a one-year period, the arrest data suggest client prevalences approximately double that observed in national probability sample surveys. Furthermore, our capture-recapture analyses show the large majority of estimated clients during periods as long as 5 years are not arrested in that time.

E: Catalina

Blogs
(Petrescu-Prahova)

Blog Network In America

Jia Lin, Alex Halavais, Bin Zhang

An analysis of permanent links in U.S. weblogs provides an indication of the interpersonal social network among U.S. cities. Drawing on aproximately twenty thousand weblogs that are identified to be located in the United States (Lin & Halavais, 2004a,b), this project will extracts outward links of these weblogs from an earlier data collection. About 700 U.S. city/region units. represented by 3-digit zip codes. are taken as nodes of the network. Total permanent links of blogs from each of the city units will be counted as the weighted outlinks from each node. A link network of these city units will be presented to address the following two issues: 1. To what degree are relationships among weblogs governed by geographic proximity? Do people in different cities/regions show different levels of openness? In other words, how far do they link? The geographical distance of the links will be weighted in the analysis. 2. Which are the authoritative nodes and are there clusters of particular cities? REference:Jia Lin, Alex Halavais (2004a) Mapping Blogosphere in America. Paper presented at Thirteenth International World Wide Web Conference, New York City, mayLin, J. & Halavais, A.(2004b) Geographical Distribution of Weblogs in the US. Paper submitted to ICA general conference, New York City, May, 2005

Blogging For Votes: An Examination Of The Interaction Between Weblogs And The Electoral Process

Remy Cross, Carter Butts

"Weblogs," or "blogs," constitute an emerging online media form whose prominence has grown in recent years. The 2004 US presidential election saw a new focus placed upon blogs as a political tool, which some believed to have the potential to revolutionize political reporting and discourse within the United States. Blogs were involved in political mobilization (including fund-raising activities) during the election cycle, and some blog authors were granted credentialed status at the DNC and RNC political conventions.
This paper explores how events of the 2004 US presidential election affected the network structure of several communities of weblogs. Using the distance-based comparison methods of Butts and Carley (2001), we examine the nature and pace of structural change within each sample. These global assessments are supplemented by multiple time series models relating the evolution of structural properties such as density, centralization, and cohesion to changes in national and state level polling data during the last three and a half months leading up to the election. Our analysis emphasizes the importance of studying large-scale networks as open systems, and demonstrates some useful techniques for future studies of network dynamics.

Mood, Music And Friends: Mapping The Culture Of LiveJournal

John Paolillo, Elijah Wright, Sarah Mercure

LiveJournal is a popular weblog/community hosting service with over five million predominantly young, female users from the US. Although reported ages range from 13 to 55, and users hail from 240 different counties, users nonetheless experience LiveJournal as having its own distinct culture. How is this culture created, and is it observable in the posts and profiles of LiveJournals users?To address these questions, we collected a snowball sample of LiveJournal user profiles, containing information about users' interests and friends, as self-reported and regularly maintained through a web form-based interface. Principal components analysis and hierarchical cluster analysis were used to analyze the interests and social positions of a subset of users (approximately 10,000) for whom complete information was available. The results were visualized in a series of reduced sociograms, which were used as a guide to select representative blogs for

qualitative content analysis. The results reveal that there is a highly-structured core of LiveJournal users with well-defined and contrasting sets of interests as well as a large periphery defined by sets of contrasting, but less coherent interests. Qualitative analysis confirms the existence of these groups, and shows them to be correlated with off-line subcultural styling (e.g. goth, punk, etc.). Musical taste is the clearest correlate of group membership, while weak-tie channels of interaction relate the groups to one another. LiveJournal is thus a dynamic social market where youthful users craft and explore their public identities in ways that conform to off-line social categories, often through the commoditized world of popular music. The mechanisms of this process are exposed through the publicly-available profiles and posts of millions of users of LiveJournal and other weblog sites.

F: Marina

Neighborhoods and Geography
(Faust)

Friendship Circles, Neighbourhoods And Schools: Linking And Disentangling Overlapping Ecological Contexts Of Juvenile Crime

Dietrich Oberwittler

This paper looks to the importance of adolescents' own choices about friendship networks and routine activities for shaping ecological effects on delinquency. Although recent criminological research on contextual effects addresses the question of interactions between individual-level and context-level factors, the importance of adolescents' preferences about their social environment which is most obvious in their connected choices of friendship networks and spatial patterns of routine activities is largely overlooked, as is the relationship between neighbourhood and school contexts. It will be shown that the spatial patterns of friendship networks almost completely moderate the effects of neighbourhood-level concentrated disadvantage on serious offending, lending strong support to differential association theories and calling for an integration of social network analysis into ecological, area-based approaches. The empirical evidence is based on a recent cross-sectional self-report study from two cities in Germany comprising about 6.000 respondents in 61 neighbourhoods, and multilevel analysis is employed to identify potential contextual effects on offending.

Neighborhood Networks Of Social Distance: Do They Predict Neighborhood Satisfaction?

John R. Hipp

Using a sample of a large number of city blocks, I explore whether social distance between neighbors on a city block affects neighborhood satisfaction. I test two questions: first, I use dyad analysis to test whether the amount of social distance between two neighbors increases the difference in their perceived neighborhood satisfaction. Rather than measuring social distance along a single dimension as is commonly done, I test it along four dimensions (race, class, life course, and social upbringing) to determine which is most important for explaining these differences in reported neighborhood satisfaction. Second, building on Simmel (1955) and Blau's (1977) notion of cross-cutting ties along social status differences, I combine these various dimensions of social distance into a single measure between each dyad. I then use these measures of social distance to construct a matrix of dyads for each block (about ten households). From these valued matrices, I then use 1) hierarchical clustering and 2) factor analysis, to construct estimates of cliques within the neighborhood. This gives me an estimate of the social distance structure of the block, and I use a structural equation modeling approach to test whether this structure predicts a neighborhood level estimate of neighborhood satisfaction. While social network studies are often conducted on a single network and thus employ measures that are descriptive in nature, a challenge faced by this study of a large number of networks is obtaining statistical measures to describe the network characteristics of a large number of networks. While I find that greater levels of social distance within a neighborhood are associated with lower neighborhood satisfaction, I also test whether the structure of social distance, as measured through several full network measures, leads to less neighborhood satisfaction.

Spaced Out: The Spatial Dimensions Of Social Networks

George Tita, Katherine Faust

This research explores the spatial dimensions of social networks. We know that space matters. Many survey network studies have collected information on relative locations of alters, for example the distance to alters, whether they live in the community, or the time it takes to travel to the alters.. Other studies have collected proxy information on local social networks (for example whether people know many of their neighbors, or whether family members live in the neighborhood). Few studies have exact spatial locations for both ego and alters. By collecting street address data, we are able to geo-code alter and ego locations. Such information allows us to map networks and precisely measure spatial aspects of social networks. Specifically we describe and illustrate spatial measures for networks at three levels: dyadic, ego-centered network, and community. At the dyadic level, we explore how distance differs by kinds of ego-alter pairs (family, friends, gang members). For an ego-centered network we measure the overall spatial dispersion and directional locations of alters. For communities we look at the aggregate spatial concentration or dispersion of alters .To illustrate the socio-spatial dimensions of networks we use ego-centered network data (n=95) collected in a predominately Latino neighborhood within the Los Angeles. This neighborhood is characterized by high levels of residential stability but also high levels of various types of crime, especially urban street gang crime. In light of the turf-oriented nature of gangs, we look at whether gang presence (or membership) somehow influences the spatial dimensions of networks.

G: Esplanade

Sesión en Español
(Saldívar-Garduño)

Redes Sociales Y Comportamiento Preventivo Ante El VIH/SIDA En Mujeres Mexicanas

Alicia Saldívar-Garduño, Carlos César Contreras-Ibáñez

Uno de los mayores retos para los especialistas en salud es el control de la diseminación de la epidemia del VIH/SIDA entre las mujeres con pareja regular. Uno de los factores que influye en la conducta de solicitar a los compañeros sexuales que utilicen el condón en sus relaciones sexuales es la llamada norma subjetiva, concepto derivado de la Teoría de la Conducta Planeada (Ajzen, 1985), que es la presión social percibida por las personas para realizar un comportamiento. Esta norma está determinada por las creencias que se tienen sobre las expectativas que tienen los otros significativos, en relación con el comportamiento mencionado. Se propone el análisis del efecto de la norma subjetiva sobre las conductas preventivas de este grupo empleando conceptos de redes sociales como actor, vínculo relacional, relación, díada y red, para agrandar el rango de posibilidades en la comprensión del fenómeno. El poder concebir a las mujeres como actores que establecen vínculos importantes con sus parejas, con miembros de la familia y amigas o amigos, mismos que podrían facilitar o dificultar que tomen acciones para evitar el contagio, aportará elementos que permitirán incorporar una visión relacional más amplia al análisis de los comportamientos de riesgo o preventivos. A partir de estos elementos, se busca proponer modelos cuya meta sea la incorporación de significados positivos asociados a la solicitud de protección a las parejas durante las relaciones sexuales, los cuales pueden provenir de las redes en las que se encuentran inmersas las mujeres, para aprovechar la calidad de las mismas, y proponer la formación de otras nuevas que diseminen información, así como creencias y significados nuevos para optimizar los escasos recursos de que se dispone para la prevención y control del VIH/SIDA en ese grupo.

Redes Sociales Y Conductas Alimentarias De Riesgo En Adolescentes De México

Ma. Guadalupe Ramírez López, Ma. Guadalupe Ramírez Ortiz, Ramiro Caballero Hoyos

Objetivo. Explorar la relación entre estructura de centralidad de redes sociales (ECRS) y conductas alimentarias de riesgo (CAR) y la relación entre rol de popularidad grupal y CRA. Material y método. Estudio transversal. Población: 486 estudiantes de preparatoria, 15-19 años, nivel socioeconómico marginado, Guadalajara, México. Se autoaplicó cuestionario con datos de CAR, escala de popularidad y RS. Análisis de estructura de centralidad de redes sociales y análisis de chi cuadrada. Resultados. Las conductas orientadas a perder peso fueron 26.5% comer menos alimentos, alimentos bajos en grasa o light; 9.5% ayunar durante un día y 4.7% vomitar o usar laxantes. ECRS: se encontró asociación entre grado alto y percepción del peso normal ($X2=7.3$, $p=0.026$). Todas las CAR se asociaron con valores bajos de grado, cercanía, intermediación y eigenvector, aunque estos no fueron estadísticamente significativos. Rol de popularidad: se asoció con vomitar o usar laxantes para perder peso ($X2=4.8$, $p=0.029$) y con hacer ejercicio para perder peso ($X2=7.5$, $p=0.006$). Conclusiones. Los adolescentes buscan ser populares por medio de las CAR como vómito, uso de laxantes y hacer ejercicio para perder peso. Los resultados orientan a que los adolescentes con conductas alimentarias de riesgo podrían estar aislados dentro de su red social escolar.

Redes Sociales Y Practicas Sexuales De Riesgo, En Un Contexto Escolar De Preparatoria En Guadalajara, Mexico

Jose Ramiro Caballero Hoyos, Maria Guadalupe Ramirez Ortiz, Maria Guadalupe Ramirez Lopez

INTRODUCCIONLas prácticas sexuales asociadas al riesgo de infección de ITS y VIH/SIDA implican: no uso o uso irregular de condón, uso de alcohol y uso de drogas. Pregunta de investigación: ¿la red social de escolares influye en la adopción de prácticas sexuales de riesgo?Hipótesis: una posición de mayor Centralidad (más integrada) en la red social se asocia a menor desarrollo de prácticas sexuales de riesgo, en el tiempo. OBJETIVO Asociar el cambio de la estructura de Centralidad por Cercanía de la red escolar con la presencia de prácticas de riesgo para ITS y VIH/SIDA.MATERIAL Y METODOSTipo de estudio: longitudinal, descriptivo y analítico. Enfoque de redes sociométricasGrupo de estudio: Censo a 486 y 390 alumnos (1er y 2do semestre calendario 2003-A y 3er y 4to semestre calendario 2004-A) de una Escuela Pública de Tonalá, Jalisco, México.Cuestionario: aspectos sociodemográficos, redes sociales y prácticas sexuales de riesgo Análisis: a) univariado de frecuencias y medias; y b) bivariado: pruebas de significancia Ji cuadrada Aspectos éticos: autorización autoridades y padres, consentimiento informado, confidencialidad, anonimato y participación voluntaria (no respuesta <5%)RESULTADOSEl grupo con prácticas sexuales pasó de 12% el 2003 a 13.9% el 2004. La vida sexual activa (VSA) se incrementó de 59.6% a 64.2%. En este grupo, las prácticas de riesgo se redujeron de 79.4% a 69.1% ($p = n.s.$). La mayor Cercanía se asoció al mayor uso constante del condón el año 2003 ($p < 0.05$), pero ya no el 2004.En la cohorte con VSA ($N = 13$, atrición de 58.6%) el cambio a una mayor integración hizo predominar un incremento de prácticas de riesgo ($p = n.s.$) CONCLUSIONEn un contexto escolar con predominio de prácticas de riesgo, el incremento en la integración del grupo puede implicar el incremento de las prácticas de riesgo

Halftime Activities
Thursday Halftime, 12:00-2:00

Redondo 1

Recent developments in exponential random graph (p*) models

Martina Morris, Garry Robins, Steve Goodreau, Mark Handcock, David Hunter, Pip Pattison, Tom Snijders, Peng Wang

In this special session we outline recent developments in exponential random graph (p*) models that make them a much more practical and useful tool for the statistical analysis of social networks. To date, it has been customary to use a Markov random graph specification (Frank & Strauss, 1986; Wasserman & Pattison, 1996) when applying p* models to data. Yet in recent years it has become apparent that commonly used Markov graph models do not represent observed social networks very well. The resulting estimated models are often near degenerate, and in such cases available software does not produce coherent parameter estimates. The problem of degeneracy is quite interesting, because it is a function of both the fit of a specific model, and the sensitivity of the general modeling framework. Over the past few years, substantial progress has been made in understanding both of these issues and the connection between them. Statistical theory has been developed to define and analyze the problem of degeneracy (Handcock 2003). New model specifications have been proposed that help to avoid degenerate estimates (Snijders, Pattison, Robins and Handcock, 2005). And computer packages are being developed to implement these and other exponential random graph specifications. The new packages use Monte Carlo maximum likelihood estimation (rather than pseudo-likelihood) and improve the robustness, accuracy and diagnostics of estimation. We will review the recent progress in this session.

Bay

Workshop: Interactive Exercises for Training Network Concepts

Dan Wohlfeiler

It is often a challenge to train individuals without a lot of background in networks how to understand different aspects of networks. This workshop is aimed at providing teachers and trainers of network concepts with feedback from other conference participants on their interactive training exercises. Please be willing to share an exercise or training technique of between 5 to 20 minutes in length. This can be a successful training exercise that you want to share with others. It can be one that you're still working on, and want feedback from others at the conference. It can be one that you've tried, failed, and want to warn others about before they inadvertently try something similar at home. Please bring:1. Materials to present the exercise2. 25 copies of a one to two page curriculum describing the exercise's objectives, methods, set-up information, and contact information Participants will be asked to facilitate and participate in one another's exercises, and to offer feedback to presenters.

Thursday 3 Afternoon: 2:00-3:30

A: Redondo 2

**Communication
(Butts)**

Informal Communication Between Police Agencies

Aki Roberts, John M. Roberts, Jr

Informal communication between police agencies is of interest for research on policing in particular and research on organizations in general. Such communication may be studied for possible effects on police practices and effectiveness, and networks of these ties are also representatives of a type of organizational network. This paper examines data on interagency informal communication, focusing on influences on choice of communication partners and relationships between informal ties and agency attributes.

Patterns Of Informal Consultation Among Primary Care Physicians

Peter V. Marsden, Nancy L. Keating

Informal consultation among physicians is widespread. Such "curbside" consultations may aid physicians in deciding whether to use new or uncertain therapies, and may serve to transmit local normative understandings that underlie variations in practice patterns. By providing access to expertise, informal consultations sometimes permit primary care physicians to treat patients themselves rather than referring them to specialists. Little is known about how consultation networks are patterned, however. We studied a network of "conversations . . . that influenced your thinking on women's health issues" linking 33 primary care physicians in a hospital-based practice. Citations appear to be patterned by expertise and experience: physicians tend to approach others who are self-identified women's health experts and whose caseloads include large percentages of women. The network is also structured by opportunity, however: an influential consultation is more likely if the target physician is often present at the practice, and if two physicians are in the same clinic (sub-practice) within the hospital. We consider the implications of our findings for understanding variation in medical practice patterns and the options available to practices for influencing the form of informal consultation networks.

Responder Communication Networks During The World Trade Center Disaster

Carter T. Butts, Miruna Petrescu-Prahova, Remy Cross

Disasters, by definition, are extreme circumstances in which conventional systems of adverse event response are overwhelmed. In the immediate aftermath of a disaster-inducing event, actions by first responders -- often bystanders who happen to be at the scene of the event -- can have a tremendous impact on the magnitude of eventual losses. Effective communication among responders is essential for coordinating situation assessment and task performance; unfortunately, however, the rarity and extremity of disasters makes studying such communication difficult. Here, we present several findings from a study of responder communication networks during the 2001 World Trade Center disaster, based on an analysis of radio transcripts and police reports obtained from the Port Authority of New York and New Jersey. Communication networks among both professional responders and WTC employees during the initial crisis period are shown to possess a number of common characteristics, and to differ in various respects from communication networks obtained in more conventional settings. The relationship between network properties and task structure is examined, and observed results are compared to various baseline models of network structure. Methodological issues relating to the analysis of networks in crisis settings are also discussed.

B: Bay

Organizations
(Vogenbeck)

Longitudinal Study Of The Changes In Four Nonprofit Communities' Social Network Structure Before And After Civic Service (Americorps) Interventions

Danielle M Vogenbeck

Community networks are perceived as tools for helping build and sustain democratic, civic cultures. As the relationship between the nonprofit and government sectors evolves to accommodate the shift to devolution of government services, new collaborations are forming to increase resources. Using a network-based approach to measure social capital, this research explores the relationship between the AmeriCorps*National Civilian Community Corps (NCCC) and the nonprofit groups with whom it works to understand how public policy can support nonprofit-government collaborations designed to strengthen communities in terms of civic engagement and development. The focus of this research is the community-level interrelations (later referred to as the "weak ties") within the nonprofit community. Explored are the relationship between community networks, social capital, and democracy. This type of relationship is called "state-society synergy," that is, the "mutually reinforcing relations between governments and groups of engaged citizens" that can construct social capital within communities (Evans, 1996 1119). Using the AmeriCorps NCCC program as the empirical subject, I examine the way sponsoring nonprofit communities handle resource allocation and strategic planning to construct social capital and strengthen the connections among the community that are often credited to an increase in social capital (Jacobs, 1961; Granovetter, 1973; Burt, 2000; White, 2002). A social network analysis of the four communities prior to engaging in a relationship with the AmeriCorps*NCCC is compared to the analysis after the community engages in the collaboration. Changes to the network over time, including the strength of ties, centrality, and structural holes are discussed as an indicator of the affect of the collaboration.

The Structure Of Nonprofit Organizational Interactions: Initial Findings And Implications

Harold D. Green, Jr.

Borgatti and Cross (2001) have shown that managerial interactions in some for-profit firms display an entailment structure. In this talk, I report a similar form of entailment among a group of 16 nonprofit international development firms in Washington D.C. Specifically, the set of relations defined by general, advice-seeking, informal, and formal interactions are investigated. To determine the degree to which one matrix is entailed in another, I introduce a measure of entailment for binary sociomatrices that relies on quadratic assignment permutation algorithms to generate probability distributions. In the process of defining this index, I address the similarities of this measure of entailment to other measures of entailment (e.g., White 1988 and Pattison, Wasserman, Robins and Kanfer 2000). I conclude with some remarks concerning the implication of entailment structures for this set of organizations and more generally for nonprofit organizational culture as compared to for-profit organizational culture.

Using Structural Equivalence To Explore Cause-Related Partnerships Between Corporations And Nonprofits

Betsy Neibergall Anderson, Itai Himelboim

Corporations often partner with non-profit organizations to develop mutually beneficial relationships. Considering corporations spent an estimated $800 million on cause-related marketing partnerships in 2002, this makes "which partner to choose" an important question. Three considerations are often used: 1) the logical "fit" between organizations, 2) the recognizability of the nonprofit, often visible in part because of its partnerships with other large corporations, and 3) whether the cause organization already has affiliations

with other large companies that may overshadow an individual company's contributions. There is often conflict between these three decision-making tools, (e.g. the best "fit" may not be the most recognizable organization, or, the most recognizable may not offer exclusivity from competing with others' messages).Little empirical research has been conducted to assist organizations in making these partnership decisions. Existing studies use experimental methodology and traditional statistical analysis to examine the importance of fit and familiarity with the charity. This study uses a different approach, network analysis, to examine which of the three considerations best explain how corporations form cause-related partnerships. Sixty large corporations make up the network in this study. These companies were selected based on their inclusion a 2004 Harris Interactive reputation survey, which ranks company reputation according to assessments of approximately 20,000 consumers. Using company press releases, the cause partners of each of these corporations are identified. Structural equivalence is used to cluster companies into positions based on similar ties to cause partners.   The resulting block partitions are used to assess how corporations group with charities (based on the three considerations above).This research provides a critical test of which consideration corporations perceive as most important, based on which model they follow in forming cause partnerships. Further, this research explores whether reputation provides additional insight into cause partner decision-making, a factor that has not been explored in existing literature. For example, if one particular type of block includes companies with statistically higher reputations than other types of blocks, this offers empirical support to companies choosing from among competing considerations.

C: Redondo 3

Personality and Identity
(Robinson)

Structural Predictors Of Identity Blending

Dawn T Robinson, Shirley A. Keeton

How do social actors cope with competing and conflicting identities? Traditional identity theories articulate a relationship between social structure and commitment to specific social identities. In this paper we develop a set of arguments about the relationship between social structure and the relationships among various identities in a person's self-structure. These arguments allow us to prediction what happens when identities compete with each other for activation within the self. For example, we argue that in denser personal networks, individuals are more likely to blend competing identities into new forms, that combine the meanings of the separate identities. We test these predictions on a sample of 269 surveys of women sociologists in the U.S.. We find that structural features of personal social networks do predict the likelihood of blending the identities of "academic" and "feminist" for these women. We further find that identity blending predicts new forms of identity-related behavior - with women who blend their feminist and academic identities reporting higher likelihoods of taking gender into account when making professional decisions about hiring, reviewing, mentoring, and research.

Instrumental Action And Locus Of Control: The Pursuit Of Social Capital

Michael Stefanone, Geri Gay

The objective of this study was to determine if individual differences in locus of control orientation (Internal vs. External) result in strategic pursuit of relationships which afford better access to resources embedded in social networks, or social capital. This research answers a call for research on the origins of network positions and the influence of individual characteristics (Emirbayer & Goodwin, 1994). Participants were 60 undergraduate students, and social network data were collected via self-report surveys at three times (beginning, middle and end of semester). It was expected that Internals would be more likely to develop extensive weak tie contacts, as well as prestigious weak tie contacts, consistent with the strength of ties and strength of positions propositions suggested by the theory of instrumental action (Lin, 1982). At t1, both groups had an equal number of weak ties in their ego networks. However, at t2 and t3 Internals developed and maintained significantly more weak ties, opposed to Externals. Also, with regard to the

strength of positions proposition, Internals acquired significantly more prestigious weak ties over time, opposed to Externals. A research question addressed the implications of increasing proportions of weak ties for ego network composition as a whole. That is, as weak tie contacts increase for an actor in a network, what happens to the number of his/her strong tie contacts? An inverse relationship was observed, such that increasing numbers of weak tie relationships are accompanied by a decline in the number of strong tie relationships maintained by participants. This relationship is consistent for both Internals and Externals. Considered together, these results suggest that Internals behave more strategically then Externals by engineering relationships consistent with the strength of ties and strength of positions propositions espoused in the theory of instrumental action.

Personality And Personal Networks

Christopher Mccarty, Harold D. Green, Jr.

In this talk we present the results of a study of the relationship between personality and compositional and structural measures of personal networks. A total of 174 respondents were interviewed using EgoNet, a software program designed to collect personal network data. Respondents listed 45 alters they currently knew, answered a set of questions about each alter, and provided an assessment of the strength of tie between each unique pair of alters. Each respondent also completed a 50 item IPIP personality index and supplied other socio-demographic data such as age, race, ethnicity and marital status. Canonical correlations show significant correlations between personality measures and network structure variables, but not with network composition or ego correspondence variables. Of the five personality factors measured, Agreeableness and Conscientiousness were most highly correlated with personal network structure.

D: Redondo 1

Drug Use Networks
(Brewer)

Injection Network Structure And Genetic Relatedness Of HCV In Drug Injectors

Devon D. Brewer, Daniel G. Sullivan, David R. Gretch, Holly Hagan, Eileen S. Hough

Most social network analyses of the transmission of infectious disease have focused on the transmission potential in a network. We studied the transmission of hepatitis C virus (HCV) in a network of drug injectors in Seattle, USA, with a design that allowed inferences about actual transmission patterns.   We enrolled 60 index cases -- 16 injectors with incident HCV (detected in a prospective cohort study), 43 with prevalent HCV infection, and 1 with indeterminate HCV-antibody test results. Most cases were involved in the same sociogeographic context of drug injection. Interviewers elicited cases' injection partners for the probable exposure period (for incident cases) or the 12 months before a positive antibody test (for prevalent cases), employing prompts and recall cues to enhance recall. For each index case, up to 5 partners were randomly selected to be interviewed and tested. The 60 cases successfully referred 146 partners. HCV in blood specimens from index cases and their infected partners was genotyped and sequenced. The recall cues increased the number of partners elicited by 44% on average. Cue-elicited partners were almost as likely to be infected (34%) as other partners (42%). Other results will focus on the structure of the observed injection network and the correspondence between the genetic similarity of cases' HCV and network distance. The latter analyses will also be stratified by index cases' infection status (incident vs. prevalent).

Stigma, Health Issues, And Social Networks: Social Support Or Avoiding A Courtesy Stigma In Namibia

Rachel A. Smith, Daniel Morrison, and Kim Witte

This research focuses on people who report a connection to those living with HIV. These people may connect to others who also know those living with HIV: to share resources, or to learn information on support and treatment, etc. This social integration (Brissette, Cohen, & Seeman, 2000) or social support (Sarason, Sarason, & Pierce, 1990) appears to strengthen peoples' mental and physical health (e.g., Biegel, McCardle, &Mendelson, 1985; Berkman &Syme, 1979; Cohen, 1994, 2001; House, Landis, & Umberson, 1988; Schwarzer & Leppin, 1992; Torres & Solberg , 2001). Although social integration provides caregivers support, research into "courtesy stigma" suggests that those who may need this support may, in fact, avoid others in their situation. HIV carries a stigma (e.g., Dupras, Levy, & Samson, 1989; Gardner, 1991; Simkins & Kushner, 1986; Weitz, 1990; Slaten, 1996). Those who accept stigmatized persons may share in that person's plight (Goffman, 1963). Eventually members of the community treat those with the "courtesy stigma" no differently than those with the stigma (Goffman, 1963). Thus, a person who is accepting of a close family member living with HIV may become stigmatized as much as the HIV positive individual, and eventually will be treated as though they are also HIV positive. In previous research, people connected to stigmatized others avoided networks with others in their situation (e.g., Birenbaum, 1970). They may seek a balance between the world of the stigmatized and the world of the 'normal' (Birenbaum, 1970). To date, a systematic study of joining or avoiding networks with others connected on a stigmatized issue has not been conducted. This research investigates whether those connected to people living with HIV in Namibia, Africa will develop or avoid social networks with those who also know people living with HIV.

The Winnipeg Social Network Injection Drug Use Study: Personal Risk Networks And Risk Of Hepatitis C And HIV Infection

Lena Shah, Ann Jolly, John Wylie

The Winnipeg Social Network Injection Drug Use study: Personal Risk Networks and risk of Hepatitis C and HIV infection.Lena Shah1,2, Ann M. Jolly4,5, and John L. Wylie1,2,3,Departments of Medical Microbiology1 and Community Health Sciences2, University of Manitoba and Cadham Provincial Public Health Laboratory, Manitoba Health3, Winnipeg, Manitoba, Canada; and the Centre for Infectious Disease Prevention and Control, Population and Public Health Branch, Health Canada4 and University of Ottawa5, Ottawa, Ontario, CanadaThe Winnipeg Social Network Injection Drug Use study is a multi-phase study of injection drug users (IDUs) and their personal risk networks. In the current phase, both individual and social network data were gathered to examine the transmission of Hepatitis C (HCV) and HIV (sample size 435 IDUs). In addition to various individual-level variables, we are exploring several network variables, highlighted below, that show links to the likelihood of infection with HCV and/or HIV.1. The mean age of an HCV positive-individual's network member is older than those individuals who are HCV negative (36 yrs vs. 31.3 yrs; p<0.0000). This relationship does not exist for HIV positive and negative individuals.2. In comparison to Caucasians, Aboriginal study participants are more likely to be HCV (OR 1.78 p<0.009) or HIV (OR 4.49 p<0.009) positive. This relationship shows no correlation to syringe sharing frequency, but may be related to the significantly higher number of IDU network members that aboriginals interact with (median number of IDU in an Aboriginal network is 3 vs. 2 for Caucasians; p<0.0015). 3. After private residences, hotels are the most commonly noted place in Winnipeg for injection (162 [59.3%] participants have injected at a hotel in the six months preceding their interview). A social network diagram demonstrated the extent to which some individuals potentially act as bridges linking distinct hotel networks. The k-core designation of an individual correlated with seroprevalence data (3-core members were more likely to be infected with HCV than 2- or 1-core individuals). In turn, this data correlated with risk behaviour as 3-core individuals were more likely to report having shared a syringe in the past. In our study population, it appears that social network factors may be important in explaining differences in HCV and HIV transmission. Multivariate analysis for this study is ongoing.

E: Catalina

**Hyperlinks
(Petri)**

A Liberating Potential Of The Information Organization In The Web: A Lost Opportunity?

Gregor Petri Phd

Although the democratic potential of the Web is largely discussed and analyzed, a certain aspect of the Web is somewhat being neglected, but still very important in a certain sense of democratization – the opportunity to liberate, that is enlarge the freedom of action. The neglected aspect to which I'm pointing to is the organization of the Web in a hypertextual structure of web sites and links between them. As it was already put forward by pioneers of hypertext and by Berners-Lee, there is a great liberating opportunity in the system which would allow everybody to publish their work and ideas and embed them into an already existing repository of human knowledge. Such system would self-organize on the basis of hypertextual structure and promote efficient rationalization of human knowledge, where anybody's ideas would be recorded. Freedom of individual in such system is enlarged in two senses: a passive user becomes an author, a subject and on the other hand a user of such an information system is liberated from authorities, who filter and edit information as is the case with traditional suppliers of information – mass media. In the hypertextual information system, the space of ideas and opinions is not centralized and determined by existing social, economic or political powers, but by the position in the network structure – this way anybody can be heard and talked to. In this research we focus on the second aspect and its empirical analysis. The research question is to what extent is a contemporary Web an information system, which allows such rationalization of human knowledge in a decentralized way, so that anybody's ideas can appear and be embedded in an existing space of ideas. There are warnings that the Web is becoming just the opposite – a tool of corporations for maximizing their profits, so that the Web will eventually become a repository not of interconnected ideas but of isolated shops and TV programs. In the presentation, a large emphasis will be on the methodological and empirical part. One important topic is the generation of a whole network of national (Slovenian) web sites and hyperlinks between them, which results in a network of almost 30.000 units and app. 150.000 links between them. Next, some results of relevant methods of social network analysis, such as centralites, k-cores and islands, will be presented which will put insight into the research problem. The results will also be graphically presented with software Pajek.

Knowledge Networks And The WWW - A Multi Level Analysis

Peter Van Den Besselaar, Gaston Heimeriks

Hyperlinks are often used for describing and analyzing scholarly networks. In this paper we will answer the question what hyperlink networks teach us about knowledge networks in the academic world. Hyperlinks are links between webpages, but as we want to analyze socio-cognitive knowledge networks, we firstly have to aggregate the hyperlinks between webpages to hyperlink relations between universities, and between research groups or departments. In the analysis we use a large database with the hyperlinks between all EU universities (at the university and at the department level).After having done this, we compare the nature of scholarly hyperlink networks on various levels of organizational aggregation (from the networks of national scientific webs to networks of websites of individual researchers) and scientific specialization (networks of whole university websites; networks of websites of research groups in a single research field). Combining these two dimensions result into seven different levels of hyperlink networks, with structures that have partly similar and partly different characteristics. >From a comparison between the networks we will answer the question to what extent the networks are shaped by geographical proximity of the nodes, by linguistic proximity, and/or by cognitive proximity.

The Determinants Of Political Hyperlinking Behaviors: An Exploratory Study

Han Woo Park, Hyo Kim

This study starts with an assumption that a set of socio-demographic variables of website producers can be viewed as antecedent conditions which predict the pattern of their hyperlinking behaviors. The state of the hyperlinking practices appears to vary according to given personal contexts. Thus, this research examines the determinants of a hyperlink network pattern using a number of attribute variables with respect to website producers. The sample of this research is South Korea's national assemblymen who were elected in April 2004 (N = 218). Some hyperlinks are manually gathered from the Assemblymen's homepage during November in 2004. The hyperlinks originating from sample sites are sorted into the 12 categories based on their target website types: political parties, unofficial research groups, parliamentary committees, central governments, local governments, national assembly, local assemblies, broadcastings, web broadcastings, newspapers, web newspapers, and civic & advocacy groups. Similar to a who-cites-which journal article matrix, a who-links-to-which (political) website matrix is first made. Using an initial actor-by-event matrix, who-colink-to-which (political) website matrix is also made to examine the patterns of interconnectivity among assemblymen's websites. Social network analyses are conducted to describe the relational structure of political hyerlinking practices. Next, it is tested whether individual assemblyman's hyperlinking behaviors are influenced by their shared backgrounds. The independent variables consist of nine items: age, gender, hometown, high school, university, electoral constituency, affiliation party, close friendship, and the number of experiences (how many times he/she has been elected for the national assembly).

F: Marina

Space and Networks
(Tita)

Connectivity, Compartmentalization And Vulnerability Of Fragmented Landscapes – A Network-Centric Approach

Orjan Bodin, Jon Norberg

Compartmentalization and structural vulnerability of fragmented landscapes is largely a consequence of land-use changes. Many methods have been proposed to quantify the degree of landscape fragmentation in order to provide management guidelines. Here we extend the graph-theoretical perspective as suggested by Keitt, Urban and Bunn (1997, 2000, 2001) by applying different methods developed mainly within the field of social network analysis. These methods can be applied to identify individual as well as subsets of distinct habitat patches which have a significant structural impact as experienced by dispersing organisms in the landscape. We demonstrate the applicability of these methods on a real landscape in southern Madagascar. In the study area, distinct forest patches, surrounded by cultivated land, serve as islands of habitats (i.e., "nodes") for a number of forest-dwelling species. Some species can traverse the cultivated land, thus being able to move between nearby patches (i.e., creating links). We suggest that these methods are particularly suitable in landscapes with distinct habitat patches where species' ability to traverse the landscape is not fully prohibited by fragmentation, but merely limited. The methods are potentially highly relevant in studying spatial resilience and the role of ecological legacies for regional dynamics of species, communities and ecosystems. We also introduce a publicly available software tool for doing many of the analyses presented here.

Resource Networks Of Secondary School Headteachers In Mukono, Uganda: Implications For Resource Acquisition And School Performance

Julie M. Hite, Steven J. Hite, W. Joshua Rew, W. James Jacob

Schools in development contexts, such as schools in Sub-Saharan Africa, are often resource poor and seek to access resources from their external environments in order to initiate improvements in school

performance. Critical conduits for resource access are found among the school's external network of relationships found between school administrators. Using both network methods in the field, this research explores and describes external resource networks of 64 secondary school headteachers in Mukono District, Uganda. The findings identify the headteacher network relationships for the acquisition and sharing of financial, physical and human resources. Multiplex resource ties, identified by the combination of these three networks, may indicate both stronger ties and more stable resource exchange. The relationship between these networks and school performance is examined in terms of percentage of students passing the national exams. The discussion explores potential explanations, specifically based on the educational system and culture, for the structural patterns within these resource networks. Implications of network relationships for both resource acquisition and school performance are explored and discussed.

Using Asymmetry To Estimate Influence Potential

Waldo Tobler

Any n by n array can be decomposed into symmetric and skew symmetric parts. The symmetric part can be used to specify spatial locations via an ordination; the remaining asymmetry can be interpreted as resulting from a vector field pushing in particular directions. Integration - in the mathematical sense - then permits the estimation of a potential field. This interpretation is quite reasonable and revealing for geographic interaction tables as shown by two examples. An example is then presented for a table of journal to journal citations. It is suggested that this model may also be of interest for the estimation of a potential field from asymmetric weighted social networks.

G: Esplanade

Sesión en Español II
(Contreras-Ibáñez)

Estableciendo Puentes Entre Pradigmas: Identidad Social Y Estructura De Red En Grupos Deportivos Pequeños

Carlos C. Contreras-Ibáñez, Verónica Zempoaltecatl Alonso

Este trabajo explora las redes sociales establecidas espontáneamente en 6 equipos de futbolistas amateur en una comunidad urbana periférica a la Ciudad de México, a partir de respuestas de cada uno de los deportistas a un cuestionario sociométrico y semi-estructurado, analizado a través de Ucinet (ver. 6) y regresiones multinomiales.El objetivo es describir la manera como se constituyen las redes interpersonales a partir de experiencias y situaciones previas (parentesco, amistad, vecindad), y el efecto de estas estructuras en el desempeño (actuación y solidaridad deportivas) y en la subjetividad intergrupal descrita por la teoría de la identidad social (SIT, Tajfel, 1978; Turner, 1985) en términos de la autoestima y cohesión que las posiciones, y centralidad y densidad de la red produce en los participantes, así como los sesgos cognitivos favorable al endogrupo y desfavorable al exogrupo (corolarios de la SIT). Los análisis se realizan de manera comparativa, dado que los equipos deportivos se eligieron para representar tres niveles de desempeño deportivo, y dos niveles de recursos y tiempo de constitución.De esta manera, intentamos tender un puente entre dos sólidas tradiciones de investigación actuales: la aproximación de redes sociales y la teoría de la identidad social. Con ello, pretendemos contribuir a la discusión en ciencias sociales acerca de la relación conceptual entre agencia y estructura sociales, es decir, entre lo que dictan hacer y pensar los procesos culturales, institucionales y grupales por un lado, y por otro la construcción de significados, prácticas y subjetividad que llevan a cabo los individuos y colectivos humanos de manera relativamente creativa.

Redes Sociales Y Consumo De Drogas Ilegales En Estudiantes De Bachillerato De Estrato
Socioeconómico Marginado De Guadalajara México

Ramirez Ortiz Maria Guadalupe, Jose Ramiro Caballero Hoyos, Maria Guadalupe Ramirez Lopez

PROYECTO FINANCIADO Fondo de Fomento a la Investigación IMSS FP-2003/148RESUMENOBJETIVO. Asociar la estructura de centralidad de la red social (RS) de pares escolares con el consumo de drogas ilegales.(DI) MATERIAL Y MÉTODO. Estudio transversal, de RS sociométricas, análisis descriptivo y correlacional. Censo a 486 bachilleres de estrato socioeconómico marginado, Guadalajara México. Cuestionario autoaplicado con aspectos sociodemográficos, consumo DI, escalas de popularidad, presión de pares, conformidad (PPC) y RS. Análisis de Centralidad y densidad en UCINET v 5, porcentaje de consumo DI y su asociación con variables sociodemográficas, escalas PPC y centralidad mediante chi2. RESULTADOS. Consumo 12.6% consumieron DI. La mayor edad (<17años) y pertenecer a una familia incompleta (p< 0.05) se asoció con el consumo de DI. Estructura de RS. Mayor conexión homofilica entre consumidores DI (p< 0.05). El consumo de DI se asoció con grado bajo (p< 0.05) y cercanía baja (p< 0.05). En alumnos consumidores de DI se presentó mayor porcentaje de presión de pares aunque la asociación no fue estadísticamente significativa. CONCLUSIONES. Tener bajo grado y baja cercanía de centralidad sugiere una posición periférica de los consumidores de DI en la red social escolar. Esta posición, reforzada por la conexión homofilica del grupo y la presión de los pares, podría generar un contexto favorable para el consumo de DI.

Redes Sociales Y Riesgo De ITS/VIH En Migrantes De Dos Contextos Urbanos De México

Jose Ramiro Caballero Hoyos, Teresa Margarita Torres Lopez, Raquel Fosados, Thomas Valente, Alicia Pineda Lucatero, Carlos Navarro

OBJETIVO: Describir la estructura de la red de parejas sexuales de los migrantes y su asociación con prácticas de riesgo para la transmisión de ITS y VIH. MATERIAL Y MÉTODOS: Estudio transversal descriptivo y analítico. Enfoque de redes egocéntricas en migrantes temporales a Estados Unidos de Tonalá, Jalisco y Cuauhtémoc, Colima. Muestra 354 varones, muestreo por bola de nieve. Encuesta por cuestionario estructurado aplicado en diciembre 2003 y enero 2004. Variables: prácticas sexuales, redes sexuales, historia ITS, patrones migratorios, consumo drogas y sociodemográficas. Análisis univariado y bivariado para datos normales y diádicos Pruebas significancia Ji, t y Anova. .RESULTADOS: Características muestra: media edad 32.8+10.9, instrucción menor a secundaria 66.3%, ocupación tres últimos meses 90.7%, unidos con pareja estable 55.6%, lengua indígena 8.1%, católicos 88.1%, dos o más viajes a EU 77.1%, trabajo legal EU 51.1%. Prevalencia ITS: 6.3%. Uso drogas ilegales: marihuana 19.6%, cocaína 13.9%, heroína 0.6 Prácticas sexuales: vida sexual activa 97.7%, parejas ultimo año 2.6+2.7, heterosexualidad 92.1%. Predominio uso condón nunca 48.1% y a veces 19.8%. Prácticas de riesgo: En casados o unidos menor uso de condón con cónyuges cuando hay parejas extramaritales (F=23.2, p<.001). En solteros, mayor uso de condón en EU que con parejas locales (F=3.6, p<.005). Es menor el uso de condón cuando hay mayor número de parejas (t=5.5, p<.001). CONCLUSIÓN: Las redes de parejas sexuales generan contextos de riesgo para la transmisión sexual de ITS y VIH a partir del número de parejas extramaritales y bajo uso de condón con las parejas conyugales.

Friday 1 Morning: 8:00-10:00

A: Redondo 2

**Methods
(Hoser)**

Analysis Of Bipartite Graphs By Eigensystem Analysis Of A Complex Hermitian Adjacency Matrix

Bettina Hoser, Andreas Geyer-Schulz

The Eigensystemanalysis of complex Hermitian adjacency matrices (Hoser,2004) yields a good understanding of the substructure of a group based on its communication behavior. Communication in a broader sense can be viewed as any kind of interaction between agents in a network. If we now consider not only people as possible agents but also parties or meetings for example, we can model two mode networks such that it yields itself to eigensystem analysis of the corresponding complex Hermitian adjacency matrix. As an example of such a network the Southern Women data set is used. The resulting eigensystem helps to identify the group structures very detailed. Not only can the larger structures be seen, but also the relevance of each lady with respect to each subgroup is evident. The result is compared to the findings of other studies as discussed by Freeman in his meta-analysis (Freeman, 2003).Literature:(Hoser, 2004) Bettina Hoser, Andreas Geyer-Schulz: Eigenspectralanalysis of Hermitian Adjacency Matrices for the Analysis of Group Substructures. Submitted to Journal of Mathematical Sociology, 2004(Freeman, 2003) Linton Freeman: Finding Social Groups: A Meta-Analysis of the Southern Women Data. In Ronald Breiger, Kathleen Carley and Philippa Pattison (eds.) Dynamic Social Network Modeling and Analysis. Washington, D.C.:The National Academies Press, 2003.

Beyond Triangles: The Importance Of Diamonds In Networks

Katherine Stovel, Christine Fountain, Yen-Sheng Chiang

Watts and others have described a class of graphs known as "small worlds." However, there are numerous examples of social networks for which standard measures of clustering based on triadic closure may not capture local density. For example, in a heterosexual network of sexual ties, the smallest possible cycle is of length 4. Even if there were a strong tendency toward local clustering, in the sense that people tend to partner with those tied to their partners, this tendency would not be captured by a triadic clustering coefficient. Throughout the social world, relations may be conditioned on attributes or other preferences instead of (or in addition to) transitivity. Networks between buyers and sellers, or faculty and student mentoring relations, may simultaneously combine out-group sorting with a preference for some type of "nearness" (in the same market or academic area) and will be characterized by an absence of closed triads. This preference for nearness combined with out-group sorting should produce a large number of open 4-cycles. Networks exhibiting this type of short (>3) cycle clustering may be locally dense and as highly connected as a random or small world graph. In addition to reflecting aspects of the generating process, the presence of 4-cycles may have important global implications for the transmission of information or influence.In this paper we explore the prevalence of open 4-cycles in undirected graphs. Specifically, we: (1) present an easily calculated analytic expression for the frequency of open cycles in Bernoulli random graphs with fixed N and density; (2) present an algorithm for calculating a census of types of 4-cyclic structures on graphs; (3) examine the frequency of open 4-cycles in several existing network datasets, and find contexts in which 4-cycles are very prevalent while triads are rare; (4) use simulation to compare the expectation in unbiased graphs with several popular generating models (including Watts' Strogatz' alpha model and Barabasi's preferential attachment model); (5) present two new generating models (one based on attribute-sorting, the other a strategic preference model à la Burt) that produce substantially more open 4-cycles than in comparable random graphs or other common generating models; (6) discuss the implications of this structure for a variety of empirical contexts.

Identifying Social Contexts In Affiliation Networks: Preserving The Duality Of People And Events

Kenneth A. Frank, Sam Field, Kathryn S. Schiller, Chandra Muller, Catherine Reigle Crumb

Frank's (1995, 1996) clustering technique for one-mode data is adapted to identify social positions in two-mode data. The algorithm is applied to the classic Deep South data as well as to high school students' transcripts associated with the Add Health data. The performance of the algorithm is calculated and simulated sampling distributions are generated to test for the presence of clustering.

Computing Core/Periphery Structures And Permutation Tests For Social Relations Data

John P. Boyd, William J. Fitzgerald, Robert J. Beck

The core/periphery structure is ubiquitous in network studies. The discrete version of the concept is that individuals in a group belong to either the core, which has a high density of ties, or to the periphery, which has a low density of ties. The density of ties between the core and the periphery may be either high or low. If the core/periphery structure is given a priori, then there is no problem in finding a suitable statistical test. Often, however, the structure is not given, which presents us with two problems, searching for the optimal core/periphery structure, and devising a valid statistical test to replace the one invalidated by the search. UCINET (Borgatti, Everett, and Freeman, 2002), the oldest and most trusted network program, gives incorrect answers in some simple cases for the first problem and does not address the second. This paper solves both problems with an adaptation of the Kernighan-Lin search algorithm, and with a permutation test incorporating this algorithm.

B: Bay

Politics and Collective Action
(Johnson)

Identifying Communities Of Practice (Cops) In Practice

Marko Pahor, Monika Lisjak, Nataša Zdouc, Matjaž Dlesk

In todays' business environment, where the ability to recognize the value of new, external information, assimilate it, and apply it to commercial ends determines the winners and the losers of the game, communities of practice (CoP) based on technological capabilities can make a difference. CoPs are groups of people who share ideas and insights, help each other solve problems and develop a common practice to approach the field. Is a way to knit people together with technical peers while maintaining the focus on cross-functional teams. The objective of the paper is to present how CoPs can be identified in practice and to give some advices regarding their future development based on their specific characteristics. The paper also tackles a problem of employees who are not community members. The empirical part was conducted specifically for Gorenje, d. d., the biggest producer of home appliances in Slovenia, but the methodology and some suggestions can be easily implemented also in other companies.

Analysis Of Voting Patterns In U.S. Supreme Court Decisions

Jeffrey C. Johnson, Stephen P. Borgatti, Kim Romney

In this paper we analyze longitudinal data on U.S. Supreme Court decisions. The court has had the same membership for a decade, providing an excellent opportunity to study the dynamics of voting patterns and their structural implications. The data indicate, for each decision, which way each Justice voted on a given

issue. All decisions over the last 9 years are studied. Correspondence analysis is used to examine changes in agreement patterns over time. Results indicate that the court has become increasingly polarized, with judges who once occupied a centrist, mediating position moving toward the right in recent years. In addition, the analysis over time shows that Chief Justice Renquist, despite his identification in the media as conservative, has defined the outermost border of the conservative camp, overlapping considerably with the court members identified as swing voters. This analysis is particularly timely given the uncertainty of court vacancies over the next few years.

Networks Of Collective Practice: Joint Participation Of Notable Conservative Lawyers In Supreme Court Cases

Anthony Paik, Ann Southworth, John P. Heinz

Do networks structure policy-event participation in forums where laws are made? To address this question, this paper investigates patterns of joint participation in cases before the Supreme Court of the United States among pairs of notable conservative lawyers. Using a sample of 26 prominent lawyers working for non-profit conservative organizations, we employ network regression models to examine the determinants of joint participation in legal cases before the Supreme Court. We test several explanations for similarity in political behavior, including shared issue interests, joint activation in prior litigation, shared organizational affiliations, and structural equivalence in communication networks. Results show that two factors – joint activation in prior litigation and structural equivalence – are associated with isomorphic patterns of political behavior. These findings indicate that political activation before the Supreme Court reflects shared interests in specific legal issues as well as having similar network positions in a political community.

Social Networks, Wealth Accumulation, And Dispute Resolution In Rural China

Christine Avenarius, Duran Bell, Zhao Xudong, Liang Yongjia

This paper investigates the relationship between social network structures, wealth accumulation, and dispute resolution strategies in rural China. Economic reforms after more than 30 years of collectivization have created inequalities between people as a result of opportunities to expand social relationships beyond kinship obligations and to engage in various business activities in addition to agricultural production. While formal mediation in court and adjudication are becoming increasingly available, most disputes in rural China are resolved by informal mediation based on the principles of reciprocity. Informal village mediation to overcome a dispute is not only a product of social relations but also focuses on the management of social relations. In the summer of 2004 we began ethnographic fieldwork in Nanzhuang village, Hebei Province. In structured interviews with a snowball sample of 185 heads of household we inquired about the social relationships of villagers with relatives, non-kingroup members, and partners in business activities. The goal was to generate information about any past or ongoing disputes over land use or borrowed money. We also obtained data on the size of houses and the ownership of utility and consumer goods for each informant. Preliminary analysis shows that villagers with higher levels of financial capital are more likely to pursue formal resolution in court above local mediation. Findings also reveal that opponents with similar levels of wealth have different access to power and influence as a result of their structural position within community and regional social networks. Further results indicate that the likelihood of dispute occurrence and their mode of resolution are based on the social and economic positions of villagers within their community.

C: Redondo 3

Voluntary Associations
(Weare)

The Effects Of Email Communications On The Cohesion And Democrat Character Of Local Voluntary Associations: The Case Of Neighborhood Councils In Los Angeles

Christopher Weare, William Loges, Nail Oztas

This paper employs a social network approach to explore the impact of the Internet on the quantity and structure of intra-organizational communications within small, voluntary associations. As such, it examines the micro-foundations for macro-level societal change that arise due to developments in communications technology. Based on network data collected from 41 community-based associations that are comparable on a variety of factors known to influence network structure, but which vary in their use of the Internet, this paper examines the effects of increased use of email on the density and centralization of associations. It finds that the technological nature of e-mail as well as the background, interests, and intentions of its users matter. Individuals do consider email to be a distinctive communication mode and employ it differently from other modes. Use of e-mail is associated with changing patterns of network structure. Network density increases, and network centralization either increases or decreases depending on the distribution of email use in the association. These structural effects on associational structure are likely to have significant long run effects on associational efficacy and democratization.

Social Capital And Voluntary Actions: Network-Based Approach On Civic Engagement

Joonmo Son, Nan Lin

Our research focuses on a question: is it possible to theorize a network-based explanation on civic engagement? According to the structural equation model, network assets are revealed as the most important source of voluntary actions. In other words, voluntary actions are originally embedded in social networks, which would be converted in a collective form of voluntary organizations.   Then, it is shown that organizational diversity of voluntary groups is another important seedbed from which voluntary actions sprout. The socio-demographic diversity of voluntary organization may be an efficient measure for voluntary actions rather than the number of affiliated organizations. Organizational diversity also means a market of volunteering in which actors with resources and altruistic value can encounter people, who seek help, more than chance.

Social Capital And Voluntary Activity: Cross-National European Variations

Léan Mcmahon

People who are involved in voluntary activities are consistently found to be more active members of society and more involved in civic activities than non-volunteers (Reed & Selbee 2003; Putnam 2000; Verba et al 1995); they are also more likely to participate in social activities, have more social contacts and describe themselves as 'happy'. In summary, people who are involved in voluntary activities are more likely to possess social capital. As Putnam (2000), like Tocqueville more than a century before him, states, voluntary organisations represent a significant source of social capital. The paper examines cross-national data from the European Social Survey (ESS) relating to levels of voluntary involvement and possession of social capital (measured by social participation, interpersonal trust, close personal ties and happiness) by both volunteers and non-volunteers. The data shows that people involved in voluntary organisations score higher on measures of social capital than non-volunteers. It also reveals people involved in voluntary organisations who also have personal friends within voluntary organisations score highest of all on social

capital measures. The paper poses three main questions for discussion: (a) to what extent is involvement in voluntary organisations linked with social capital? (b) In what ways do volunteers differ from non-volunteers in terms of possession of social capital? (c) What regional variations exist in Europe regarding voluntary involvement and social capital?

Untangling The Roots Of Tolerance: How Networks, Voluntary Associations, And Personal Attributes Shape Attitudes Toward Ethnic Minorities And Immigrants

Rochelle R. Côté, Bonnie Erickson

Past research suggests that tolerance flows from personal characteristics (especially education), from diversified networks, and from participation in voluntary associations. But earlier work does not include all of these in the same study, so we have not been able to explore alternative theoretical accounts of how these possible causes of tolerance connect to each other and to tolerance. For example, does education lead to tolerance because education opens minds, or because more educated people develop more diversified networks and are more active in associations? Do association members have more tolerance because association activities meet the conditions for the "contact hypothesis," or because members are well educated, or because association activity widens one's networks? Further, both associations and social networks vary in the extent to which they provide the experiences theoretically linked to tolerance, so types of associations and types of networks should have different effects on tolerance. Exploring such variations provides an enriched test of theoretical conjectures. This paper is based on a national study of the Canadian federal election of 2000.

D: Redondo 1

Trust, Success, and Leadership
(Gubbins)

Exploring The Role Of Trust In Social Networks: A Focus On Top Management Teams And Innovation

Claire Gubbins, Sarah Maccurtain, Dr. Thomas N. Garavan

Social networks are a primary means through which individuals and organisations can access and share novel information and knowledge through which to learn and develop innovative capabilities (Hansen, 1999). Individuals and groups of actors who possess this information and knowledge and who have the ability to communicate it can choose to share or refrain from sharing the information with others (Ibarra, 1993). This knowledge or information is not likely to be exchanged freely if the holder is unsure about how the other party will use it (Jones & George, 1998). However, Jones and George (1998) argue that trust is the characteristic, which activates the appropriate social processes such as intensive social relationships, high confidence in others, help seeking behaviour and thus facilitates the free exchange of information. While some may suggest that this argument essentially equates trust with strong tie networks, others have recognised how trust and strong ties are distinguishable. For example, sometimes people at work are forced to interact frequently (a measure of tie strength) with someone whom they do not trust; conversely, sometime people with little or no prior history develop "swift" trust (Tsai & Ghoshal, 1998). Therefore, in such a context, it is suggested that trust is a relational, as opposed to structural, variable by which transfer of information or knowledge is enabled and enriched in social networks (Cross & Prusak, 2002; Levin & Cross, in press; Tsai & Ghoshal, 1998; Zand, 1972). To date, few empirical studies have examined the role of trust in networks and its influence on accessing and sharing information and knowledge (McEvily et al., 2003). This paper seeks to address this gap and examine the social networks of a sample of organisational top management teams (TMT) and explore the role of trust in these particular networks with respect to accessing and mobilising the knowledge and information available through and within them.

Teamdating: Does Speed Dating Generalize To Effective Teams?

Ulrik Brandes, Petru Curseu, Gabi Dorfmüller, Marco Gaertler, Patrick Kenis, Jörg Raab

Project teams are increasingly used by organizations to produce new knowledge incorporated into products and services or to integrate divisions of an organization after merger or acquisition, and in the same time are common educational settings especially in the Business Studies field. It is already a common sense wisdom that a team is more than the sum of its members, or less, depending on the quality of teamwork processes (Burn, 2004). From an open system perspective, structural variables (e.g. group size and composition) have been extensively studied as antecedents of high quality teamwork. Therefore, creating groups only based on the members' attributes, which is usually done, seems to be a rather tricky enterprise due to the complex patterns of interaction between the structural variables. How then, can we form groups in order to achieve a maximum of effectiveness and efficiency? Previous research proved that the initial interaction in dyads, accurately predict the relation development (Sunnafrank & Ramirez, 2004). We extend these findings to group formation by developing a mathematical framework that generalizes pair matching based on initial contacts (popularly known as "speed dating"). The driving hypothesis is that the groups formed based on such relational data will experience a higher teamwork quality, have a higher cognitive complexity and will perform better in cognitive tasks compared with groups formed based on a random distribution of their members. To test our hypothesis we investigated 52 groups (N=288) of students during a seven-week period while they were working on several team projects required for two different courses. We assessed the group performance on the basis of individual satisfaction and group level outcomes. In addition, we investigated the cognitive complexity in groups by applying a cognitive mapping procedure and the group performance by using expert evaluations of the final projects delivered by the groups.

The Organizational Life Of An Idea: The Role Of Bridges And Alleys On The Creation, Development And Success Of New Ideas In R&D Labs

Bob Kijkuit, Jan Van Den Ende

Generating, developing and adopting valuable new ideas is a central concern for firms, particularly in a research and development environment. Scholars from the network literature have often highlighted the importance of networks for the generation of new ideas (Burt, 2004; Cummings, 2004; Perry-Smith and Shalley, 2003), but have dedicated little attention to the adoption of ideas and the transfer into development projects. Scholars from the 'New Product Development' literature advocate interaction across functions, teams and units, because it can ensure the timely integration of cross-functional knowledge into concept development (Souder and Moenaert, 1992). Some of the scholars within NPD literature have had attention for corporate sponsors and the 'ambassadorial' role of heavyweight team leaders (Ancona and Caldwell, 1992; Brown and Eisenhardt, 1995; Wheelwright and Clark, 1992), but again little attention is paid to how social interaction across units can influence the adoption of ideas. In this empirical paper we present preliminary results of an extensive longitudinal study at a central R&D lab of a large multinational in the 'fast-moving consumer goods' industry. Over a period of more than a year 22 ideas were followed by conducting around 200 semi-structured interviews and dozens of informal talks. The data shows the need for dynamic networks that shift from a non-redundant structure with diverse contacts to a closed structure with political content. The results clearly show that interaction across social networks is not only used to generate valuable ideas, but more importantly to further extend an idea and gather support from key decision-makers to ensure funding.

The Structural Bases Of Leadership In New Product Development Teams

Jan Kratzer, R.T.A.J. Leenders, J.M. Van Engelen

Managing new product development (NPD) teams is a very delicate challenge. A cross-functional group of highly specialized NPD team members has to be navigated, motivated, sufficiently provided with

information etc., only to mention a few managerial challenges of the team leaders. Although past research has shown little consensus on the successful execution of leadership, there is some agreement that successful leadership is somehow related to the embeddedness in relational structures. Focusing on the structural emdeddedness of NPD team leaders internally within their NPD teams, and externally within their NPD organization, we explore which structural configurations contribute to a successful leadership. In order to do so we investigate different relational contents and different structural configurations in 61 NPD teams who are part of 3 large instrument consortia in space industry. The results imply that successful leadership indeed is a matter of the relational embeddedness of NPD team leaders. As it is illustrated different structural configurations of different relational contents facilitate the successful execution of NPD leadership. We conclude by discussing the implications of these results for research on leadership in NPD teams.

E: Catalina

Blogs
(Welsch)

Revolutionary Vanguard Or Echo Chamber? Political Blogs And The Mainstream Media

Peter Welsch, Howard Rosenbaum

For several years, blogs have been presented as a technological innovation that will revolutionize a variety of social and cultural institutions, particularly journalism and, by extension, electoral politics. The question of the degree to which blogs rely on resources within the mainstream media or supplement and replace them with other sources, and the degree to which ideology or political affect might be related to such action, remains largely unexamined. This paper presents the initial results of a longitudinal study tracking four political weblogs: two from the upper echelons of the genre's "A-List" and two that were selected at random from a sample of the wider Blogosphere, both pairs being divided along partisan lines. All four were tracked for one day, with individual posts being used to seed a snowball sample of pages linked to out to three tiers of iteration. The resulting material was subjected to social network and qualitative analysis. Initial findings point to different applications of the medium according to the authors' level of connectedness and their political persuasion, particularly in terms of A List authors' tendencies to link to blogs or mainstream media sources in their posts. These tendencies are expressed by marked differences in the shape and apparent function of the blogs' social networks, with the differences between right and left wing blogs becoming more pronounced at higher levels of iteration. Overlap between the right and left wing networks is virtually non-existent at all levels, suggesting that competing narratives are presented not only by individual authors but by the social network they exist within.

Social Network Dynamics In The Blogosphere

Susan Herring, Inna Kouper, Sarah Mercure, John Paolillo, Lois Ann Scheidt, Peter Welsch, Elijah Wright

Interest in the dynamic nature of hyperlinked corpora has recently been extended to the blogosphere, or universe of weblogs (Kumar et al., 2003). At the same time, the blogosphere is attracting the interest of social network researchers as patterns of interlinking among weblogs are found to exhibit properties of clustering, centrality, and reciprocity (Herring, et al., 2005). As yet, however, little if any research has investigated the evolution over time of social networks in the blogosphere. In this paper, we present the results of a longitudinal study of the link networks of four random blogs collected at three intervals between April and November 2004. An algorithm was created to collect a snowball sample of all blogs at one, two, and three links away from each source blog, gathering approximately 6,000 unique URLs at each time interval. The patterns of linking among the blogs in the three samples were analyzed using quantitative and qualitative methods, and the networks characterized through visualization. The results reveal changes in patterns of linking related to identifiable external events, including the United States presidential election campaign in fall of 2004. These and other observed dynamics are interpreted in terms of who and what is

socially valued within the blogosphere at a given point in time. Herring, S. C., Kouper, I., Paolillo, J. C., Scheidt, L. A., Tyworth, M., Welsch, P., Wright, E., & Yu, N. (2005, January). Conversations in the blogosphere: An analysis "from the bottom up." Proceedings of the Thirty-Eighth Hawai'i International Conference on System Sciences (HICSS-38). Los Alamitos: IEEE Press.Kumar, R., Novak, P., Raghavan, S., & Tomkins, A. (2003). On the bursty evolution of Blogspace. Proceedings of the Twelfth International World Wide Web Conference, Budapest, Hungary.

Social Structure From Free/Open Source Weblogs

Patrick Wagstrom

Free/Open Source Software (F/OSS) development is inherently a distributed community driven process. Unlike traditional methods of software engieering where colocation is used as a tool to create community, F/OSS development frequently requires the use of computer mediated communications to build community. We examine the use of "Planets", websites that aggregate the weblogs of various F/OSS developers, as a method to build and link communities and developers of Open Source Software. We have built a system to monitor various F/OSS "planets" and infer the true social structure of a community by capturing all discussions and links, even those that may not be directly related to the practice of creating F/OSS. This data can then be combined with other data streams, such as email discussion listsand source code commit logs to create a useful image of the social network of a F/OSS community. We show that a social network analysis of this data set accurately identifies the key players and actors within a subset of the global F/OSS community.

Tracking Information Flow In Blogspace

Eytan Adar, Li Zhang, Lada Adamic, Rajan Lukose

Beyond serving as online diaries, weblogs link together in a complex structure through which new ideas and discourse can flow. This network is in some ways ideal for the study of the propagation of information. As weblog authors discover and republish information, we are able to use the explicit link structure of blogspace to track the information's flow. Where the path by which it spreads is ambiguous, we utilize a novel inference scheme that takes advantage of data describing historical, repeating information diffusion patterns. We develop a visualization tool that allows one to graphically track information diffusion using explicit and inferred connections. We also describe an algorithm that uses inferred information paths to identify blogs that are the early sources of popular information.

F: Marina

**Global Networks
(D. Smith)**

Appraisal And Comparison Of Data Sources In The Study Of Global Inter-City Relations

Ben Derudder, Frank Witlox, Peter J. Taylor

Although the call for relational, trans-state data is copious in global city research, it can be noted that until recently this kind of information was generally lacking. Indeed, one of the main problems in this research field has long been that data sources almost invariably contained attribute data. In recent times, however, a number of data collection efforts have helped to overcome this empirical conundrum at the heart of global city research. Generally speaking, these new sets of data are based upon two different foundations, which may be labelled (i) the corporate organisation solution and (ii) the infrastructure solution respectively. The corporate organisation approach to the devising of transnational urban matrices is premised upon the observation that global city relations are primarily created by firms with transnational fields of activity,

which are thereupon considered to be prime world city agents (e.g. the research by GaWC and Alderson/Beckfield). The infrastructure approach to studying global inter-city relations, on the contrary, builds upon the observation that telecommunication and transportation infrastructures are unquestionably tied to key cities in the world-economy, e.g. the most important cities also harbour the most important airports (e.g. the research by Smith/Timberlake and Derudder et al.). Now that the evidential crisis in the study of global inter-city relations is being tackled from these two standpoints, the time seems ripe for a detailed appraisal and comparison of both approaches. The first part of the paper presents a confrontation of the theoretical rationale behind both approaches; the second part is devoted to a comparison of both approaches from an empirical point of view.

Changing Contours Of Global Integration Since 1840

Chris Chase-Dunn, Tom Reifer, Shoon Lio, Chris Schmitt, Anders Carlson, Richard Niemeyer

The extent and contours of networks of international economic integration are hypothesized to be causally related to the patterns of cooperation and conflict. We seek to test this hypothesis using data from Brian R. Mitchell's Historical Statistics on the imports and exports to major trading partners in the 19th century run-up to World War I.. In connection with our study of transnational and international elite ties in the same period, as well as the contours of warfare, we will try to infer probabilities of future faultlines of global conflict.

Evaluating The Use Of Air Passenger Transport Flows In Assessing The World City Network

Frank Witlox, Ben Derudder

Information on air passenger flows is potentially a prime data source for evaluating spatial patterns in the world city network, but previous analyses in this context have been hampered by inadequate and/or partial data. The ensuing analytical deficiencies have flawed the overall value of these world city network analyses, and this paper examines how some aspects of this state of affairs can be rectified. First, we review the rationale for using airline data in analyses of the world city network. Second, we assess the obstacles present in previous researches. The third section elaborates on the construction of a global inter-city matrix. Our approach is unique in that for the first time a worldwide (i.e., truly global) perspective is taken because use is made of a so-called MIDT database. This exceptional dataset contains information on global airline bookings and connections relating to more than half a billion passengers. It is shown how the matrix is able to sidestep a number of the previously identified problems.

Globalization—Obeying The World-System Or Changing It?: A Network Analysis Of International Trade, 1965-2000

Matthew C. Mahutga, David A. Smith

Since the late 1970s, network analysts have studied international trade in order to answer fundamental questions regarding the structure and dynamics of the world economy. From these studies we learned that 1) the structure of the world economy is hierarchically organized, 2) countries toward the top of the hierarchy grow faster than those at the bottom, 3) part of the explanation for this growth divergence may be the unequal levels of processing that differentiate lower from higher regions of the structure, and 4) change over time is limited when measured as the mobility of countries on an ordinal scale. However, the last half of the 20th century suggests that change should be the defining feature of the world economy, giving rise to a burdening "globalization" literature. Within this literature, there is little agreement as to the exact type or level of change. Some suggest that these decades have only produced a quantitative change in what are age-old "world-systemic" cycles and trends. Others, however, suggest these decades have witnessed a qualitative shift in the way in which countries relate to each other in the world economy. We address these questions by first replicating Smith and White's classic (1992) analysis and extending it to cover the last 20

years of the century. We then measure the extent to which the pattern of international trade conforms to a core-periphery structure through time. Finally, we develop both a global and an individual measure of changes that allows us to assess how much movement has occurred in the structure over time, as well as, identify individual countries that deviate from this overall pattern by displaying either hyper upward mobility, or hyper downward mobility.

G: Esplanade

**Structure of Networks
(Bonacich)**

Social And Economic Exchange Are Opposites, Or Are They?

Phillip Bonacich

The distinction between social and economic exchange is important to sociologists because it distinguishes our field from economics. Economists deal with rational actors, whereas we deal with the more affective and humane aspects of exchange. Economic sociology, as inspired by the work of Mark Granovetter, is not an attempt to extend economic principles to sociology but rather a demonstration of how economic rationality is undermined or supported by non-rational affective bonds. There is no reason to think that the structural implications of economic ("negotiated") versus social ("reciprocal") exchange are similar. The psychological underpinnings of experimental work on reciprocal versus negotiated exchange are quite different. The experimental results for economic network exchange are caused by actors who compete with one another to be included in exchanges. On the other hand, behaviors in reciprocal exchange networks appear to be governed by the principle of reciprocity. Despite these theoretical dissimilarities, experiments on six different networks show that the positions of power are almost the same regardless of whether actors are involved in negotiated or reciprocal exchange. An argument based on dependency shows why these two radically different forms of exchange should have the same structural implications.

Balance Theory Revisited: Negative Ties, Social Settings, And Tie Strength

Yuval Kalish, Garry Robins

A basic idea behind Heider's and Newcomb's balance theories is that certain configurations of positive and negative ties lead to psychological distress, which then induces actors to try to change their local networks. These theories were tested by examining the levels of psychological distress experienced by 332 participants for whom valued egocentric network data (including both positive and negative ties) were collected. Our results were broadly consistent with Doreian and Krackhardt's (2001) reanalysis of the Newcomb fraternity data. As with Doreian and Krackhardt, the predictions of balance theory were not entirely supported. The results can be explained by three general principles regarding the location, strength and characteristic of negative ties. More specifically, negative ties to ego are more stressful than negative ties between alters; strong negative ties are more stressful than weak negative ties; and negative ties within settings are more stressful than negative ties between settings. These general principles will be discussed in relation to the Newcomb fraternity data and to other theoretical accounts of signed relations.

Ego Networks And Compulsive Gambling

Pierre Mongeau, Johanne Saint-Charles, Jean-François Biron

Our research aims at a better understanding of the relationship between social interaction and compulsive gambling. So far, most studies on compulsive gambling have centered around personal and psychological characteristics of players and we know very little on gamblers' social network and interaction patterns. Data indicate that video lottery gamblers are more likely to become addicted to gambling than other

gamblers. Therefore we devised a research strategy that will allow us to compare social interaction while playing and ego network composition between players of video lottery and other games. In this paper we will present the first results of this research.

The Development Of First Year University Students' Personal Friendship Networks

Zhigang Wang

A personal friendship network refers the friends an individual has. The support from personal friendship networks is critical for strengthening one's abilities to cope with stressful life events such as transition to university life. Most of the literature in this field either concern how dyadic friendships develop or concern how friendships develop within a defined group such as students in a class, but provide limited understanding about the development of personal friendship networks. This research explores features of changes in personal friendship networks of first year university students during their transition to university life. 56 first year university students (Canadian students and international students) had participated in this study. To assess the nature of changes of their personal friendship networks, participants were asked to complete Personal Friendship Networks Questionnaire, Friendship Attitude Questionnaire, and Shyness Scale (Cheek, 1983, Cheek & Buss, 1981) twice: just arrival and after two months of their arrival in the fall term 2004. In addition, after two months of arrival, each participant was interviewed to reach a rich, detailed picture of his/her understanding and perspective of personal friendship networks.   Preliminary analysis shows that during transition to university life, first year university students made every effort to maintain their pre-university best friendships, but kept their pre-university casual friendships with less effort. Results also show that first year university students want to develop new friendships; the more social activities they participated, the more new friends they made; the more small classes or study groups they had, the more new friends they made; the more time they spent with their pre-university friends, the less new friends they made; their difficulties in language and cross-culture understanding limited the number of cross-cultural friends in their personal friendship networks.

Friday 2 Morning: 10:30-12:00

A: Redondo 2

Statistical Models
(Butts)

Curved Exponential Family Models For Networks

Mark S. Handcock, David R. Hunter

We consider models for networks based on statistical exponential families; therefore, we refer to them as exponential random graph models (ERGMs).Although ERGMs are easy to postulate, maximum likelihood estimation of parameters in these models is very difficult. We first review the method of maximum likelihood estimation using Markov chain Monte Carlo in the context of fitting linear ERGMs. We then extend this methodology to the situation where the model comes from a curved exponential family. The curved exponential family methodology is applied to new specifications of ERGMs, proposed by Snijders et al. (2004),having non-linear parameters to represent structural properties of networks such as transitivity and heterogeneity of degrees. We review the difficult topic of implementing likelihood ratio tests for these models, then apply all these model-fitting and testing techniques to the estimation of linear and non-linear parameters for a collaboration network between partners in a New England law firm.

Goodness-Of-Fit Statistics For The p2 Model

Marijtje A.J. Van Duijn, Bonne J.H. Zijlstra

In the development of statistical models for social network analysis, the topic of goodness-of-fit has not received enough attention, which may be due to the focus on obtaining satisfactory estimation methods for the usually complex models. For the p2 model, MCMC estimation, seems to solve the latter problem, so that it has become even more important to study and develop goodness-of-fit statistics. Moreover, the estimation method by itself provides ways to evaluate these statistics. In the presentation several goodness-of-fit statistics based on the classical notion of the chi-square statistic – comparing observed and expected observations – will be presented. In a simulation study, their behavior will be evaluated, both when correct and incorrect models are estimated. The use of these goodness-of-fit statistics will be demonstrated in an empirical application.

Power In p-Star: Density And Multiple Covariates

Silvia Swigert, Michael Francis Johnston

Statistical power calculations are not reported in p-star studies that use logistic regression methods even though commercial programs and formulae that can be calculated by hand are available for use in planning these studies. One reason may be due to the wide acceptance of general rules of thumb related to how many actors one should have for adequate power in logistic regression analyses. Another reason could be that the network size is predetermined. In this paper, we propose methods for power calculations in p-star analyses, taking account of relevant network structures, such as density and multiple covariates. Like conventional power calculations, it is assumed that the goal is to have a power level of 80%, an alpha level of .05, two-tailed, and that the effect size is the log odds coefficient. The power level and alpha level can be changed however, and formulae are available for both continuous and binary covariates. We conclude by discussing the ways in which authors may include key power information to strengthen the connection between their empirical findings and substantive conclusions.

B: Bay

Organizations
(Cronin)

Profitable Connections? A Longitudinal Study Of The Impact Of Directorate Interlocks On The Profitability Of New Zealand Firms

Bruce Cronin

Amidst the great volume of almost a century's research on director interlocking, one finding is striking: the limited evidence of any relationship between interlocks and corporate profitability. While the potential for these networks to channel important information between firms has been extensively explored, it appears that if these communication channels are used in the suggested manner, they are not used very effectively.It has been suggested that the elusiveness of an interlock-profitability relationship may reflect methodological limitations; research in this area is almost universally cross-sectional, while social learning is a longitudinal process. For example, director interlocking has been found to be a frequent response of firms to financial difficulty, so a simple cross-sectional association between interlocks and profitability is unlikely to be found. Similarly, the content of information passed through interlocks may change over time. Few studies examine the specific mechanics of the transfer of information through interlocks. Comprehensive investigation of network effects is also hindered by the wide variety of interlocking that takes place among directors. Interlocks arise in many ways and do not necessarily simply constitute an instrument for the firms involved. This research takes up the methodological challenge in this area, exploring the interlock-profitability relationship longitudinally and dynamically. It distinguishes intentional from accidental

relationships and draws on recent research on the mechanics of information transfer within director networks. The dataset comprises directors and financial results of the 100 largest New Zealand companies over a twenty year period.

Technological Base And The Evolution Of Complex Learning Networks: An Agent-Based Simulation

Adam Tatarynowicz

Empirical studies of cooperative agreements between firms contend that interfirm networks frequently take on characteristics consistent with the graph theoretic notion of a small world: they are characterized by uneven structures composed of several clusters that are internally dense yet have relatively few links leading from one cluster to the other. While this revelation is nothing new in management science, scholars are only now beginning to realize that this complex network topology is not equally prevalent in all industrial settings. Some industries are apparently more "small-worldly" than others, and it remains largely unclear as to what particular elements of the industry produce these differences. In this paper I focus on the technological base of an industry as one possible determinant of the observed network structures. Defining technological base as the number of different knowledge types required for production and, hence, successful learning (i.e., knowledge breadth) as well as the extent to which each knowledge type can be maximally utilized in the given sector (i.e., knowledge depth), I propose a single computational model for the emergence of complex interfirm networks in different industrial environments simulated as the combination of these two parameters. Learning takes place when two firms form a joint alliance in order to recombine their existing knowledge endowments or when a single firm decides to innovate independently in the absence of an appropriate partner. Three considerations drive the partner search process: complementarity of the knowledge resources held by both potential allies, the history of their previous collaborations, and the information about one another gained through common past and present partnerships. As the alliance formation continues and firms' subsequent partnering decisions become increasingly embedded in the surrounding social structure, a large interfirm network evolves whose properties are studied along with the properties of the learning processes occurring on that emergent network. My analysis shows that the topology of networks generated by these mechanisms depends heavily on the underlying technological base – with small worlds observed only within a limited region of the parameter space – and, furthermore, that there is a strong link between the resultant network structures and the learning performance of participating firms.

The Dynamics Of Inter-Firm Networks: Effects Of Changing External Conditions networks In Genomics From 1998 To 2003

Maurits De Klepper, Peter Groenewegen, Gerhard V.D. Bunt

That firms are relationally as well as structurally embedded in inter-organizational networks is accepted as a starting point. The effects which network position have on choices made by firms has been the subject of several studies (Gulati 1995; Ahuja 2000). The networks and their specific evolution has not been analyzed with recent methods such as actor-oriented models that take into account the dependency of network choice on the already existing relations. Such methods have advantages that overcome statistical dependency in social networks that makes common analytic methods such as linear regression unsuitable. We examine longitudinally the network formation and evolution between genomic firms, using network-specific methods provided by StOCNET. The period covers cooperative agreements from 1998 to 2003. Between the years 1999 and 2001 there is a change in the selective strategies of firms within the network, due to changing external conditions. Our results show that size dissimilarity and trust are important incentives for tie formation and network evolution in the relatively certain environment before 2000. However, firms react to uncertain environments (after 2000) in two ways. Firstly, firms acquire firms that have similar partners in resources to reduce risks we will address the methodological choices that we made to deal with the reduction of the number of nodes. Secondly, they select collaborations based on risky and complementary mechanisms (structural and attribute based) improve competitive advantage and sustain their efforts. The changes suggest that networking behaviour is contingent on conditions external to the

core network. The outcomes also show the applicability of actor-oriented modelling. References: Ahuja, G. (2000). "The Duality of Collaboration: Inducements and Opportunities in the Formation of Interfirm Linkages." Strategic Management Journal 21: 317-343.Gulati, R. (1995). "Social Structure and Alliance Formation Patterns: A Longitudinal Analysis." Administrative Science Quarterly 40(4): 619-652.

C: Redondo 3

Meaning and Cognition
(De Nooy)

Stories, Scripts, Networks

Wouter De Nooy

In Identity and Control, Harrison White (1992) stresses the importance of stories as a medium for and outcome of efforts at control. Stories as social ties retell the events that have occurred between people or identities and they offer scripts for social action. The notion of stories as scripts is in line with an early result in the study of literature, where Vladímir Propp (Morphology of the Folktale, 1928) showed that a large corpus of Russian folktales are characterized by a script with a limited number of functions or roles that appear in a fixed order. It will be demonstrated that these roles can be identified by a signed dyadic tie with a particular temporal order and that the scripts culminate in a balanced situation: a happy end. Furthermore, it will be shown that the temporally ordered ties occur in social networks and that the associated folktale script seems to apply here as well, although one person's happy end may be another person's tragedy. These results suggest a new approach to the analysis of longitudinal social networks.

Structural Comparison Of Cognitive Associative Networks In Two Populations

Kate Coronges, Thomas W. Valente, Alan W. Stacy

The cognitive associative structure of two populations was studied using network analysis of free-word associations. Structural differences in the associative networks were compared using measures of network centralization, size, density and path length. These measures are closely aligned with cognitive theories describing the organization of knowledge and retrieval of concepts from memory. Size and centralization of semantic structures were larger for college students than for seventh graders, while density, clustering and average path-length were similar. Findings presented reveal that sub-populations might have very different cognitive associative networks. This study suggests that graph theory and network analysis methods are useful in mapping differences in associative structures across groups.

Managing to Connect: The relationship between social network structure and everyday network management tools.

Bernie Hogan

This presentation will provide links, both theoretical and empirical, between everyday network management tools (such as address books, calendars and agendas) and specific aspects of one's social network structure, namely network size and embedded social support resources. The goal of this work is to provide a conceptual overview of how people manage their connections with each other during the intervals between interaction, and how different network management practices can have widely divergent network outcomes. I posit that active diligence on the part of ego is related to, if not a causal force in, the construction of larger and more supportive networks. Furthermore, it will be demonstrated through multivariate analysis that diligent management of time (through the frequent use of time management aids) is more strongly correlated with network size and social support than diligent management of contacts (through the frequent use of address books, etc…). Finally, I compare technologically-heavy networks with

many points of contact (via cell phone, landline, email, instant messaging) and technologically-light networks (via telephone and infrequent email). I suggest that when considering network outcomes, the tools one uses to keep track of one's network are as important as the tools one uses to connect with network members. Data for this presentation will be provided by preliminary survey data from the ongoing Connected Lives project in Toronto, Canada.

D: Redondo 1

**Sexual Networks
(Remple)**

Adolescent Sexual Network Structure And Composition And Risk Of Sexually Transmitted Infections

Caroline M. Fichtenberg, Jonathan M. Ellen

Characteristics of sexual networks are thought to affect risk of acquiring sexually transmitted infections (STIs), however there is uncertainty about what specific networks characteristics are most important, in particular among adolescents, who are at highest risk of acquiring bacterial STIs. In this analysis, we identify network factors that are associated with STI risk behaviors and with risk of infection with gonorrhea or chlamydia in an adolescent population. We use survey data collected from a population-based sample of African American adolescents in San Francisco, and a snowball sample of their sexual networks. Individuals were interviewed about their sexual behaviors and experience and tested for gonorrhea and chlamydia. Patterns of sexual partnership between participants over a three-month period are used to derive structural and compositional network measures. Measures of structure used in the analysis include component size, component density, and component closeness and betweenness centralization. An individual's location within a component is measured by closeness and betweenness centrality. We also consider the composition of the components in terms of mean component age, race/ethnicity, socioeconomic status, condom use, drug use, partner type, criminal justice history, and parental involvement (excluding the ego's characteristics). Multilevel regression models are used to identify which structural and compositional network characteristics are associated with risky sexual behaviors and with infection with an STI, controlling for the lack of independence among individuals in the same components. We conclude by identifying which network characteristics are associated with infection status independently of risky sexual behaviors to explore how sexual partnership patterns affect an individual's disease risk independently of an individual's behaviors.

Sex Differences In Partner Characteristics And STI Risk Among Economically Disadvantaged African American Adolescents

Colette Auerswald, Md, Ms, Stephen Q. Muth, Ba, Beth Brown, Ms, Nancy Padian, Phd, Jonathan Ellen, Md

Background: African American female adolescents suffer disproportionately from sexually transmitted infections (STIs) relative to their male peers, perhaps due to a difference in partner selection. Goal: To compare the demographics and partner STI-related characteristics of the egocentric sexual networks of a household sample of economically disadvantaged male and female African American adolescents and their relationship to STI rates by gender. Study Design: A household sample of 14-19 years olds was interviewed by telephone. Youth reported the number, age, type, and history of incarceration, gang membership, and level of sexual activity of partners in their networks for the prior 3 months. Youth were tested for gonorrhea and chlamydia. Results: Female participants were significantly more likely than male participants to report having a partner who was ³ 5 years older, casual, or who had been incarcerated. The odds ratio for having an STI among females controlling for partner number was 1.39 (95% confidence interval .98, 1.98). Controlling for partner incarceration eliminated the increased risk for an STI by gender (OR=1.07; 95% CI .70,1.63). Controlling for type of partner increased it (OR=1.57; 95% CI 1.09, 2.28). Conclusion: Gender differences in STI rates among African American adolescents may be due to

differences in partner characteristics in their sexual networks. Incarcerated older adults may serve as a bridge for infection with STIs to adolescent female populations.

Sexual Contact Networks Of Massage Parlour-Based Commercial Sex Workers

Valencia P Remple, Ann M Jolly, Caitlin Johnston, David M Patrick, Mark W. Tyndall

Women who work in massage parlours are at risk of sexually transmitted infections (STI), including HIV. Because risk exists in the context of sexual relationships, an understanding of the unique sexual network structures and characteristics of this population is essential in order to determine their STI risk environment and plan targeted health care and education programs. The primary objectives of the massage parlour network study are to determine the network structure and characteristics of massage parlour workers in the British Columbia Lower Mainland, and to determine the potential for STI transmission from the network to the general population. This project is an academic-community partnership that employs ex-commercial sex workers ('peers') who conduct parlour outreach, deliver community-based support services, and develop rapport and trust with parlour owners and workers in order to facilitate research interviews. In-depth interviews are conducted with women onsite at the parlours, eliciting sociodemographic, sexual health, sexual behaviour, STI knowledge, and egocentric network data of the respondent and proxy data on sexual contacts. Preliminary findings demonstrate large, dense networks with bridging between parlours, other sex work venues, and the general population. Sexual mixing by age and ethnicity is largely dissassortative, and the proportion of concurrent relationships is high. We found moderate to high levels of sexual health-related knowledge, but significant barriers to accessing adequate sexual health services. Protective sexual behaviours are consistently used with clients, but inconsistently with non-paying sexual partners. These early findings suggest that the potential for epidemic spread of STI is high within massage parlour networks, particularly those STI for which condom use does not provide adequate protection. Furthermore, there is a high risk of acquiring STI from non-paying sexual partners, thereby increasing the potential of spread within the networks.

E: Catalina

Science and Research Networks
(Matsuo)

Mining Large-Scale Social Network Of Researcher From The Web

Yutaka Matsuo, Junichiro Mori, Yohei Asada, Koiti Hasida, Mitsuru Ishizuka

Recently, a vast amount of information related to research activities is available on the Web. We developed a social network extraction system, that is based on Web mining technology and can find relationships among researchers such as co-authorship, same laboratory, same project and co-attendance to the same conferences. We use a search engine to estimate the strength of a tie among researchers, and detect a type of ties using natural language processing. We overview our social network mining approach and show some results on analysis of the network. We also introduce a researcher retrieval system based on the extracted social network. It is very important to find appropriate researchers to collaborate in newly-developing research fields such as robotics and genome informatics. Our goal is to support and promote the efficient collaboration based on the social network so that research activities have greater impacts on our society.

Scientific Production And Network Structure: A Blockmodel Study Of A Biomedical Research Community In A Teaching Hospital

Americo Cicchetti, Filippo E. Leone, Daniele Mascia

Social networks and social capital have been clearly demonstrated to affect outcomes in a variety of different contexts. However, there is a lack of evidence of how social networks affect productivity in scientific contexts, i.e. publication capabilities and bibliometric performance. In this paper, a conducted in a large teaching hospital reveals several effects on research outcomes achieved by an extended analysis of research collaboration ties in a community of biomedical scientists. Such community well represents an open population because of the difficulties to ascertain the underlying boundaries of the population, and the major lines of stratification within it. Dataset refers to more than two thousands publications co-authored along the period 2001-2003 by 983 co-located academic researchers and scientists engaged within the biomedical field. All publications examined in this work reflect interpersonal professional relationships established within the hospital. Publications are highly cited and registered in the PubMed database. Nor books, book chapters, and other non-cited scientific works were included. An idealized pattern of the interaction between scientists is identified across networks of co-authored papers by using a stochastic blockmodelling (Nowicki & Snijders, 2001). This pattern is sustained by the data. OLS and negative binomial regression analyses were then conducted to test the network effect on the scientific production measured in terms of both number of published papers and their impact factor values. Even though the network prominence is shown to have a strong initial effect on scientific production in terms of number of publications, the results do establish that membership to specific positions, that is classes of structural equivalent actors, has a significant role on the impact factor levels achieved by single scientists. The research also analyses additional attributes that have potential for affecting scientific performance, specifically career attributes and academic status, professional age, division and specialty affiliation, etc. The empirical results suggest that, following the academic commons, the most valuable knowledge and scientific works achieved are strictly related to the structural equivalence of single researchers following the block partition identified. Theoretical, methodological and managerial implications are discussed.

Where Do Co-Author Networks And Co-Citation Networks Differ?- A Study Of The Evolution Of Social Network Analysis (1990-2004)

Chaomei Chen, Yunan Chen, Jasna Kuljis

The increasingly widespread interest in studying co-author networks as social networks of collaborating scientists has tremendously expanded our understanding of scientific collaboration. An increasing number of researchers have incorporated the principles and techniques of social network analysis in the study of networks beyond traditional social networks. However, to our best knowledge, an evolving scientific domain has not yet been studied from both social network and intellectual network perspectives within an integrated framework. In this paper we describe an integrative study of co-author networks as social networks and two types of co-citation networks as intellectual networks, namely document co-citation networks and author co-citation networks. Structural and temporal patterns in terms of structural holes, pivotal points, research fronts, and intellectual bases are compared over time across different types of networks so as to identify distinctive insights revealed by different types of networks. Techniques such as time slicing, network scaling, visualizing evolving networks, trend detection, and finding pivotal points are utilized in an illustrative study of the evolution of the field of social network analysis between 1990 and 2004.

F: Marina

Global Networks
(D. Smith)

Inter-Urban Links & Flows: The Contemporary Global City Network

David A. Smith, Michael F. Timberlake

"World cities" and "global cities" are topics of great interest today, especially in connection with recent debates about "globalization." Some claim that the world city network constitutes an increasingly important and even "autonomous" dimension of the world-system. From this perspective, the great cities of the world are organizational nodes in multiple global networks of economic, social, demographic, and information flows. This relational view guides this analysis, which includes describing the structure of a world network of cities and identifying and explaining hierarchical relations among world cities. This research is an extension of our previous efforts to conceptualize and "map" the structure of the global city system using data on inter-city flows and formal network strategies. Even though theoretical and historical approaches describe global processes and structures in relational terms, most attempts to quantitatively model them rely on measures of the attributes of cities and nations. But this research uses data that directly measures actual ties and flows between cities and countries: actual relations. The data for this project includes information on a relatively large numbers of cities, measures the flow volumes (number of passengers, dollar value of trade) between units, and is available annually over many years. This will allow the research to develop empirical models of the urban "architecture" of globalization and how it changes over time. We will discuss the implications of our results for models of contemporary "globalization," debates about "denationalization," etc. Ultimately, this strategy will allow us to test theoretically-based causal assumptions about the "effects" of relational position in global networks on characteristics of the network units (e.g., cities).

The Structure Of International Open Source Movement Network

Seung Joon Jun, George A. Barnett

Using network analysis, this paper examines the structure of the international open source movement network. Co-membership networks were constructed based on 51 languages used for projects with about 10,000 of open source project descriptions downloaded from Sourceforge.net database. The result indicated that English is the most central language in open source project network, followed by Germany, French, Spanish and Russian. The most peripheral are Persian, Hindi, Bengali and Telugu. A cluster analysis found a single group centered about English. The network showed high correlations with sizes of population using the same languages, showing a positive network effect in large-population languages in software program. Using centrality measure, the structural change of the network over time was traced and also confirmed the positive network effect of the size of language population. Cultural factors in the diffusion of open source movement were discussed in terms of globalization and world system theory.

World-System Network Dynamics In The Early Renaissance

Douglas R. White

The European and surrounding region, 1175-1500, is examined as a portion of the larger world-systems interface, drawing on (1) Spufford's work on trade networks, urban industry, the dynamics of monetization and hyperinflationary processes and their effects and (2) Turchin's work on dynamics of population change and sociopolitical violence. Longitudinal analysis of generational time series for industries and trade routs

in intercity networks integrates network analysis -- providing additional predictions about structural effects on change processes -- with statistical dynamics and the dynamics of change in interindustry implicational structures. Overlays of GIS and network data and images are used for visualization in addition to statistical analyses.

G: Esplanade

Art and Culture
(Kirschbaum)

Blockmodeling Jazz Evolution: Style Emergence From 1930 To 1969

Charles Kirschbaum

The field of jazz music gained its legitimacy in the 30's of the last century, becoming one of the most popular styles in the history of music in the U.S. As the field evolved, new styles emerged, as Swing, Bop, Hard-Bop and Fusion. In the same token, structural articulation changed vis-à-vis the community evolution. In this paper, we take the period that stems from 1930 until 1969 in order to understand some of these dynamics. First, we build affiliation matrixes among musicians and records. Then, we blockmodel the structurally equivalent musicians, in order to monitor the development of the field structure. We select a sample of musicians from each block in order to explore the styles performed. By building affiliation matrixes between records and styles, we are able to link styles and structural topology. Finally, we identify dominant and emergent music styles, and correlate them with musicians' trajectories. Our preliminary results show a strong correlation between style innovation and structural position within time.

Small-Scale Network Modeling For Interdisciplinary Collaborative Art Projects

David Birchfield, Miranda Zent, Hari Sundaram

Research: contributing to the development of a model for small-scale networks in collaborative art projects by documentation of player involvement throughout the creation of a mediated theater piece, Haunted When it Rains. Individual disciplines in both the humanities and sciences have well-defined and often tested models that provide efficient mechanisms for collaboration. These models reflect centuries of refinement, and are fully integrated into the training and education of creators and researchers. However, as new forms of media creation emerge, creative teams are increasingly trans-disciplinary, and these discipline specific, often hierarchical models are not well suited for more dynamic environments. As a consequence, trans-disciplinary collaborative teams in the humanities often expend a great deal of effort in redefining roles and social network structures within the group. Tension arises between the familiarity of well-defined discipline specific architectures and the need for new, dynamic, evolving models of collaboration. Nonetheless, there has been little work in developing formal models for trans-disciplinary research and creation that might assist in defining the optimal conditions for successful collaboration in these small teams. While some relatively universal models have been developed in social network analysis that aid in predicting patterns and likely events within scale-free networks, these models do not necessarily translate to small-scale networks. Nonetheless, we propose that appropriate models for small-scale networks in trans-disciplinary collaborations can be constructed through empirical analysis of recurring patterns and detection of unique events as they are documented within actual development cycles. This paper uses the tools of social network theory to document the creation of a mediated theater piece, Haunted When it Rains. Our research traces interactions and network evolution within a trans-disciplinary group of both faculty and students from art and engineering disciplines over an eleven-month time span. We are specifically concerned with group ethics, communication/information flow, player connectivity, player investment, presence of contribution to the project at given points in time as the project developed, and individual player models outlining responsibilities assumed and prior individual experience relevant to the project.

Who Chats In A Chatroom?

Valery Yakubovich, Sasha Goodman

We identify the leaders of chatC: Redondo 3onversations among sales agents of a virtual call center and relate their leadership to their position in the call center's social structure. The social structure is derived from agents' work schedules and chatA: Redondo 2ppearances. By definition, two agents have a virtual relationship if they work in the same 30-minute slot and each of them appears in the chatA: Redondo 2t least once during that period; the more often two agents appear in the chatroom together, the stronger their relationship. We explore whether central or peripheral actors are more involved in chat and whether socially proximate actors participate in the same conversations, talk to each other, or address the same third party in succession. Is the type of conversation, business or social, associated with the network position? To code chatC: Redondo 3onversations, we use probabilistic communication categorization, implemented in a Bayesian language analysis tool, the CRM114 classifier, and achieve a 95% accuracy level for two category classification.

Halftime Activities
Friday Halftime: 12:00-2:00

Bay

Advances in Generalized Blockmodeling

Pat Doreian

Generalized Blockmodeling
Vladimir Batagelj, Anuška Ferligoj, Pat Doreian

Generalized blockmodeling extends blockmodeling in three important ways. First, it permits an indefinite number of generalizations through the specification of new block types and new blockmodel structures based on these new block types. Second, it permits - even encourages - the prespecification of blockmodels on the basis of substantive and empirical information. Third, it provides a general fitting procedure for blockmodels through the use of criterion functions tailored to each blockmodels that provide measures of fit. This generalized (direct) approach raises a variety of further problems that are far from straightforward to solve. We focus on four of these problems. One concerns the extension of the approach to valued relations rather than binary relations. The second concerns multiple relations where each relation has its own blockmodel structure defined in terms of different block types and the third concerns the evolvinging blockmodel structure of a relation through time. The final open problem we consider concerns generalized blockmodeling of large networks. We provide illustrative examples, sketch ways of solving these open problems, and provide some real examples.

Networks of Environmental Social Movement Organizations: The Turning Point Project
Patrick Doreian, Hyung Sam Park

This paper presents some analyses of the interorganizational networks for the organizations involved in the Turning Point Project. The initial data take the form of two-mode data where some organizations endorse full page ads placed in the New York Times. The second data set concerns the board links between these organizations. Generalized blockmodeling is used for partitioning these networks within the broader goal of understanding the structure of mobilized networks and predicting which organizations can work together and which cannot.

Generalized Blockmodeling for Valued Networks

Ales Ziberna

The aim of this paper is to present an idea for generalized blockmodeling for valued networks. Firstly a generalized version of criterion function for generalized blockmodeling binary networks is presented. The criteria function is generalized in a way that it is no longer restricted to binary networks (connection either exists or not), but can also handle valued networks (where the strength of the connections can be specified). The restriction remains that the values must be positive or zero. This function is presented through the definition of block inconsistencies for different types of blocks. The theoretical part finishes with some possible improvements or alternatives. At the end, the current implementation in the statistical package R is presented and the new approach is applied to some examples.

Generalized Blockmodeling of Multiple Networks

Vladimir Batagelj, Andrej Mrvar

Multiple networks are networks with more than one relation defined on the same set of vertices.
In the paper we discuss possible approaches to generalized blockmodeling of multiple
networks such us:
- multicriteria optimization;
- transformation to single criterion optimization:
  - by combining criterion functions;
  - by combining relations;
  - by combining solutions of partial (single
    criterion) blockmodeling problems.
 We will illustrate these approaches on some 'classical' multiple networks (Sampson, Bank wiring room, Student Government, ...).

Analysis of U.S. Patents Network: Development of Patents over Time

Natasa Kejzar, Vladimir Batagelj

The network of U.S. patents from 1963 to 1999 (Hall, Jaffe, Tratjenberg 2001, USPTO) is an example of a very large citation network (3774768 vertices and 16522438 arcs). We selected a group of companies and categories appearing in the main theme in the network. The theme was determined using islands algorithm (Zaver\v{s}nik, Batagelj, 2004) for the Search Path Count (SPC) weights (Hummon, Doreian 1989, Batagelj 2003). We split the entire network into subnetworks according to selected companies and technological categories. We observe the general trends and features of the subnetworks in the past thirty-seven years. We propose another approach for studying patents' network as temporal network. Vertices from the same category in the same time slice are shrunk and then the obtained smaller networks over time are observed. With studying development patterns of the network over time we are trying to determine the general trends in the research and development for the selected companies and categories over the past three decades.

Catalina

Personal Network Methods

Barry Wellman

Simplifying the Collection of Support Network Data: Evaluating A Middle Road Between Multiple and Single Name Generators
Alexandra Marin, Keith Hampton

Collecting data on social support networks by asking respondents about the people they count on for multiple kinds of support ensures that the various dimensions of social support are represented. The resulting composite measures of characteristics of the support network are representative of the entire support network and not just some aspects of it. However, administering multiple name generators is not practical for researchers seeking to minimize respondent burden. Therefore, researchers often administer one name generator. We use support network data collected using six name generators to evaluate the results of using single name generators. By comparing measures of network properties based on alters listed in response to five individual name generators to the more comprehensive measures of the same network properties calculated using all alters we test the reliability of measures from single name generators. Our findings suggest that name generators vary widely in the !
reliability of the measures they produce, with name generators eliciting the alters with whom respondents discuss important matters and with whom respondents socialize providing the most reliable data. However, though some of these name generators provide passably reliable estimates of some measures, all the name generators failed in providing reliable measures of network size and density. To improve the reliability of measures of network properties while still reducing respondent burden we propose and evaluate a second alternative: administering multiple name generators and following up with name interpreters for only a small number of randomly selected alters rather than the complete set of alters. This method greatly improves the reliability of measures of network size and density and shows modest improvements for most other network measures.

Generating names in East York: An analog approach
Juan Antonio Carrasco, Bernie Hogan, Barry Wellman

We focus on the methodological issues encountered during the production of an interviewer administered name-generator and an emergent ego-centered network diagram. We will discuss five specific aspects of this process: motivation, past name generators, whole network variables, sampling within the network, and specific challenges. This project is part of a larger study in the East York area of Toronto that investigates the relationships between social network structure, travel, communication habits, and social support. The study began with a random sample survey conducted last year. The follow-up interviews containing the name generator are currently being conducted.

The specific questions we are addressing through the name generator are: 1. What is the relationship between physical closeness, social closeness, and social activity? 2. How do communication habits mediate the relationship between physical distance and social structure? 3. Does the active, rather than passive, use of communication media relate to overall network structure? We will address how these specific research questions motivated our data collection techniques. One of the key decisions in this process has been to discard a computer-supported tool in favor of an elaborate pen and paper device. The costs and benefits of this choice, including interviewer reliability, sampling strategies, cost, data collection and emotional impact, will be addressed. The presentation will conclude with preliminary results from this study.

Untitled
Jeffrey Boase
Abstract not available

Friday Afternoon 3: 2:00-3:30

A: Redondo 2

Models
(Leite)

Multiple Group And Latent Association Models For Ego-Network Data

Omar Lizardo

Log-linear and log-multiplicative association models for counts have been used in the past to model patterns of relations among categories of individuals obtained from ego-network data (Marsden, 1981, 1988). However, most applications of log-linear models to relational data so far have limited themselves to the analysis of a single cross-classification (usually of respondent's by alter attributes) at a time. Recent developments in multidimensional log-multiplicative models for multiple groups (Becker and Clogg, 1989), and association models for latent groups (McCutcheon, 1996), have a natural applicability to many empirical and theoretical issues in network analysis. In this paper I show how this general class of models for multiway tables can be used to formalize and answer questions related to how the strength of the association between ego and alter's socio-demographic characteristics ("inbreeding" effects) and parameters associated with social distance vary across a) different types of network relations (i.e. close friend, relative, acquaintance), b) other observed socio-demographic dimensions (i.e. whether gender or age homophily is stronger or weaker for different educational or racial groups) and c) across unobserved groups as defined in mixed association models including latent variables. I illustrate their application using ego-network data from Davern and Hachen's (1997) study of Television managers and the 1985 and 2002 General Social Survey.

Scalable Bayesian Networks To Detect Relationships Among Actors using Events Data

Anna Goldenberg, Andrew Moore

The recent rapid growth in probabilistic and statistical approaches to tractable machine learning makes it possible to analyze networks with very large numbers of entities. One example is detecting relations among scientists from a large set of publications. We develop statistical machine learning approaches to detect relationships among large numbers of actors. We propose an algorithm (SBNS) that learns/infers structure of Bayesian Networks, where nodes are actors and arrows are probabilistic dependencies (Goldenberg and Moore, 2004). SBNS is a scalable search procedure that learns Bayes Nets from the binary events data, i.e. the estimation is based solely on information about which entities (variables) participated in the set of given events (records). Modeling dependencies using Bayes Nets allows to answer a set of questions about actors, such as who are the top 10 closest collaborators of a given actor or identifying an actor or a set of actors that are most likely to participate in an event given partial set of already participating actors. We illustrate our approach on several networks with over a hundred thousand actors and several hundreds of thousands events, by first learning the Bayes Net structure and then answering queries about sets of actors.

Sex, Society, And Association Revisited: A Report On New Research Into Cross-National Variation In Sex Homophily

Matthew E. Brashears

Over the last century a number of significant social changes have occurred within Western society, but few have been more dramatic than the growing equality of women. With increased access to employment outside the home, education, and lifestyle choices, the sexual revolution has decisively altered the social

and political landscape. Despite the obvious magnitude of these changes, however, many studies continue to examine issues focal to the politics of sexuality, rather than examine questions that are peripheral politically, but of concrete importance to how men and women live their day to day lives. The present paper attempts to address such a peripheral issue by examining how sexual liberalization in the workplace affects the social ties of males and females. Specifically, the degree of preference for same sex, versus opposite sex, alters as a function of female supervisory presence in the workforce will be examined using the 2001 International Social Survey Project's social networks module. This study provides interesting and suggestive evidence that male preferences for sexual homophily decrease with increasing female supervisory presence, and that female preferences for sexual homophily increase under the same conditions. This finding has a number of interesting implications both for the success of sexual equality and for the true nature of homophily. The paper begins by considering previous research in the area, continues by explaining the methods and rationale employed in the study, describes the results, and concludes by considering drawbacks in the research as well as implications for future work.[Note: An earlier version of this paper that used the 1986 ISSP, rather than the 2001 ISSP, was presented at Sunbelt XXIV in Portoroz, Slovenia. This new paper is able to draw firmer conclusions through its use of a larger, richer dataset.]

B: Bay

Social Capital
(Keister)

Social Capital in Organizations

Nan Lin

The presentation reports a work in progress on how organizations recruit, deploy and use social capital in China. More specifically, it shows that differential deployment of social capital to different positions is contingent on economic institutions (better differential deployment among private firms as compared to firms in the state and collective sector), and such differential deployment is coupled with more "efficient" work and better rewards. These data provide clues to the development of a theory in regard to social capital in organizations.

Does Social Capital Fit? Matching Job Characteristics To Social Capital Levels In Chinese Organizations

Martha A. Martinez

Employee's social capital is theorized to be potentially a resource for organizations. However, the benefits are contingent onto the proper allocation of social capital in the right positions. Using a sample of 199 Chinese organizations and 526 employees, I tested the hypothesis that organizations allocate individuals with higher levels social capital to the positions and departments that require them. Social capital was measured using the Position Generator. Results provide evidence for a functional allocation of one dimension of social capital (Extensity) but not the other (Upper Reachability). The study also found significant differences between three types of organizations: State/Collective work units did not allocate social capital according to functional requirements, Private work units allocated social capital according to the needs of departments, and Foreign work units allocated social capital according to the specific requirements of each position.

Social Capital, Intellectual Capital And Promotion: The Mobility From Engineers To Managers In High-Tech Firms Social Capital, Intellectual Capital, And Promotion: The Mobility From Engineers To Managers In Taiwan High-Tech Firms

Ray-May Hsung

This paper attempts to examine how social capital and intellectual capital affect the probability of promotion from engineers to managers. Social capital variables include the diversity of position-generated networks and the diversity of the participation in clubs or associations within the firm. Intellectual variable is the extensity of cross-divisional discussion networks within the firm. This paper examines the promotion experience of 251 engineers within four high-tech firms in Taiwan. The social capital and intellectual variables significantly affect the probability of the promotion to the managers even after the input the human capital variables. The human capital variables include the educational background and work experience. The effect of social capital on the probability of promotion to managers for these engineers disappears after bringing the firm variables; however, the effect of intellectual variable still maintains the significant effect. The findings imply that the value of social capital varies with different firm promotion policy, and the value of intellectual capital is widely shared by the high-tech firms as the critical factor for innovative productivity and competition.

C: Redondo 3

Health and Adjustment
(Innes)

Adaptation To Childhood Diabetes- The Structure And Characteristics Of Parental Social Networks

Joanne Innes, Brendan Bunting, Vivien Coates

This paper presents a model for analysing the social network characteristics and support mechanisms of parents of young children with diabetes. Poor management of insulin dependant diabetes is believed to result from poor psychosocial adjustment to the recommended care routine, and leads to potentially devastating consequences. No single factor has been shown to predict adherence to the medical regime. For children, initially their parents manage their illness, and it is possible that their own long-term adjustment to their condition will depend on perceived parental attitudes. Parents/carers are responsible for blood glucose monitoring, subcutaneous insulin administration and management of diet and exercise, as well as coping with incidents of hypo/hyperglycaemia. The aim is to asses the impact of social support on adaptation to the care routine. A parent will be considered to have adapted well based on the child's HbA1c (blood glucose test) results, number of hospital admissions and days of school missed. Telephone interviews have been conducted with the target group and a control group from both the Republic of Ireland (rural) and Northern Ireland (urban). Using EGONET (McCarty, 2004), a social network measure has been designed to examine both structural and functional aspects of the networks. Items were factor analysed to identify latent variables, and a model devised. Structural Equation Modelling will be utilised when the data collection is complete, in order to identify the network characteristics, psychosocial mechanisms and pathways leading to good child health status. This paper will focus on the development and components of the model, and discuss possible interventions to help the family unit adapt to childhood chronic illness, with particular consideration given to the role of psychology

Moving On: The Importance Of Weak Ties For Adjusting To A New Location

Irina Shklovski, Jonathon N Cummings, Robert Kraut

A residential move is a common occurrence in the US, where approximately 14% of the population moves annually. While prior research has focused on why people move (family, work, housing, etc), we know relatively little about factors that influence how well people adjust after they move. One factor that should play an important role in adjusting to a new location is the social network available to support a mover. In this paper, we examine the association between personal ties (formed before and after a move) with two indicators of mover adjustment: (a) satisfaction with how the move went and (b) ease with which people could find a job, school, doctor, and other resources after moving. Using data from a US sample of 929 individuals who moved in the past 6 months, we show that weak ties formed after the move are positively associated with adjustment. Specifically, having a weak tie in the new location is positively associated with moving satisfaction, and having weak ties in the new location who provide support is positively associated

with finding resources. Overall, there was a significant negative relationship between distance moved and both indicators of adjustment.

Social Support, Social Capital And Access To Information For Parents Of Heavily Handicapped Children

Johanne Saint-Charles, Ginette Brûlotte

Parents with heavily handicapped children have access to many services to helped them coped with this difficult reality. In Quebec, most of these services come through governmental agencies but not every families benefit from the services relevant to their child handicap, mostly because they don't know the existence of these services. In order to understand the discrepancies between families in their access to this crucial information, we conducted interviews with parents of heavily handicapped children. These interviews started with one open question about their history with services since the birth of their child. A three part questionnaires then followed: the first part listed all services relevant to their child handicap and asked them whether they knew or used these services, a second part was a social capital questionnaire, and the third part a social support questionnaire. In this paper we will present and discuss the results of this research.

D: Redondo 1

Drug Use Networks
(Wylie)

Correlates Of Needle Sharing Among Winnipeg Injection Drug Users

Patricia Sulaiman, Dr. John Wylie

Needle sharing is the primary risk factor for the transmission of blood-borne pathogens among injection drug users (IDUs). In this study we examine the individual characteristics, and the network characteristics of IDUs who engage in needle sharing, and IDUs who do not engage in needle sharing. Data for this study is derived from responses to questionnaires administered from November 2000 to July 2001, which were part of the "Social Network Analysis of Injection Drug Users" (SNAIDU) study. A total of 157 individuals in Winnipeg, Manitoba, with histories of injection drug use participated in this study. We will discuss the individual variables, and the network variables that were found to be significantly associated with needle sharing. Furthermore, we will compare the results of the dyadic network data analysis to the results of the non-dyadic network data analysis, and discuss whether a significant difference exists between these two methods of analysis.

Relationships Between Injection Drug User Network Characteristics Among High Risk Youth And Young Adults

Cynthia Lakon, Susan T. Ennett

Few studies have investigated relationships among network characteristics. Prior studies group network characteristics into categories (e.g., structural, interactional, or normative) that describe different types of characteristics. The present study investigates hypothesized relationships among network characteristics across these categories and in some cases within categories in three types of egocentric injection drug user networks defined by those with whom injectors inject drugs, hang out, and have sex. Hypothesized relationships were based on past theoretical and empirical research. The network characteristics investigated included structural (i.e., size and density), interactional (i.e., multiplexity and closeness), and normative characteristics (i.e., norms for safe needle use and network injection drug use). Data for this secondary analysis are from a study of HIV risk and protective behaviors of young women and their peers, ages 15 to 23, who were either injection drug users and/or their sexual partners (N=231). Relationships

among characteristics were examined using Pearson-product moment correlations. Findings provided little support for hypothesized relationships. Multiplexity was, however, positively correlated with average closeness in all three networks as hypothesized. This correlation was strongest in the sex network (r=.53), followed by the drug network (r=.29), and then the hang out network (r=.18). Across all network types, density was positively correlated with size. Overall, interactional characteristics (i.e., multiplexity and average closeness) related to each other as did structural characteristics (i.e., size and density). The pattern of correlations across the hang out and sex partner networks were more similar to each other than to the drug network. Findings offer some support for existing conventions for grouping interactional and structural network characteristics, and are suggestive of network processes and risky needle use behaviors that may have contributed to the similar patterns among network characteristics in hang out and sex partner networks.

The Dynamics Of Injection Drug Users' Personal Networks And HIV-Risk Behaviors

Elizabeth Costenbader, Nan Astone, Carl Latkin

Background Serial use of drug injection equipment is a well-known route of HIV transmission. Studies of the social networks of injection drug users (IDUs) have provided considerable insight into how the structures of interpersonal relationships among IDUs affect these HIV-risk behaviors. The majority of these studies, however, have characterized IDUs' social networks with cross-sectional data. This research contributes to the understanding of HIV risk among IDUs by examining the dynamics of their personal social networks and HIV-risk behaviors over time. Methods Using data from a longitudinal HIV-intervention study conducted in Baltimore, MD, this study first assessed changes in the composition of the personal networks of more than 500 IDUs. We used a multinomial logistic regression analysis to assess the association between changes in personal network composition and simultaneous changes in levels of HIV-risk behaviors. Using the regression parameters generated by the final multinomial model, we estimated the predicted probability of being in each of four HIV-risk behavior change groups. Results The findings from this study suggest that, over and above an IDU's baseline individual and personal network characteristics, changes occurring over time in her or his personal network membership have an important impact on whether she or he increases, decreases or maintains her or his level of risky injection behaviors. The fact that network turnover is significant indicates that the likelihood of behavior change due to network factors is not fully captured in a snapshot of the network at one point in time. Despite the evidence to show that enduring social relationships have positive effects on health, our data suggest that if we seek to reduce HIV-risk behaviors, termination of some network relationships may be necessary.

E: Catalina

**Science
(Gulas)**

Science Under Political And Economic Pressure - The Affiliation Network Of The University Councils In Austria

Christian Gulas, Dr. Harald Katzmair

In the year 2002 a universities reform act completely changed the structure of the Austrian universities. The main goal of this reform act was to make the universities self-governed and independent from the influence of the Austrian Federal Ministry of Science. At each of the 21 universities so called university councils were established which consist of five to nine persons "in responsible positions within the society, particularly in science, culture, and in the economy", as the wording of the law says. Because of the expected political and economic influence on the universities the appointment of the university councils led to a heavy conflict between the universities and the Ministry of Science. Network analysis allows to investigate this "responsible positions" of the university councils in different "social fields" (Pierre Bourdieu). Based on Roland L. Breiger's classic paper "The duality of persons and groups" data about the

interlocking memberships of the councils in different enterprises, science institutions, cultural associations, clubs and so on were collected that allow to generate a two-mode network which is nearly a connected graph. Among others the network analysis wants to discuss the following questions: Which enterprises and institutions are the most influential within the "power network" of the university councils? Which different social fields are represented and how are they connected? How are the universities linked to these fields? And how can the influence of politics and the economy regarding the affiliation network be described? The presentation shows the preliminary findings of the analysis and the visualization of the council's affiliation network. It also wants to discuss the problems of analysing two-mode networks. How should the network be defined and encircled? How can the "duality" of the network, the relations within persons and institutions, be characterized? And which measures are suitable for analysing this network?

The Art Of Consensus: The Role Of Networks In Setting Recommendations At The World Wide Web Consortium

Peter Mika, Tom Elfring, Gerhard Van De Bunt

This study investigates networks effects on decision making in the context of standard setting. The subject of our study is a working group of the World Wide Web Consortium (W3C), the organization responsible for creating technical standards on the Web. Working Groups are technical committees consisting of representatives from member organizations (both industrial and academic), chartered with a fixed duration and on occasions where the lack of standards could hinder the development of the Web. The activities of working groups are regulated by their charter and the W3C Process, which has been created with the purpose of maximizing the efficiency of the work. The W3C process requires the members of Working Groups to achieve a compromise (a quasi-unanimous agreement) in order for their work to be considered complete and their results are published as an official recommendation. Anecdotal evidence suggests that under the pressure of this framework the social networks and capabilities of key actors become a significant factor in reaching an agreement over critical issues, in particular those that threaten to bring about a stalemate by dividing the community in two opposing factions. The particular group that we study is the Web Ontology Working Group within the Semantic Web Activity, comprised of 63 members and was active from August, 2001 until April, 2004. In this group, the capacity to broker an agreement over the most critical outstanding issue was even formally recognized by the community in the form of giving an award to one of the members. We plan to study this setting from a dynamic point of view with the help of an array of electronic records documenting the activities of the Working Group (in particular email communications and electronic logs of telephone conferences and face-to-face meetings) as well as information on the pre-existing social networks of the participants (obtained by methods of web mining).Compared to related work that investigated similar settings [Rosenkopf et al., 2001], our focus is not on the influence of technical committee activity on social networks of the members or alliance formation following committee participation, but rather the influence of the pre-existing social networks on membership activity and decision-making in particular. References [Rosenkopf et al., 2001] Lori Rosenkopf, Anca Metiu, and Varghese P. George. From the Bottom Up? Technical Committee Activity and Alliance Formation. Administrative Science Quarterly, 46:748–772, 2001.

Theoretical Structures In Social Network Research

Zack Kertcher, Benjamin Cornwell

Social network analysis is often regarded as an atheoretical approach, a mere collection of sophisticated empirical techniques. In this paper we address the validity of this claim through an examination of the inclusion of theoretical components in influential network studies. First, we identify fourteen key dimensions of social relations that were of chief concern to classical sociological theorists such as Weber, Simmel, Durkheim, Marx, Mead, and Schutz. We then identify a small sample (n = 20) of influential network papers in sociology, as indicated by their positions in a network of citations (n = 1,421). We examine this sample for evidence that the fourteen dimensions are: 1) taken into consideration; and 2) emphasized. Preliminary findings suggest that influential treatments of social networks are indeed anchored

in classical theoretical concerns, but with varying foci. There is a general concentration on some theoretical dimensions (e.g., micro and macro-structures and network boundaries) and a relative neglect of others (e.g., consciousness of actors' consideration of time in their action and actors' consciousness of structure). Furthermore, there is an association between an article's position in the citation network and its placement in the matrix of dimensions derived from the overall sample, suggesting that cliques in the networks discipline signal true theoretical divergence.

F: Marina

**Global
(Krempel)**

Poor Countries And Global Tourism

Lothar Krempel

Tourism is the largest industry of the world. Ever increasing airline travel has since the 1970s reduced transportation costs to far away countries. This had created new opportunities for poor and unindustrialized countries to participate and benefit from globalization. I analyze the current state of this process and use data on tourist flows and economic trade data (is tourism the bright side of globalization ?). The aim is to describe where and to understand when international tourism contributes to the income of poor countries.

Routes Into Networks: The Structure Of The English Trade In The East Indies, 1601-1833

Emily A. Erikson, Peter S. Bearman

In the seventeenth and eighteenth centuries the nature of East-West trade transformed from a simple dyadic structure to a vastly more complex multilateral network of exchange, ultimately leading to the emergence of densely connected global markets. The English East India Company (EIC) was at the center of this transformation. Drawing on a dataset recording the 4,572 voyages undertaken by the EIC, we induce a graphical representation of the trade network and map out the emergence of dense, fully integrated trade over the 233 years of the company existence. We then turn to identifying the dynamics underlying the structural cohesion of the emergent global trade network and trace its production to a loss of control over agents that multiplied external contacts, thereby securing steady supply streams and lowering prices through communication across markets. Specifically, using voyage characteristics to identify illicit trading activities, we show that this cohesion was the unintended by-product of systematic individual malfeasance on the part of ship captains seeking to profit from internal Eastern trade. The finding is tied to a discussion that problematizes distinctions between free trade and monopoly and underscores the importance of institutional settings as well as self-interested action in market-making activities.

G: Esplanade

**Selection and Influence
(Baerveldt)**

An Introduction And A Test Of Selection Strategy Theory. The Effect Of Network Configurations On The Way High School Freshmen Choose New Friends

Chris Baerveldt, Ronan Van Rossem, Gerhard Van De Bunt, Marjolijn Vermande, Christian Steglich

When a network starts, an actor needs to invest in new relations. But whom should she choose? Actors often lack the information to decide which choice is best. Therefore, the actors can use various strategies to select candidates for new relationships. Their repertoire follows from three choices actors make. First,

actors decide whether they will actively pursue new relations, or rather wait for others to make the first step. Second, they have to decide whether they want to make use of already existing ties within the network. They can link, i.e., befriend the friends of their friends, or jump to others with whom they have no indirect link. Third, they need to decide if and how to make use of the, often scarce and erroneous, information about personal and network features of the candidates to get an idea about the use of making a move to them. The strategy chosen will depend on the configuration of the existing network, i.e., the actor's goals regarding relationships, her initial network position, characteristics of the initial network and it's members, and the level of information. Hypotheses about the effect of network configurations on strategies were derived from selection strategy theory. We used data from a two wave study regarding 850 freshmen in 38 classes of three high schools in a small Dutch town to test the hypotheses. The pupils filled out a questionnaire twice: in the first week of school and after four months. Network data was collected about actual and desired friendship relationships among all students in a class. Using SIENA modeling, we test effects of actor's goals (as related to gender) and the actor's initial network position on their selection strategies.

Analyzing Network-Behavioral Co-Evolution With SIENA

Christian Steglich, Tom A. B. Snijders, Michael Pearson, Andrea Knecht

In many applications, social networks are not static but evolve over time. This can be due to purely structural, network-endogenous mechanisms (like reciprocity, transitivity, or balance), but also due to individual characteristics of the network actors (like gender, political preference, or drug consumption). Changeable individual characteristics, in turn are often mediated by social networks. Processes of social influence, contagion, or group differentiation all depend on the social network as their 'structural substrate'. This mutual interference between network dynamics and the dynamics of changeable actor characteristics, together with the already complex interdependence structure that characterizes social networks in general, poses a statistical challenge. In principle, the collection of longitudinal (panel) data on networks and individual characteristics allows for separating effects in both causal directions on empirical grounds. However, there are as yet very few analytical tools that would enable applied researchers for indeed doing so. We present SIENA (simulation investigation for empirical network analysis) as a statistical toolbox that meets the requirements. By simultaneously estimating evolution functions for the social network and the behavioral dimensions in a multivariate setup, we can determine, e.g., to what degree the 'homophily' phenomenon (a.k.a. network autocorrelation) is caused by selecting new, similar network neighbours, or by assimilating own characteristics to those of the existing network neighbours. For panel data, where many changes seem to happen simultaneously from one observation to the next, this is not a trivial task. We illustrate the use of the software with network panel data on the co-evolution of friendship ties, delinquent behavior, and musical taste among adolescents at school.

Social Influence, Social Selection And Gay Men's Behaviour: Do Social Sanctions Play A Role?

Anthony Smith, Murray Couch, Jeffrey Grierson, Marian Pitts, David Wain

Social sanctions have been proposed to play an important role in establishing and maintaining behavioural norms in social networks. Put simply, sanctions are the social costs and benefits associated with the engagement in particular practices in specific social settings. For example, our social network could encourage or discourage the consumption of alcohol at a particular place or time. Similarly, we could encourage or discourage the consumption of alcohol by members of our social network. These acts of influence of the network on the individual and by the individual on the network have associated with them costs and benefits. The present qualitative study aims to document the ways in which influence is exerted, and the associated costs and benefits, in relation to patterns of alcohol use, patterns of drug use, disclosure and management of mental health issues, and sexual partner selection and sexual practices among gay men in Melbourne. Drawing on focus group interviews with these men, the present study will provide important insights into the strategies people use to construct or engage with social networks in order to engage in, or avoid, particular social practices.

Friday 5:30-7:00

Redondo 1

Software Demonstrations

Modeling Information Equality: A Real-World Networks Simulation

Aram Sinnreich, Arul Chib, Jesse Gilbert

In this study, we build and test the second version of a stochastic, agent-based model of information diffusion, called dFusion. The first version used three separate real-world data sets to demonstrate a relationship between social and/or media latency and the information equality of a given network. We define information equality as the extent to which members of a social network gain access to salient information at relatively equivalent speeds, while latency refers to limitations in this diffusion process stemming from characteristics of the social structure or media infrastructure. By focusing on differential, rather than absolute, speed of access to information, we hope to create an evaluative framework for information technology investment that accurately predicts the effects of such interventions on social equality.DFusion Version 2.0 incorporates recent developments regarding the optimal structure of real-world social networks. We attempted to integrate rival perspectives on social network structure into a single, supportable social network algorithm. This meant using Barabási's (2003) notion of a preferential attachment process, bounded by nodal aging (Davidsen, Ebel, and Bornholdt, 2002; Jin, Girvan & Newman, 2001) and a cap on nodal degree (Amaral, Scala, Barthélémy, & Stanley, 2000), to create the evolutionary structure of the dFusion network.Simulations run with Version 2.0 suggest that, while a diffusion model for scale-free networks can be created, the resultant structure leads to almost instantaneous diffusion under a variety of situations. A comparative network analysis of the two versions found differing network properties that may influence the diffusion process. These findings may have implications for the debate about the relevant social structure of real-world networks. Examining whether simulated processes external to the social network replicate real-world processes may lead to a better understanding of the validity of the underlying network structure.

The Art and Science of Dynamic Network Visualization

Daniel A. McFarland

If graph drawing is to become a methodological tool instead of an illustrative art, many concerns need to be overcome. We discuss the problems of social network visualization, and particularly, problems of dynamic network visualization. We consider issues that arise from the aggregation of continuous-time relational data ("streaming" interactions) into a series of networks. We describe the use of SoNIA (Social Network Image Animator) as a prototype platform for testing and comparing layouts and techniques, and as a tool for browsing attribute-rich network data and for animating network dynamics over time. We discuss strengths and weakness of existing layout algorithms and suggest ways to adapt them to sequential layout tasks. As such, we propose a framework for visualizing social networks and their dynamics, and we present a tool that enables debate and reflection on the quality of visualizations used in empirical research.

Exploratory Data Analysis through the Graph Exploration System (GUESS)

Eytan Adar, David S. Feinberg

We present the GUESS system which consists of an infinite plane, infinite zoom visualization surface for displaying networks and a flexible back-end that allows for nodes and edges with an unlimited number of user-controlled properties. This talk will also describe the interpreted scripting language which supports the programmatic exploration of graph structures from simple snapshots to complex dynamics. The GUESS language is a modified version of Python that considers nodes and edges to be first class objects that can be

queries and manipulated by their properties. Using the user interface and the language, a researcher can quickly control the visualization, explore large networks, and create new custom applications. The tool provides for visualization of both static and dynamic networks, and implements many SNA algorithms.This talk will concentrate on the use of the GUESS system within SNA and will highlight various projects that have made use of the tool. GUESS is a second version of the Zoomgraph tool. Both are Java-based and open-source and are available at: http://www.hpl.hp.com/research/idl/projects/graphs/

Using NetMiner for Social Network Analysis

Ghi-Hoon Ghim

Interactive Visualizations of Dynamic Networks

Jim Blythe, Cathleen McGrath

Visualizing how networks change over time is a hard problem that hasrecently attracted renewed attention, e.g. [Moody et al. 04, Mrvar andBatagelj 04, McGrath and Blythe 04]. We introduce a novel, implementedvisualization technique, the summary stream, that allows users tointeract with a graph of chosen network properties over time andsimultaneously view a snapshot of the network at the relevantmoment. Rather than passively watch a network animation, users can moveto a timepoint of interest as indicated by the summary stream, play andre-play changes in the network and modify the network or node propertiesthat are shown. We also compare layout techniques that attempt tominimize the change in layout over time while providing a good layout ofa temporal network at each point in time. We demonstrate the techniqueswith Newcomb's fraternity data [Newcomb 61]. Finally, we showpreliminary results of user studies to determine the impact ofinteraction and summary streams on user perception of changes innetworks.

Wolfpak: A Neural Network for Multilingual Text Analysis

Joe K. Woelfel, Hao Chen, Pauline Hope Cheong, Jennie Hwang, Joseph Woelfel

Text analysis procedures which rely on linguistic theories, grammatical rules or heuristics are restricted to the languages for which they have been developed. Neural network models, since they depend solely on pattern recognition, storage and retrieval, are not restricted to specific languages, but may work across a broad spectrum of very different languages. Catpac, a widely used neural model, has been used in many languages, including English, German, Korean, and other languages, but was restricted to languages that could be expressed in the ASCII character set. In this paper, we present preliminary results from Wolfpak, a neural text analyzer based on UNICODE, and show results of analysis in both English and Chinese.

JUNG: A Software Library for Social Network Analysis

Joshua O'Madadhain, Danyel Fisher, Padhraic Smyth, Scott White

Software libraries for social network analysis offer a new and different framework for working with social networks. We present the JUNG (Java Universal Network/Graph) Framework. JUNG is a free, open-source software library, written in the Java language, that provides a common and extensible language for modeling, analysis, and visualization of social networks. Unlike standard network applications, such as Pajek and UCINET – and like other libraries, such as the R language's "sna" package – JUNG offers programmers a toolkit for general graphmanipulation. As such, it can be used to create specialized applications, and to automatedifficult or repetitive calculations. Because Java is a popular and widely-supported programming language, JUNG can be easily incorporated into many existing systems. JUNG provides a broad selection of graph algorithms; users can also easily write their own algorithms within its

framework.We discuss the design of the JUNG system, outline its features, and present several applications of JUNG, including a variety of network visualizations. We compare our experiences with JUNG to those with other toolkits, and discuss the advantages and disadvantages of using a programming-based library.

Real-world Oriented Information Sharing Using Social Network

Junichiro Mori, Tatsuhiko Sugiyama, Yutaka Matsuo, Hironori Tomobe, Mitsuru Ishizuak

With the currently growing interest in online social network services, social relationships in the real world are emerging in the Web and a user itself is gradually coming to play a central role in the Web contents. The emergence of user information from the real world into the Web has a great impact on information system.We propose real-world oriented information sharing system using social network. The basic idea is to give access control to information contents based on social relationships between online users. The idea comes from the analogy of information sharing in the real world. The system is composed of three main functions: Extracting tool of social network, Editor for semi-automatic mapping between social relationships to access control information, and Contents browser. Social relationships are modeled with various parameters such as centrality, topology, relationship property by analyzing the extracted social network. Compared with conventional systems, our system provides more flexible and real-world oriented information sharing.

InfoVis Cyberinfrastructure

Katy Borner

This talk provides an overview of the InfoVis Cyberinfrastructure (IVC) under development in the InfoVis Lab at the School of Library and Information Science, Indiana University. The IVC software framework provides a unified architecture in which diverse (network) data analysis, modeling, and visualization algorithms can be plugged in and run. The framework is unique in that it places no restrictions on the type of data structures, algorithms or persistent data formats. Given that the IVC is completely open-source, it allows peer-review at the algorithm level using the actual code rather than just relying on pseudo code made available in research publications. The IVC software framework comes with a growing set of learning modules. It is our hope that this infrastructure is widely adopted for research and education in data analysis, modeling, and visualization.More information on the IVC software framework and currently available algorithms can be found at http://iv.slis.indiana.edu/sw/. Source code is available via http://sourceforge.net/projects/ivc.

Borrowing from Computer Music to Describe Temporal Aspects of Social Networks

Peter A. Gloor

If you are a lover of classical music, imagine listening to a sonata from Beethoven. After the music has been introduced in the exposition, it will undergo a modulation and will arrive at the end of the exposition in a different key. As the melody further develops, you will be more and more able to unravel the tune and to analyze and understand the underlying patterns of the melody. The longer you listen to the tune, the better you will know what to expect next. In our project we are aiming to do the same for the evolution of communication patterns in social networks. Our goal is to come up with a set of temporal communication patterns typical of different types of collaborative knowledge networks such as innovation networks, learning networks, and interest networks (Gloor et al, 2004).The description of music and of the temporal evolution of social networks has strong similarities. In order to describe a melody, we need to portray the recombinations of pitches and durations over time. In a social network we describe the growth and decay of ties between people over time. Just as in an orchestra many different musicians play together to produce a multi-voice melody that develops and unravels over time, people in a social network interact with each other, building up and severing mutual ties over time.Musical composition by computer disassembles tunes written by a human composer into fragments, trying to understand the rules that a particular composer

applied to produce her tune. The computer program then takes the fragments, recombining them into new melodies while applying the combination rules of the composer (Cope 2001). We are doing the same for the temporal analysis of social networks, using as formalism principles of music analysis from the field of computer generated music combined with musical classification theory (Mazzola et. al. 2002). References:Cope, D. Virtual Music, Computer Synthesis of Musical Style, MIT Press, 2001.Gloor, P. Laubacher, R. Zhao, Y. Dynes,S. Schrott, G. Trying to Correlate Temporal Communication Patterns of Online Communities with Innovation, Presentation at Sunbelt, Social Networks Analysis Conference, Portoroz, Slovenia, May 13-16, 2004http://www.ickn.org/html/ckn_publications.htmMazzola, G. The Topos of Music, Geometric Logic of Concepts, Theory, and Performance, Birkhauser, 2002.

Visualisation and Analysis of Large and Complex Networks Using GEOMI

Tim Dwyer, Xiaoyan Fu, Seok-Hee Hong, Nikola Nikolov, Kai Xu

GEOMI (Geometry for Maximum Insight) is a visual analytic tool for the visualisation and analysis of large and complex networkssuch as social networks and biological networks.Such visual analytic tools involve taking advantage of the graphics capabilities of computers to support analysis of network structure. More specifically, GEOMI supports interactive three dimensional visualisation and analysis of large and complex networks.Using GEOMI we can visually explore such networks and discover patterns and trends to provide critical insights. GEOMI is at the cutting edge of a new generation of visual analytic tools that combine network visualisation techniques with network analysis methods.

Saturday 1 Morning 8:00-10:00

A: Redondo 2

Data Collection and Sampling
(Corman)

A Reality Show For Network Geeks: Software Factory And The Quest For The Ultimate Dataset

Steven R. Corman, Kevin J. Dooley, John Parsons

It is well established that self-reports of behavior differ, often substantially, from behavior that can be independently observed. Given that network researchers often use reports of behavior (like communication) to measure networks, there arises a theoretical question about what such networks really represent. This is the well-known "accuracy problem" popularized in the late 70s and 80s by Bernard, Killworth, and colleagues, among others. One explanation for the discrepancy holds that reports are biased and/or noisy signals, and if we can somehow model this we can recover valid behavior data (for example, Butts, 2003). Another explanation says reports and behaviors index different domains, mapped onto one another over time by transformational processes (for example, Corman & Scott, 1994). Which is correct? The prospects for an answer seem dim because we lack detailed data for researching both reports and behaviors, in a realistic context, over an extended period of time. The Software Factory (SF) project reported here aims to create such data using what might be called a "reality show" approach. SF is a lab managed by a professional software engineer that provides software development support to university research projects. Students working on assistantships or hourly wages, up to 12 at a time, are the employees. All personnel wear time-synchronized digital recorders while at work, and the recordings are stored for later research use. They also complete weekly surveys including network items, and are periodically interviewed, observed, and evaluated. We present results from SF's first 27 months of operation. This includes a self-report network measured over 117 time points and 50 people, which to our knowledge sets a record. We report descriptive findings about the network, and then describe ongoing efforts to extract observable communication behavior from the recordings. We also comment on the difficulties presented by this kind of research.

Comparing Sampling Designs For A Hidden Population

David C. Bell, Tabitha Serrano, Cheryl A. Dayton-Shotts

The recruitment of representative samples from a hidden population such as drug users requires special sampling designs. Early techniques such as outreach recruitment and targeted sampling contained notable biases. More recently developed techniques are capable of minimizing these biases and achieving relatively representative samples. This paper describes the experience of implementing random walk and peer-driven recruitment methods to recruit a community sample of drug users. Both recruitment methods were implemented for comparable periods of time. We discuss results in terms of staff impact, recruitment success, participant commitment, and their consequences for data quality. Peer-driven recruitment methods were able to recruit more participants at least psychological costs to staff, but the recruited participants were less cooperative than with the random walk method.

"To Tell The Truth": Measuring Concordance In Multiply Reported Network Data

Jimi Adams, James Moody

Social network data must simultaneously capture an accurate representation of the population being studied and the relations between the network's actors. While researchers have established numerous methodological approaches for improving sample selection techniques, methods of evaluating and improving the collection of network data are still being established. One data collection approach, a link-tracing design, uses existing network data for the targeting of additional respondents. In this paper we examine the multiple reports of network data from one link tracing designed data collection effort (the Colorado Springs Project 90 Sexual and Drug User Network Data). By comparing the reports of multiple individuals regarding the same relations, and the reporting consistency of single individuals across time, we evaluate the reliability of one study's network data. Our findings suggest that the data in this particular study exhibit a high level of reporting agreement. From these findings, we discuss potential implications for analysis of this data, and make suggestions for future social network data collection efforts.

B: Bay

Attainment
(Ao)

Measuring the degree of homophily of individual social capital

Dan Ao

This study reevaluates the relationships between accessed social capital, job contact, and the labor market outcomes. In order to understand these relationships, my analyses distinguish the whole sample and the sub-sample, which is important because the job contact variable is measured differently when using these two samples. The former includes the respondents who were participating or had participated in the labor force at the time of the survey and job contact is measured as a dummy variable—whether to use job contact; the latter, however, is a sub-sample of labor force participants who use contacts during the process of getting their present jobs and job contact is measured as a continuous variable—contact status. Data used is a telephone survey that was conducted among adults (between 21-64 years of age) in the 24 largest metropolitan cities in the United States. When using the whole sample, I found that (1) level of accessed social capital can't determine use of contact; (2) use of contact has a positive relationship with status outcomes; and (3) level of accessed social capital has an indirect relationship with status outcomes. Moreover, when using the sub-sample, I found that (1) level of accessed social capital has a positive causal effect on contact status; (2) contact status has a positive relationship with status outcomes; and (3) level of accessed social capital has an indirect relationship with status outcomes. These findings indicate that social capital exerts an important and significant effect on status attainment.

Double Jeopardy For Whom?-Intersection Of Gender And Race And Social Capital Inequality In Job Search

Nan Lin, Shanhui Wu

This study examines gender and race based inequality in social capital for job seekers. From a perspective of gender and race intersection, we attempts to contribute to the literature of gender and racial inequality and the studies on social capital by addressing the issue of how gender and race combine to determine the opportunities for accessing social capital and obtaining return from it.   The study is based on a survey data on American job seekers in the 24 largest metropolitan cities in 2002. Operationalizing social capital as resources accessed through contacts in job search process, we ask two questions. First, whether and why certain gender-racial group of job seekers access better social capital (contact status) than others? Second, whether and why the effect of such accessed social capital on current job statuses (SEI score) is differentiated for different groups? We focus our analyses on those who use personal contacts in finding current jobs. To test and control for possible sample selection bias, we adopt Heckman's selection model which takes in to account the selection process.   Three major conclusions are achieved. First, with regards to accessed social capital racial inequality is greater than that of gender, and such racial disparity exists primarily between white and minority males. Second, it is minority men rather than women of color who suffer "double jeopardy" in accessing social capital, suggesting that the interception of gender and race is not simple addition of gender and racial effects. Furthermore, the advantages of minority females over males in accessing social capital cannot be explained by structural factors, since minority women do not occupy better positions in social hierarchies. Finally, the effect of social capital is not differentiated for gender and racial groups. When presenting similar social capital in labor markets, white females and minority people do not notably receive fewer returns than white males.

The Influence Of Social Networks On The Employment Of The Elderly

Dr Kaberi Gayen, Dr Robert Raeside

In Scotland economic inactivity rates of those aged 50 to 65 years are around 35%, although some of this is voluntary much is not. This is a cause for great concern and is exacerbated in that those who are involuntary out of work tend to be poorer and less skilled and undergo longer periods of joblessness. Added to this the population of Scotland is rapidly ageing. Among the low skilled word of mouth is a very important channel for finding out about job opportunities and obtaining recommendations. Reported in this paper is the preliminary result from an empirical work conducted in East Central Scotland on the influence of Social Networks on the employment of the elderly. The networks of three groups of 50 to 65 year olds were compared: those who are in work with those who are involuntary out of work and those who are voluntarily out of work. Ego-centric networks were constructed for each of these groups and some interesting differences have emerged which are reported in this paper. The information obtained from this research will be of benefit to many organisations who work to help people return to work.

The Role Of Goal-Relevant Social Ties In Changes In Salary And Job Satisfaction Among Graduates

Markku Jokisaari, Jari-Erik Nurmi

The underlying assumption in various theories related to career development is change in work adjustment over time. Using latent growth modeling approach to data collected from 166 graduates in 5-wave study, we explicitly model individual differences in intraindividual changes in salary and job satisfaction after graduation. Furthermore, we examine the effects of graduates' work goal-related social ties to salary and job satisfaction development. Specifically, we examine to what extent characteristics of graduates' work goal-related social ties, i.e. highest socioeconomic status accessed, strength of ties and social contact to the organization, before graduation relate to initial status and changes in salary and job satisfaction. Preliminary results indicate that graduates' salary increases and job satisfaction declines during two years after graduation. However, results show that there are individual differences in both initial level and in

growth rates of job satisfaction and salary. Furthermore, results indicate that goal-related social ties before graduation relate to initial level of job satisfaction and salary: graduates who have a supervisor contact to the organization report higher salary and job satisfaction than graduates without such a contact.

C: Redondo 3

On-line and Other Networks
(Spielthenner)

Structures Of Power Landscapes By The Example Of A Large Real Data Network. (Austria's Elite Network)

Doris Spielthenner, Max Ruhri, Harald Katzmair, Christian Gulas, Jürgen Pfeffer

Our long time research project explores the social morphology of the economical, technological and cultural key sectors of the Austrian society. This paper explores the aspect of structural power of such distributed resource networks following a relational conceptualization based on theoretic models from the field of Complexity Theory and Social Network Analysis. General structural principles which give power structures a robust and sustainable setting will be discussed and ascertained at the individual level (centrality, prestige), the dyadic level (structural and other notions of equivalence, tendencies towards reciprocity, line betweenness), the triadic level (balance, robustness and transitivity) and at the network level (connectedness, diameter, density) by the example of the overall Austrian Elite Network. (approx. 80,000 Austrian opinion leaders, 20,000 affiliations and 200,000 links) The paper also compares these specific structural characteristics of the following sectors and areas: economy (fortune 2500), media & advertisement, medicine & health, high society networks and lobbying institutions.

Online Discussions As Networks: The Relations Between Topic Of Usenet Groups And Their Structure

Itai Himelboim, Shawn M. Lavelle

Usenet can be considered as the world's largest conversational application with hundred of thousands of groups and millions of users. Discussion is conceptualized as a directed network of participants and their responses in a single group and is characterized by its structure. It is suggested here that the networks¡¯ structure is related to the topics of discussions and their sizes. It is more likely for a more hierarchical structure to evolve when messages are informational (and may be more important), than when messages state and reflect upon opinions. 136 Usenet groups are analyzed from two topics: political (opinioned discussion) and health (informational discussion). The groups range in size from 19 to 2628 authors and 54 to 46294 messages. This study tests the relationship between topic and discussion size and the skewness of in-degree distribution, using ¥á coefficient in log-based regression lines ($\ln y = - ¥á * \ln x + ©¬$ where y is the in-degree and x is the size). The hypotheses are: (a) health Usenet groups will show higher ¥á, and (b) the discussion group size is positively correlated with ¥á. The findings support the first hypothesis. Health Usenet groups show more skew for in-degree distribution, i.e. higher ¥á (M=0.699) than the political Usenet groups (M=0.512), with p<0.01. The findings partially support the second hypothesis. A significant (p<0.01) correlation was found only among the political groups between ¥á coefficient and the size of the group (r = 0.357). The findings are important for Usenet participants, many who are not likely to be aware of the underlying structure of the discussion. For one who is seeking for health information, it would be helpful to identify the dominant and credible participants. In the political groups a hierarchal structure is less desirable; one who is looking for an opportunity to engage in egalitarian political discussions should participate in smaller groups.

Social Space In Cyberspace: Social Networking Through Online Communities

Lisa J. Greenman

The virtual community is slowly becoming the modern kinship network for a number of global populations dispersed by phenomenon such as war, economic migration, or natural disasters. Communities in countries such as El Salvador are eagerly grasping new domains, hoping to find a fresh definition to the historically nebulous term of kinship. New virtual communities serve as an international neighborhood where Salvadorans are reconnecting with both genealogical and non-consanguineous kin from their prospective departments (similar to states). According to Boyd (1989: 641), "networks connect immigrants…across time and space". I propose that many Salvadoran immigrants are networking not through traditional social space, but through cyberspace. Virtual communities are vital in the study of social networking and organization, and often is overlooked. The case of El Salvador will be used to show the importance of social networking in cyberspace.

How To Make it Big – Using Multiple Media to Maintain Social Ties and Access Resources

Jeffrey Boase
Barry Wellman

This presentation draws on the results of the Pew Social Ties Survey to examine the effect of network composition on media selection (i.e. contact via in-person, mobile phone, regular phone, email and IM) and access to resources. During the months of February and March 2004, random-digit dialing was used to administer this survey to 2,200 Americans. Existing national surveys that examine the social implications of media selection tend to focus only on a few of an individual's strong ties, thereby excluding the possibility of comparing these relationships to weak ties. The Pew Social Ties Survey is one of the very first national surveys to measure media selection and social network composition using a comprehensive battery of ego-centered social network measures, including network size, diversity, geographic distance, density, and tie strength. Findingsindicate that email is used in conjunction with telephone and in-person contact to maintain relatively large networks of intimate and weak ties. Large networks of intimate ties provide resources that require considerable time and energy, while large weak tie networks provide access to important informational resources.

D: Redondo 1

Health
(Latkin)

Correlates Of Having Injection Drug Users As Sexual Network Members

Carl Latkin, David Leighton Howard

In Europe and the U.S. injecting drug users (IDUs) are currently the second largest group of reported AIDS cases. Beyond the risks of HIV transmission posed by sharing injecting equipment there is growing interest in the risk of sexual transmission of HIV among IDUs. This study examined the networks of drug users, focusing on factors among non-IDUs that were associated with having an IDU sex partner. Data from the SHIELD project, a network-oriented experimental intervention, included 1070 indexes and 567 network members. Using a 18-item name generator, participants reported their network members, including sex partners' frequency of drug use as well as their drugs of choice in the past 6 months. Non-injectors with one or more injecting sex partners were somewhat more likely to be female, report that the selling of drugs was a big problem in their neighborhood, and to be HIV positive relative to non-injectors with no injecting sex ($p<.10$). Non-injectors with one or more injecting sex partners were significantly ($p<.05$) more likely than those with no injecting sex partners to report having had sex with more than one person in the prior 90

days and to report having one or more injecting non-sex partners in their network. Finally, among male non-injectors only, those with one or more injecting sex partners reported on average having more females in their network than those with no injecting sex partners. In our multivariate regression model, having had sex with one person in the prior 90 days preceding significantly associated with having an IDU sex partner. There was an inverse relationship between the proportion of heroin snorters in the network of the non-injector and having an IDU sex partners. The statistically significant increase in the odds of the outcome with increasing network size only occurred among male non-injectors (OR=1.62; 95% CI 1.05-2.47).

Familial Clustering In Colorectal Cancer: Extension Of Analytic Methods

Andrew J. Seary, William D. Richards

The Familial Colon Cancer Registry (FCCR) is an international consortium of researchers studying factors related to the incidence of Colorectal cancer, including epidemiological, lifestyle and genetic variables. We discuss a study which aims to examine which genes, and/or which environmental factors account for familial clustering as well as the relative importance of genetic or environmental factors. The Canadian subset of data from the FCCR is now being tested with the computer program MultiNet. This data consists of 112,000 individuals in 4092 families and over 1,000 variables including 500+ epidemiological and lifestyle variables, and 500+ diet and nutrient variables. Building on an analytic strategy we successfully applied to other medical data, we describe extensions to MultiNet which we expect will facilitate the detection of familial clustering of types of cancer.

The Hiv Vaccine Preparedness Study

Eva Operskalski, Thomas Valente, Andrea Kovacs, Jennifer Zogg

This study attempts to determine whether social network analysis can be used to recruit individuals at high risk for HIV to participate in an HIV vaccine preparedness study. Index cases provide the names and consent-to-contact of up 15 family, friend and high-risk alters. Indexes and alters are recruited to participate in baseline, 2-week, 3-month and 6-month interviews to assess their willingness to participate in a vaccine trial. They also receive prevention materials. We report results from the first 3 months of data collection, indicating respondents' willingness to provide network data as well as consent and contact information. We also report on subjects' willingness to participate in a vaccine study. Preliminary results indicate that social network analysis is an effective means to identify subpopulations at high risk to an infectious agent and useful for implementing a vaccine protocol to combat it.

E: Catalina

Simulations
(Lazer)

Congressional Connections: The Diffusion Of An Innovation Among Members Of Congress

David Lazer, Allan Friedman

Members of Congress began using the Internet to communicate with their constituents in the mid-1990's. These decisions, beyond the actual url (all Members' sites are located at www.house.gov) and a few ethics rules constraining Members' decisions, are decentralized—made by Members and their staff. There is thus enormous variability in how Members have decided to use their web pages. This paper examines the sources of that variability, using cross-sectional data from 2002, focusing on the diffusion of information within Congress.

A Simple Model Of Coalition Formation In Ideologically Heterogeneous Groups

Maren Friesen

We construct a simple agent based model to investigate the dynamics of coalition formation. We consider two fundamentally different scenarios: first, when agents have fixed ideologies and second, when agents change their ideologies based on interactions with other agents. We define a coalition as the state when all agents form a single cluster. In an initially unstructured population, the time to coalition formation follows a power law when ideologies are fixed. However, when ideologies can change, the time to coalition formation may be hastened or slowed down. The counterintuitive result that, for some parameters, coalitions can form more slowly under flexible ideologies may be explained by the preservation of extreme ideologies throughout the clustering process. These results have implications for those trying to form consensus on, for example, conservation issues.

Does Innovation Affect Social Structures? A Study Of The Joint Dynamics Of Networks And Technology Diffusion

Michele Simoni, Adam Tatarynowicz, Gianluca Vagnani

Existing literature on technology diffusion increasingly observes that social networks play a vital role in processes that guide the adoption of major technological innovations. Although it is generally agreed that knowledge about a new innovation can be distributed unevenly within a network of potential adopters and that, therefore, the network may act as a powerful conduit of that knowledge, current research does not explore sufficiently the other side of that coin, namely that the diffusion process may also affect the network itself. Our study fits into this gap by examining how the spread of a technological innovation impacts patterns of dyadic relationships between actors within a social network and, in turn, how these changes interact with the processes of technology diffusion. To explore this dynamic interplay in more detail, we construct an extended computational model using agent-based simulation techniques. Several elements are key to the model. The initial structure is modelled as a random graph. Consistently, a random search process highlights the formation of new links throughout the simulation. The intensity of existing ties follows a life-cycle function, yet the parameters of the function are different for pairs that consist of similar actors versus pairs of dissimilar ones (based on a single "adopter" or "non-adopter" criterion). Each actor assesses the value of the new technology individually, each is also exposed to a different level of bandwagon pressure to adopt or to reject the innovation. Given these mechanisms, two types of communities are considered: an explorative community whose members tend to exchange information about the new technology in order to adopt it or to promote it further, and an exploitative community which is solely interested in exchanging information about the already adopted technology so as to increase its usability. We use this overall structure to inquire both about the positive feedback loop between the number of adopters and technology diffusion, and about the extent to which bandwagons dynamically reshape the networks that generate them.

Social Capital Management By Means Of Agent Based Simulation Modelling what Is The Best Networking Strategy To Improve One's Position In A Distributed Resource Network?

Harald Katzmair, Juergen Pfeffer

What is the best networking strategy to improve one's position in a distributed resource network? The paper shows the outcome of agent based simulation experiments comparing different networking strategies like structural holes strategies, network closure strategies, random strategies or coalition forming strategies. The parameters of the simulation model take into account various phenomena known from social network literature like transitivity effects, homophiles effect, preferential attachment effects, link decay effects, burn out effects and random and/or strategic error effects. Which networking strategy will prevail given different weighting functions of these effects? What lessons can an adaptive agent learn for successful strategic networking behavior?

F: Marina

**Network Dynamics
(Roth)**

Dynamics Of Galois Lattices: The Case Of Epistemic Communities

Camille G Roth., Paul Bourgine

Understanding the structure of knowledge communities and particularly the organization of « epistemic communities » (ECs), or groups of agents sharing common knowledge concerns, is usually based on either social relationships of semantic similarity. To link social and semantic aspects, we introduce a formal framework based on Galois lattices that categorizes ECs in an automated and hierarchically structured way, allowing us to rebuild a whole community structure and taxonomy. As the resulting lattice includes all possible ECs it is often voluminous and quite clumsy, we accordingly propose criteria for selecting the most relevant epistemic communities with respect to our rebuilding task – for instance, ECs gathering a certain proportion of agents and thus prototypical of major fields. This process produces a partial lattice yet a yielding and manageable representation of the community structure. From there, the dynamic study of these static partial lattices enables us to describe community taxonomy not only statically but historically. In particular, we rebuild important stylized facts such as i) field progress or decline, through the variation in the number of agents of the corresponding EC, ii) field scope enrichment or impoverishment, through the variation in the number of concerns, and ultimately iii) field interaction, namely the merging of several existing fields into a more specific subfield, or the regrouping of several fields into a more general one. Our method has eventually been applied to empirical data and has been successfully compared with categories given by domain experts.

Quantifying Change In And Of Core-Periphery Structures With Correspondence Analysis: An Application To International Trade

Matthew C. Mahutga

This paper demonstrates the utility of Correspondence Analysis (CA) as a tool for measuring both global and actor level change in core-periphery structures through time. Since the pre-processing done to adjacency matrices in CA pushes sparsely tied actors away from, and densely tied actors toward the origin, it is well suited to measure both global and actor level change in core-periphery structures. Individual actors can either move toward the core, or away from it. Similarly, the overall structure can become more or less connected, resulting in a smaller or larger space within which the structure is contained. I develop two simple measure of change. The first measure quantifies the overall shrinkage or expansion of the space necessary to contain all actors through time. The second measures change as the difference between the distance from each actor to the center of the CA solution in time 1 and time 2, controlling for the global level of changed from the first measure. I compare the results with expectations derived from theories of globalization, as well as previous empirical findings.

Constancy: A Measure Of Network Dynamics In Bipartite Graphs

Soong Moon Kang

In many networks, the relationship between actors is not simply dyadic, but more complex, such as in affiliation and collaboration networks. In this paper, I present a probabilistic measure—-constancy—-that indicates the dynamics of relationships between actors (as well as of the overall network) taking into account their bipartite nature. I provide applications and examples based on relational networks such as affiliation and collaboration networks.

Sensing Social Network Evolution

Nathan Eagle, David M. J. Lazer, Alex (Sandy) Pentland

We introduce the use of mobile phones as a method to quantify the evolution of social networks as well as to supplement traditional self-report data. We have an application for the phone that continuously logs a user's location (using cell tower IDs), people in proximity (from repeated Bluetooth scans), communication (call and SMS logs), and application usage. The experiment involves forty incoming students given these phones upon arriving at MIT. We first examine the inter-relationship of these behavioral data with various self-reported relationships. We find that particular kinds of relationships produce characteristic behavioral traces-- e.g., self-reported friends are more likely to get together off campus off hours. Secondly, we use the continuous nature of the data to quantify the dynamics of the interpersonal ties between the incoming students over the course of their first 3 months on campus. We conclude with a discussion of the different patterns observed in the three datasets collected (incoming business school students; doctoral students; and freshmen).

G: Esplanade

Processes in Networks
(Lehmann)

A Dynamic Model For Small Worlds

Katharina A. Lehmann, Hendrik Post, Michael Kaufmann

That social networks constitute a 'small world' has long been some kind of folklore, until Milgram [1,2] made a first attempt to measure how small our world really is with his famous experiments. Watts and Strogatz [3] were the first who introduced a formal network model for Small Worlds that combines a high local clustering of nodes with a small diameter of the whole graph. In our paper we present a novel, generalized model that is fully dynamic, i. e., nodes are allowed to join or leave the system and edges are constantly rewired. Despite this new dimension the model is mathematically analyzable at the same time and we can proove that it shows the same combination of local and global properties as the classis Watts-Strogatz-model. Further, we give a new explanation for the emergence of high local clusterings that is based on a minimization of costs. This new model is applicable to all dynamic social networks and might help to gain new insights in how the global topological characteristics of a high clustering coefficient together with a small diameter self-organizes in a dynamic process.[1] Stanley Milgram, "The Small World Problem", Psychology Today, May 1967. pp60 - 67[2] J. Travers and Stanley Milgram, "An experimental study of the small world problem", Sociometry 32, 425 (1969)[3] Duncan J. Watts, Steven Strogatz, "Collective dynamics of small-world networks", Nature 393 (1998)

Equilibrium And Evolution In Supply Chain And Social Networks

Mike Pearson

We outline some recent work which introduces an equilibrium solution to the newsvendor problem generalised to a supply chain network. A solution is proposed to the contractual $\{(C,V),(Q,R)\}$ problem, whereby a manufacturer determines the cost to charge a retailer (C) and the credit/unit to pay for unsold units returned (V), while the retailer determines the amount of inventory to order from the manufacturer (Q) and the retail price (R) to charge the customer. We identify a natural duality whereby a player knows about her own distribution, but makes decisions about her network partner's distribution. We solve the stochastic problem by assuming a limited degree of cooperation between the players in the network, and synchronise the network through the application of the primal-dual transformation to each link. The players are allowed to form coalitions with other players, leading to the establishment of network components. We show that the components behave in a similar manner to the players themselves through the principles of

capability and optimality. We draw some parallels between evolution in supply chain and social networks.

Interrogating The Usual Suspects: Social Networks, Education And Voter Turnout

Meredith Rolfe

In this paper, I argue that education increases voter turnout not by creating better citizens, but by partially sorting people into different social worlds with different structural characteristics. Rather than teaching people to value democracy, or even helping them acquire resources and skills that make political participation easier, education is one indicator of access to a social world of large and diverse personal friendship networks that are more conducive to solving the large-scale collective action problem posed by elections. I argue that individuals make decisions on the basis of conditional cooperation in local social networks. Using a simulation of this decision model, I show that some network structures encourage turnout more than others. After demonstrating the relationship between education and social networks, I show that better measures of personal social networks outperform the traditional education measure as an explanation of turnout using survey data.

The Origins Of Network Integration: A Simulation Study

Joesph F. Cabrera

This work draws from two computer simulation studies conducted by Cathleen Carley (1990) and Noah Mark (1998). Both of these studies used three basic interaction principles, (1) people interact with others whom they share information, (2) when people interact with others information is exchanged, or (3) new information is created. Carley used these basic principles to demonstrate the properties that effect group stability in the face of challenges to such stability. Mark used these principles, along with a fourth principle, forgetting, to demonstrate how initially homogeneous societies can become differentiated over time, indicating that inequality in society can be created randomly from initial equality. This study extends the work of these two researchers, seeking to understand how the model, with a few new revisions, can be used to understand how two previously disconnected groups can become integrated. Preliminary results indicate that both memory and cultural complexity negatively effect integration, while group size has little to no effect on integration. There is an interaction between cultural complexity and memory in which cultural complexity has a much greater effect on integration at larger than smaller amounts of memory. In the next phase of testing I plan to examine different structural forms and new variations in the basic interaction rules to determine the major determinants of network integration.

Saturday 2 Morning: 10:30-12:00

A: Redondo 2

Centrality
(Ruhri)

Calculating Line Centrality Measures By Transforming Edges Into Nodes

Max Ruhri, Juergen Pfeffer, Harald Katzmair

Detecting the key connections in a network often is of particular interest. What are the relations that function as bridges between loosely connected areas of a network? What are the relations that add to an actor's centrality? Edge betweenness provides important information about social structures and became the basis of new clustering methods (Newman and Girvan, 2003). The paper shows a way to calculate line centrality measures by using standard network software. Each edge of a given network is transformed into a node. Simultaneously nodes are transformed into a certain number of edges depending on the number of in-between positions of the original node. Each node therefore results in the edges of a complete subgraph of the new network. The resulting network turned out to be useful to calculate line centrality measures. Computing the edge betweenness of the transformed network provides additional information about actors: it can be shown, which combinations of relations are accountable for an actors Centrality. The method will also be applied to real world networks to give an impression of its usability.

Understanding Information Centrality

Daniel Fleischer, Ulrik Brandes

Information centrality (Stephenson and Zelen, 1989) is typically introduced as taking "into account not only shortest, but all paths originating from an actor" and to "weight these paths according to the information that is transmitted through them." Even though it thus addresses an important issue that frequently renders shortest-pathbased measure like closeness and betweenness inappropriate, the use of information centrality "has been limited" (Wasserman and Faust, 1994:196). Presumably, this is because it is not widely understood how its underlying intuition is reflected in its formal definition. We review a recent proposal for a variant of betweenness based on all paths in a network (Newman, 2004) and introduce a corresponding variant of closeness that turns out to be exactly the same as information centrality. We claim that this new perspective makes understanding and classifying information centrality easy.

Uniqueness Centrality

Nikola S. Nikolov, Seok-Hee Hong

We propose a new centrality measure called uniqueness centrality which emphasizes the importance of the nodes with the most unique role in a social network. Our centrality measure is based on the concept of extremal variety introduced in the area of quantum physics by Barbour and Smolin [1]. Consider a graph that models a social network. For each node v we define its k view as the subgraph induced by all nodes connected to v by a path with length at most k. Then the centrality value assigned to node v is 1/k where k is the smallest number such that the k-view of v is different from the k-views of all other nodes in the graph. If there are nodes with identical k-views for any k then their centrality will be equal to zero. Large centrality values identify nodes with a unique view to the rest of the network. There might be alternative approaches to comparing the k-views of two nodes. An obvious approach is to check if the corresponding subgraphs are isomorphic. This could be very expensive computationally. Thus, we propose a few alternative solutions which are fast from computational point of view. They include comparison of spanning trees of the k-views which can be done efficiently.[1] J. B. Barbour and L. Smolin, Extremal Variety as the foundation of a cosmological quantum theory, Syracuse University Preprint SU-GP-92/2-4, 1992. [2] J. Barbour, The Deep And Suggestive Principles of Leibnizian Philosophy, The Harvard Review of Philosophy, IX 2003, pp. 45-58

B: Bay

**Alliances and Communities
(Mika)**

A Social Network Analysis Of Alliances In The Enterprise Software Systems Industry

Ramnath Chellappa, Nilesh Saraf

Data on alliances among the top ninety-seven Enterprise Software Systems vendors is analyzed to understand the implications for their performance. A centrality measure, called sociotechnical capital, was computed to incorporate the transitivity of product-knowledge flows and technical compatibility requirements throughout the vendor alliance network. Regression analysis with firm performance as the regressand and socio-technical capital as the regressor yields significant estimates after controlling for firm size effects and product breadth.

Expanding Your Horizon: The Impact Of Network Horizon On Network Structure

D.W. Van Liere, O.R. Koppius

Over a decade of research shows that structural holes are sources for value creation and it is therefore advantageous to have structural holes in your ego network. The research question addressed by this paper is "What are the conditions that enable an actor to create a network structure rich with structural holes?"Past research has not yet revealed what conditions enable an actor to create an ego network rich in structural holes. We propose two constructs, one at the actor level and one at the network level that are hypothesize to influence the number of structural holes in a network. At the actor level is the network horizon defined as "that part of the network structure that is known to the actor". At the network level is the network ruggedness defined as "the heterogeneity of each individual actors network horizons". Rugged networks are characterized by a large heterogeneity of network horizons, flat networks are more homogenous. This paper uses laboratory experiments, using a business network simulation game, in which we manipulate network horizon and network ruggedness to explore their effects on the number of structural holes. Data from a series of experiments indicates an ambiguous effect of network ruggedness, for network horizon the results show that actors that have a more extended network horizon have more structural holes compared with actors who have a limited network horizon.

Shoulders To Stand On: *Network Analysis Of The Semantic Web Community*

Peter Mika, Tom Elfring, Peter Groenewegen, Yutaka Matsuo

The Semantic Web is a significant extension to current web technology that would enable computers to more easily understand, process and reason with the information available on the World Wide Web [Berners-Lee et al., 2001; Berners-Lee et al., 1999]. The idea of extending the current human-focused Web with machine intelligence has been first formulated by the original inventor of the Web (Tim Berners-Lee) and promoted since then by the World Wide Web Consortium (led by Tim Berners-Lee), the organization that is chiefly responsible for setting technical standards on the Web. Due to this initial impetus, the Semantic Web has quickly attracted significant interest from funding agencies on both sides of the Atlantic, reshaping much of the AI research agenda in a relatively short period of time. Our aim is to investigate the development of this nascent research community from a social network perspective. In particular, we analyze the possibly contradictory social strategies by which actors are able to occupy favorable positions either in terms of access to key resources or in terms of innovativeness. On one hand, we posit that centrality in this network correlates to the real world status reflected in holding key positions for accessing resources, a motivation for members of the network to move towards the center. On the other hand, strong

embeddedness in the core of the network (where those central positions are found) may result in overembeddedness and limit the actors ability to sustain innovativeness. Our method to study the dynamics of this community involves web mining methods [Mika, 2004], i.e. extracting information from online information sources in order to reconstruct the social network of Semantic Web researchers both at the present and in a historical perspective. We plan to validate our results by coordinating our work with a study of the Semantic Web research community in Japan, where the same methods of data collection are applied. Our contribution is thus two-fold. First, our methods go beyond existing work in extracting and using electronic data and merit discussion on their own as a promising way of obtaining dynamic data for network analysis purposes. Second, the specific data we collect allows us to study the effects of networks on status and innovativeness in scientific communities, with practical implications for the field of research policy. References[Berners-Lee et al., 1999] Tim Berners-Lee, Mark Fischetti, and Michael L.Dertouzos. Weaving the Web : The Original Design and Ultimate Destiny of the World Wide Web by its Inventor. Harper San Francisco, 1999.[Berners-Lee et al., 2001] Tim Berners-Lee, James Hendler, and Ora Lassila. The Semantic Web. Scientific American, May 2001.[Mika, 2004] Peter Mika. Social Networks and the Semantic Web: An Experiment in Online Social Network Analysis. In Proceedings of the IEEE/WIC/ACM International Conference on Web Intelligence, Beijing, China, September 2004.

C: Redondo 3

Attraction and Friendship
(Skvoretz)

Attraction Vs. Repulsion As A Basis For Homophily

John Skvoretz

The tendency for many social ties to be disproportionately intragroup is widely recognized. How a population's opportunity structure affects the working out of these tendencies to produce actual rates of intra vs. intergroup association is at the heart of Blau's (1977) influential "primitive theory of social structure." The network literature proposes two formalizations of Blau's ideas, labeled by Skvoretz (1991) as a methodological model and a theoretical model. The former, originally proposed by Marsden (1981), uses general log-linear models for cell counts while the latter uses concepts and derivations from biased net theory to express Blau's ideas. The theoretical model posits an underlying hypothetical process by which intra vs. intergroup ties are produced and the estimates of its parameters translate directly into probabilities of the occurrence of various biasing events in the hypothetical process. The methodological model has had, until now, no corresponding theoretical imagery. I show that there is, indeed, a theoretical basis for the methodological model, derivable from Huckfeldt (1983), who proposed a mechanism for generating homophily based on repulsion between actors from different backgrounds as opposed to attraction between actors of similar background. I explore this linkage and discuss its consequences for the study of the formation of intra vs intergroup social relations.

Friendship Among Graduate Students: A Social Network Approach

Miruna Petrescu-Prahova

This paper studies the network of friendship ties among graduate students in an academic department of a large public university. The first objective of the paper is to describe the structure of the network and to determine the extent of homophily among interactants, i.e., the tendency for people who are similar on various characteristics to be linked with one another. The second objective is to apply the model for dealing with missing data and assessing informant accuracy recently developed by Butts (2003). We solicit friendship information from all graduate students in the department using a cognitive social structure instrument and then apply the informant accuracy model to obtain estimates of the underlying network. We then employ these estimates for data analyses about homophily. We find that students in this department tend to have friends who are similar to them with regard to age, academic cohort, and citizenship status, but

not with regard to gender. The most important contribution of the paper, however, is that by applying the informant accuracy model we are able to study the network even without a 100 percent response rate, a condition on which traditional network studies have been highly dependent.

Gender Differences In Friendship Patterns

Deirdre M. Kirke

Teenagers are likely to select as friends other teenagers of the same gender. But the selection of individual friends results in the selection of a friendship network as that new friend connects the teenager indirectly to others. This paper uses case studies of peer groups from a complete network of teenagers in a community to examine how similarity in gender in dyads of friends results in different patterns of friendship ties being formed in the networks by the male and female teenagers. The implications of gender differences in friendship patterns for peer influence and chain reactions in teenagers' substance use are explored.

D: Redondo 1

Drugs and Disease
(Pelude)

Are Drug-Using Networks Formed By Injection Drug Users (IDUs) Truly Random?

Linda Pelude, John Wylie, Ann Jolly

Most disease transmission has traditionally been conceptualised as occurring between an infected person and a randomly selected number of contacts. It is assumed that on average, all the individuals in a network have a similar number of contacts which when plotted on a graph results in a bell curve. Do we really believe that injection drug users (IDUs) transmit HIV/HCV through random drug using relationships? Frequent drug use has been associated with injection equipment sharing. Therefore, we examined the distribution of the frequency of injection in order to determine if the distribution of drug injection equipment sharing networks may contribute to the transmission of HIV and HCV among IDUs. In addition, the structure and composition of IDU networks are described. Data used for this investigation is from a cross-sectional pilot study undertaken among Winnipeg IDUs (n = 142) in 2000. Eighty percent (n = 114) of IDUs reported injecting 2160 times a year or less. A small number of individuals (n = 10) reported injecting 4320 times a year or more (maximum 15000 times a year). The power law model provides a good fit (r = 0.99) for the available data. The form of the graph has important implications. In a scale-free network, such as that suggested by our data, contagiousness can be very low for an epidemic to develop, so that epidemics can reproduce despite few infected persons initially, compared to an epidemic in a random network(1). Randomly targeted interventions would have little impact on the spread of disease in a scale-free network and fundamentally different interventions would be required to reduce the transmission of HIV/HCV through sharing drug injection equipment. These preliminary analyses suggest that further investigation regarding the distribution of IDU networks is warranted.1Pastor-Sattoras, R. & Vespignani, A. (2001). Epidemic spreading in scale-free networks. Physical Review Letters, 86, 3200 – 3203.

Preliminary Analysis Of The Contact Structure Of The UK Cattle Herd

Matthew C. Vernon, Cerian R. Webb, M. Fred Heath

The aim of this work is to assess the effect of livestock movements on disease transmission, and to model how controls of livestock movement might impact upon disease spread. Data on cattle movement within the United Kingdom has recently become available. As part of the conditions for lifting an export ban on British beef following the BSE epidemic, the EU required that the UK should have "An effective animal identification and movement recording system". The Cattle Tracing System was introduced in September

1998, and the scheme was extended to include all cattle by the beginning of 2001.This cattle movement data may be represented as a large network. Cattle holdings are represented as nodes, with a movement of cattle between holdings being an edge. The data set contains around 78million movements of 23 million animals between 750 thousand holdings. Studies of human infectious diseases have shown that network-based approaches can be useful in modelling disease spread and control. We present initial analysis of the structure of this network, and discuss potential sampling techniques to facilitate analysis.

Sexually Transmitted Infection Networks In Manitoba, Canada, 2002-2003

Emily Meadows, John L. Wylie, Ann M. Jolly

Since 1997, Canada has witnessed an increase in the incidence of both C. trachomatis and N. gonorrhoeae. To further understand the population dynamics of these bacterial sexually transmitted infections (STIs), social network analysis techniques have been used to examine routinely collected notifiable STI data of laboratory-confirmed chlamydia and/or gonorrhea cases and their named sexual partners exposed to STIs in the province of Manitoba. The objective of this study is two-fold, 1) to construct sexual networks using STI registry data from June 2002 to October 2003, and 2) characterize networks using routine epidemiologic data supplemented with more detailed voluntary information on healthcare use, risk behaviours, and social/sexual interrelationships. Pajek was used to identify sexual network consisting of 8476 unique individuals (n=4683 cases, n=3793 contacts). There were 2,508 components, ranging in size from 2 to 33 individuals; 1,192 cases who named no partners. Sixty percent of the components were dyads, 23% were triads, 11%, 5% and 1% were of size 4-5, 6-10 and greater than 11, respectively. UCINET was used to identify four 2-cores of size 4, in components of size 9, 17, 20 and 32. Components were characterized relative to network size using network, demographic, infection and geographic summary measures. The largest components, (n > 15 individuals), were found to have the greatest difference in the age range of actors, mean age range = 18.7 years, despite the relatively constant mean age of actors across components of differing size. Larger components had more individuals diagnosed with both gonorrhea and syphilis, and contained more repeat cases and individuals with repeat nominations. Unique to this dataset was the identification of same sex partnerships; 31% of the components of size 15 or greater exhibited this feature. Further research is needed to examine the social forces behind the formation of these interconnected groups.

E: Catalina

Collaboration and Work
(Sardone)

Methods For The Identification Of Communities Of Practice From Email Logs: A Critical Overview

Giuseppe Sardone

This paper proposes a comparative analysis of methods for the identification of communities through observation of email exchange within organizations. All methods are automatic in nature and require only email logs as input data. The different methods are evaluated upon a series of criteria, particularly with regard to the possibility to correctly identify and characterize communities of practice. Their effectiveness is then tested in a real-world case, where the dataset comes from observation of emails exchanged, in a set period of time, by over 700 PhD students belonging to the same academic institution. Final considerations are made about limitations and future developments.

Strategies And Efficiencies In Organizational Email Networks

Nathaniel Bulkley, Marshall Van Alstyne

Our research examines the empirical relationship between social network processes and individual success. The context of our investigation is email patterns of executive recruiters and their performance. We have developed a unique three part data set composed of: (1) project level accounting measures of revenues, (2) surveys of individual perceptions of information technology and information sharing, and (3) direct observation of e-mail activity over a period of six months. We will present results on the effects of: network position, information flows and network efficiencies. Detailed communications data allow us to investigate social network strategies related to information flows and behaviors, which can provide insight into the ebb and flow of network structure. We have correlated performance to topological factors such as structural holes and betweenness centrality, controlling for behavioral variables and job level. For example, the performance of junior consultants relates positively to investments made in building their social networks through search strategies, such as directing proportionally more communication to people with whom they have not worked in the past. In contrast, the performance of senior partners relates positively to more intensive focus on existing relationships. In addition we have found evidence of network efficiencies, related to factors such as email size and response times. Including control variables in addition to measures of network position has increased the explanatory power of some of our performance models. Our larger goal is to better understand how the email "fingerprints" of individuals differ and what such differences reveal about the social network strategies and efficiencies individuals pursue within organizations.

Structural Information From Email Networks Enhances The Collaborative Workspace

Danyel Fisher, Paul Dourish

Everyday work frequently involves collaborating with others, but the structure of collaboration is frequently invisible to conventional desktop applications. This presentation argues that this separation needs to be broken down by building systems that better acknowledge the roles and relationships of other people within computer systems. This presentation will focus on ways that relationships are expressed through email and other forms of communication. Using dynamic social network visualizations and extended interviews, we have identified a series of network "patterns," and have used those patterns to develop more advanced interfaces that connect users with each other. The networks that are examined are egocentric, looking at known communication to pairs and groups of alters. In addition, edges on the networks are coded by time; alternate visualizations are used to examine temporal aspects of the interactions.

F: Marina

Geography
(Tita)

Discrete Choice With Social And Spatial Network Interdependencies

Elenna R. Dugundji, Joan L. Walker

An outstanding challenge in econometric discrete choice analysis is the treatment of the interdependence of various decision-makers' choices. When modeling such interdependencies, it is useful to apply the formal concept of a network with nodes representing decision-making entities and links representing interdependencies between these entities. When considering travel demand behavior, both social and spatial aspects of networks can be relevant. This paper illustrates issues in the empirical estimation of a discrete choice model with social and spatial network interdependencies using mixed GEV model structures. Five modeling strategies are presented to highlight some main hypothesized interaction effects. Estimation results on commuter mode choice behavior in the greater Amsterdam region considering nine variations on three network treatments suggest that for this particular case study and the models under consideration, aggregate field effects representing social and spatial network interactions between an agent and the aggregate behavior of other reference agents do indeed have explanatory power. The fit is better than models with mixed effects representing correlation between respondents via normally distributed error components, without field effects. Furthermore there is no statistically significant gain in fit by adding mixed effects, when the field effects are already included in the model. The best performing model strategy for this particular case study is what we term a "random field" effect model, with unobserved individual heterogeneity on the group mean state dependence. Limitations in the present work are summarized and suggestions for future research efforts are outlined.

Teams As Networks In A Connected Organization: The Critical Role Of Geographic Dispersion

Jonathon N Cummings, Tanu Ghosh

Project teams in organizations are bounded networks of interdependent individuals with a shared goal. Like other kinds of social networks, project teams rely on relationships among individuals for the flow of knowledge, information, and ideas. One barrier to this flow, geographic distance, has received much attention in the academic literature for its powerfully negative effect on face-to-face communication. With the increasing prevalence of mobile phones, electronic mail, and other communication technologies in organizations, it is important to re-examine how distance impacts interaction among members of a social network. Towards this end, survey data was collected from 1640 individuals across 317 project teams in a single organization (representing 3417 unique relationships). Controlling for age, gender, company experience, company rank, project type, years known, and how they met, analyses were conducted at the relationship level using hierarchical linear modeling. The results suggest that while geographic distance significantly increases the likelihood that two individuals will use telephone, video conferencing, and web conferencing with each other, two individuals are significantly more likely to use electronic mail and instant messaging with each other when they are in close proximity. Overall, the use of communication technology does not mediate the strong negative association between geographic distance and interaction -- physical location still has an impact on interaction in social networks.

The Effects Of Physical Space On Social Networks: Correlations Of Sociometric And Geographic Data From Coastal Ecuador

Sarah Bates, James Trostle, William Cevallos, Betty Ayovi, Joseph Eisenberg

Study of social networks often neglects the surrounding physical environment as a factor contributing to both individual and network attributes. Relative physical proximity of actors is not independent of social connections; physical closeness plays a role in the ability to establish social connections, which in turn influence people's movements. As part of a larger study examining social development and disease changes in 21 villages of Ecuador's northern coastal region, we collected social network data for 9 villages in the summer of 2003. We also collected GPS latitude/longitude data for all structures in the villages, enabling us to characterize the underlying geographic space in which the social networks exist. Methods: UCINET

software was used to construct binary network matrices and compute individual and network attributes. To quantify relative physical proximity of all individuals, a simple spatial index was created from the harmonic mean of distances between actors. The HOPACH procedure of the statistical package R was used to identify clusters in both physical and social space. Results: The spatial index varies greatly [70.0,1210.0] between individuals and between villages in the study. Individual attributes (eg. degree, closeness) are highly correlated with spatial index and geographic position within a village. The structures of identified social clusters and geographic clusters are not random with respect to each other. Conclusions: Social contacts are not independent of the larger physical space in which they exist. Geographic position should be accounted for in certain applications of social network analysis.

G: Esplanade

Community
(Hanson)

Assessing The Growth And Structure Of A Community Based Safety Promotion Network

Dale Hanson, David Durreheim, Reinhold Muller.

AIM: The Mackay / Whitsunday Safe Communities Project (MWSCP) seeks to reduce injury in the region by facilitating the development of a community based safety promotion network. This study aims to identify whether the project has been successful in developing this network and thereby the social capital necessary to promote safety in the community. METHOD: A questionnaire regarding the nature and quality of relationships was distributed to all people who had attended one or more meetings of an action group affiliated with the MWSCP. A snowballing methodology was used to follow relationships established outside the MWSCP. Data was analysed using UCINET 6.0 software. RESULTS: The network, which initially consisted of 64 people, has expanded to include over 100 members, representing 47 government, business and community originations. More importantly the network has become more cohesive, with the average degree increasing from 2.06 to 4.72 and the density from 0.02 to 0.05 (p < 0.0005).The project now has a strong core periphery structure centred (centralisation index 21.3% cf 52.7%). Members of the network are much more likely to be connected in groups (Clustering coefficient 0.25 cf 0.64).Analysis of member roles indicates that a small number of central actors play a critical role in facilitating communication between different groups within the network. CONCLUSION: Social Network Analysis is a useful tool for documenting the growth of a community safety promotion coalition and the development of social capital within the coalition. Two distinct forms of social capital have been documented. Firstly the growth of network cohesion and secondly the critical role played by a small number of key actors who perform an important brokerage function within the network.

Collective Action And Social Capital In Rural India

Wendy Janssens

We consider social capital at the community level as the propensity to engage in collective action. This propensity is often thought to depend on the amount of trust and the norms of reciprocity and cooperation in a community. However, few field studies offer large-scale quantitative assessments of the relationship between social capital, trust and collective action. A unique data set based on a large-scale survey of a women's empowerment programme in rural India, allows us to examine these interdependencies. The survey covers two thousand respondents, both participants and non-participants living in programme villages, as well as respondents in control villages where the programme is not yet active. We econometrically analyze the simultaneous relationships between trust in community members and in strangers, contributions to community projects, assistance to other households, and norms of reciprocity. We find that members of the women's groups are more trusting and more likely to cooperate than non-participants are. In addition, we find that women in programme villages who do not participate in the programme themselves are significantly more trusting and more cooperative compared to women living in

control villages. This suggests strong spillover effects of the programme and increasing social capital among non-participating community members. Norms of reciprocity are negatively related to trust or contributions to collective action, but positively associated with assistance to others.

Neighborhood Network Structure Of Social Capital:An Analysis Of The Los Angeles Experiment

Nail Oztas, Ph.D., Chris Weare Ph.D., Julit A. Musso Ph.D

This study empirically investigates the explanatory power of different network theories of social capital in an exploratory study of neighborhood councils in Los Angeles. Network theories of social capital argue that actors that are "better connected" perform better. However, different network theories of social capital make contradictory predictions and a disagreement exists in the literature about what it means to be "better connected" (Coleman, 1998; Burt, 2000). We analyze network data collected from 533 members of 41 neighborhood councils across the city of Los Angeles and performance data collected from staff members of two City agencies, the City Council and Department of Neighborhood Empowerment. We find statistically significant relationships between the network structure(s) related to social capital and the performance of neighborhood councils. Specifically, two types of social capital, bonding and bridging, explain neighborhood council performance. These two different types of social capital, however, are created by two different levels of networking activities; internal versus external network structures are found to be distinct sources of social capital. In addition, these two different types of social capital have different functions, providing resources either for citywide policy-making activities or for implementing local projects. Contrary to Burt's suggestion, bridging and bonding types of social capital complement each other in a different way within this specific institutional context: Neighborhood councils with less internal network constraint and high external network density are found to be the highest performing organizations. Theoretical and practical implications of these findings are discussed.

Halftime Activities
Saturday Halftime: 12:00-2:00

Redondo 1

Viszards: Analysis and Visualization of KEDS Networks

Vladimir Batagelj, Ulrik Brandes, Jeffrey C. Johnson, Lothar Krempel, Andrej Mrvar

At the Sunbelt XXII 'Viszards session', we presented different analyses and visualizations of the media coverage of the September 11 terrorist attacks, at Sunbelt XXIII we analyzed 'The Summer Joker' network, and at Sunbelt XXIV our attention was on the players market of the football World Championship 2002. With this year's session we are continuing this tradition.
Rather than a series of contributions on related subjects, this session features a single, joint presentation by all contributors. Our aim is to demonstrate the richness and power of network analysis, in particular when supported by visualization. We therefore present a multi- perspective analysis of a single data set, utilizing a broad range of visualization methods.

This year we will analyze KEDS (The Kansas Event Data System) networks - http://www.ku.edu/~keds/ .
They use automated coding of English-language news reports to generate political event data focusing on the critical regions such as Middle East, Balkans, and West Africa. These data are nice examples of temporal multiple (multi-relational) networks.

Bay

Panel on Informal Networks within Formal Organizations

Charles Kadushin, Robert Cross, David Krackhardt, Valdis Krebs, Amalya Oliver

Ever since Max Weber described the ideal elements of bureaucracy, social scientists have been showing how organizations deviate in actual practice from the ideal type. Beginning in the late 1920's and with publications as late as the 1950's, Elton Mayo and his colleagues Roethlisberger, Dixon and Homans showed how informal networks flourished within the confines of formal organizations. In the 1950's Peter Blau reported on the informal relations within a public bureaucracy that allowed it to get its work done. More analyses in the 70's were devoted to leadership and informal networks within formal organizations. All agreed that informal networks within formal organizations are conditioned by the exigencies of what Homans called the "external system." Some informal networks operate at odds, while others augment and aid the formal. In recent years, however, published work on this topic has become sparse even at the spread of network consulting to formal organizations has increased as modern techniques of network graphing and analysis have flourished. Lack of publication has not meant that the problems have been solved and a body of systematic propositions has emerged. On the contrary, there is no formal recognized set of propositions that link the characteristics of formal systems to the nature and types of informal organization that flourish within them. This panel features three experienced network analysts and consultants who will attempt to fill in the missing ideas drawing upon both published work and their own experiences. Observers of the panel are invited to become participants, building upon the panel and adding their own work to what we hope will be some emerging propositions that will revitalize these old concerns.

Catalina

Putting Network Theory into Practice to Reduce Transmission of Sexually Transmitted Diseases in California: Successes and Challenges

Dan Wohlfeiler, Ed Laumann, John Potterat, Michael Samuel

Putting Network Theory into Practice to Reduce Transmission of Sexually Transmitted Diseases in California: Successes and Challenges.Network theorists and infectious disease epidemiologists have largely toiled in two separate professional networks. Panelists will focus on bridging this gap by describing successes and challenges to applying network concepts to two real life situations: venue approaches and outbreak investigation. Venue approaches: In 2003, the California Department of Health Services met with theorists and practitioners to develop interventions for gay men who continue to experience high rates of sexually transmitted infections (STI). Participants highlighted the need to fragment sexual networks, separating high- from low-risk individuals and the need to help men make wiser choices in partner selection. Particular attention was given to applying these two themes to bathhouses, circuit parties, and internet sites specifically because each venue facilitates mixing between high- and low-risk individuals. Suggestions included incorporating algorithms at the entry point to websites where individuals search for partners; encouraging websties and venues to ask patrons to disclose risk behavior and/or HIV/STD status; and creating venues catering to low-risk individuals.Outbreak investigation: In 2003, a gonorrhea outbreak occurred among heterosexuals in a rural California county. Epidemiologists conducted social/sexual network analysis using Ucinet 6.0 and NetDraw 1.0. One central network with diverse demographics characteristics (i.e. race/ethnicity, age and gender) was identified. Although field staff included experienced disease investigators, they lacked experience in the collection of consistent partner information from all patients. Program staff also questioned the additional value of network analysis for interventions. Use of network analysis software highlighted several challenges, including the need for rapid staff training, for updating data collection systems, and for better understanding the implications of incomplete network data sets. Conclusions: Ongoing collaboration is needed between network theorists and practitioners to plan and evaluate venue-specific interventions and to improve outbreak control efforts. Development of practical network tools for sexually transmitted disease clusters is also needed.

Saturday 3 Afternoon: 2:00-3:30

A: Redondo 2

**Methods
(Everett)**

Irregular Equivalence: Testing For Regularity V. Dispersion On Clusters Of Social Relations

John P. Boyd, Kai J. Jonas

A number of social relations are clustered by a Kernighan-Lin method that is independent of the regularity of the individual blocks. These blocks can then be tested for regularity and other properties, such as dispersion (variance over mean). Regularity has a negative correlation with dispersion, but given the empirical rarity of regularity, the authors focus on dispersion, which is important in biology and other fields. The statistical models depend upon whether the data matrix is symmetric or anti-symmetric, and whether it contains binary entries or nonnegative integers. Binary matrices suggest beta-binomial, binomial or hypergeometric distributions, as determined by a parameter, whereas matrices with nonnegative integers suggest a negative binomial distribution. The results generally support the model of over-dispersion for all numbers of clusters, while rejecting regularity.

Distributions of Contribution to The Social Networks ListServ

Scott Feld, Michael Harrison

Distributions of Contribution to The Social Networks ListServThe contributions to the SocNet listserv have an expected power law type distribution, where a few individuals make many contributions. Contributions were grouped into threads, composed of an initial contribution followed by responses. Initial announcements and asides were highly concentrated, but no individual contributed large numbers of questions. Responses to all types of initiations were less concentrated than initial announcements and asides, but more concentrated than initial questions. This listserv's focus on announcements accounts for its extremely concentrated pattern of contribution. Topics of contributions and characteristics of contributors were also examined.

Why Are Networks The Shape They Are?

Martin Everett, Steve Borgatti

Many networks share a common structure. They are made up of single or multiple cores with peripheries. The cores maybe small possibly singletons, and the way the peripheries interact with each other and with the cores give rise to different structures. This is particularly true when the networks focus on communication. In this paper we tentatively suggest some reasons for these structures drawing on ideas from Physics, Biology as well as the Social Sciences. We do not come to any definitive conclusions but hope to start a debate which begins to answer a common question namely 'What should my network structure look like?'.

B: Bay

Organizations
(Danowski)

Organizational Communication Networks And Manufacturing Plant Productivity

James A Danowski, Ken Riopelle, Julia Gluesing, Scott Blow, Mark Ferencz, Fred Hallway
Mark Henry

Ford executives argue that there is a relationship between communication and corporate profits, but is there evidence? Are communication networks about costs of industrial materials, not actually placed on vehicles during assembly, associated with the company's benchmark plant-level performance measure: average cost per vehicle unit produced? Respondents were plant members formally identified to reduce industrial materials costs, with a steering committee from corporate headquarters. The network sizes in four assembly plants were: n=38, n=41, n=42, and n=51. Members estimated the frequencies of communication using a roster on a set of 9 categories dealing with industrial materials cost message content and media used, and a 10th question tapping relationship closeness. The first 9 network generators loaded strongly on a first factor, while the closeness item formed factor two. Network analysis was performed on each plant's factor one data using UCINET 6. Several network variables had moderate to strong levels of association with the cost per vehicle measure, although were insignificant because of the sample size of 4 plants: network density, $R2=.48$; normalized betweenness centrality, $R2=.36$; percent of betweenness centralization, $R2=.69$. Valued network density-- total link strengths in the network divided by the total possible links--had an $R2 =.97$, significant at $p < .01$ level. The key difference was that the highest performing plants had members communicating weekly or more often. Thus, how talk was distributed across nodes was not as important as its distribution across time. Projections from the results show that improving communication surrounding industrial materials, which is less than 1% of vehicle cost, can result in 10's of millions of dollars saved annually in the organization.

Predicting Organizational Innovation: Social Network Brokerage, Knowledge, And The Tertius Iungens Orientation

David Obstfeld

This study examines the tertius iungens orientation, a strategic, behavioral orientation toward connecting people in one's social network by either introducing disconnected individuals or facilitating new coordination between previously connected individuals. The tertius iungens mechanism contrasts with the tertius gaudens mechanism emphasized in structural holes theory that concerns the advantage of a broker who can play people off against one another for his or her own benefit. Ethnographic observations of an automotive design process indicate tertius iungens activity is central to the combinative activity at the root of innovation within the firm. Social network data is presented to demonstrate the connection between the tertius iungens orientation, network constraint, and innovation, and to suggest the ties between the tertius iungens orientation and knowledge movement. A typology of brokerage and tertius iungens activity based on field observations is also presented.

Social Capital Within The Board Of Directors

William B. Stevenson, Robert F. Radin

Attempts to mobilize support within corporate boards of directors around controversial issues are hypothesized to depend on social capital based on interactions on the board. Social capital is defined as preexisting ties to others on the board, being in the same cliques with others on the board, or being on the same board committee. At the same time characteristics of the individual seeking support based on formal position or status, such as being the CEO or being centrally located in the network of board members are hypothesized to interact with the dyadic social capital variables, allowing some board members more access to social capital than others. Hypotheses are tested in a multilevel model of dyadic ties and individual characteristics.

C: Redondo 3

**Personal Networks
(Jäger)**

The Impact Of Personal Core Networks On Attitudes Towards Immigrants In Germany

Angela Jäger

In this paper we will explore the impact of personal core networks on attitudes towards immigrants in Germany. For decades there have been numerous attempts to assess and explain the content, distribution and social consequences of stereotypes and prejudices towards immigrants based on the assumption that 'social distances' are important factors for the structuring of interethnic relations. So far, empirical research on opinions and attitudes towards immigrants has focused primarily on individual attributes and characteristics. Evidence from other research fields has shown that relevant reference persons (also called alters) have an influence on the formation and change of personal opinions and attitudes. However, the impact of the immediate social context has largely been ignored in research about attitudes towards immigrants so far. Therefore, it remains unclear to which extent individual attitudes towards immigrants reflect actual opinions of relevant communication and interaction partners. Which underlying processes of social influence occur in the context of day-to-day interaction? Which structural factors mediate the impact of the personal network? Are some persons more susceptible to social influence processes with respect to their attitudes towards immigrants? And, are some alters more influencing than others? In order to answer these questions we use cross-sectional survey data (N=2.010) collected on our own which contains 892 egocentric networks of adult Germans including information about respondents' perceptions of alters' attitudes towards immigrants and alters' self-reports in this respect. Results reveal that individual ethnocentrism is conditional on the attitudes of the reference persons (controlling for other determinants). The strength of the impact of personal core networks depends on individual characteristics of the respondents as well as on structural features of the personal network. These moderating effects are discussed with respect to the perceived and actual attitudes of the reference persons.

Toward An Affective Theory Of Instrumental Ties

Tiziana Casciaro, Miguel Sousa Lobo

We provide theoretical arguments for the role of interpersonal affect, both positive (i.e., like) and negative (i.e., dislike) in instrumental ties. We investigate these arguments empirically using data from four network studies of employees in a large information technology corporation, MBA students at a U.S. business school, employees at an entrepreneurial IT company, and staff personnel at an academic institution, respectively. Based on a methodology drawing from social psychological models of interpersonal perception, social network analysis and hierarchical Bayesian models, we offer evidence for the extensive impact of interpersonal affect on the structure of instrumental ties. We specifically explore how affective considerations modify the use of task competence as a criterion for the choice of work partners. The results of this research point to the need to broaden substantially the domain of affect in the literature on instrumental networks.

When Institutions Meet Networks: Educational Homogamy In China

Lijun Song

Homogamy studies can be traced back into the beginning of the 20th century. Among them, the trend of educational homogamy across spaces and over time has received more academic attention recently. Almost all of these studies assume a linear upward developmental process of economic modernization as the causal background. Therefore, there is little attention to educational homogamy in varying non-economic institutional environments. This paper will attempt to explore the shifting institutional effects on educational homogamy based on evidence from China. The findings from log-multiplicative layer effect models show that in China the strength of association on education for the marriage cohort within the ten-years Cultural Revolution is smaller than those for marriage cohorts before and after the Cultural Revolution. The legitimate base for education was destroyed by the destratification policies in this revolution, which further influenced individual mate selection behaviors regarding education. These

findings imply that sociologists consider the dynamic interplay of the institutionalism and the network analysis and especially the structural constrain to network formation and capital access at specific historical places and time.

D: Redondo 1

Add Health Networks
(Hoffman)

Effects Of Peer Influence, Peer Selection, Ethnicity And Gender On Adolescent Smoking

Beth R. Hoffman, Thomas W. Valente

Peer pressure has long been thought to be the primary type of social influence affecting smoking in adolescents, but recent evidence indicates that peer selection is a factor as well. To date, the best way to study differences in influence versus selection processes in a sample is to examine social network data longitudinally. This study examines the roles of peer influence and peer selection in the relationship between friend and adolescent smoking. The relationship of gender and ethnicity to this model is discussed as well. Data from the Adolescent Health (Add Health) data set was used for this study. Measures included general survey items as well as social network measures of the five best male and five best female friends in the current grade level. Structural equation modeling was used to examine the associations between adolescent smoking, and proportion of friends who smoke over the two time points. Comparisons of model fit across gender and across ethnicities were conducted. Results of the analyses and implications for adolescent tobacco prevention will be discussed.

Friends And Lovers: Racial Homophily In The Social And Sexual Networks Of American Adolescents

Anthony Paik, Christabel Rogalin

Scholarship has consistently found racial homophily in social networks to be not only a pervasive feature in the United States but also the most important socio-demographic characteristic. Nevertheless, despite the burgeoning literature on homophily in different types of ties (i.e., among discussants, confidantes, friends, co-workers, intimate partners), few studies examine patterns of homophily across different types of networks. Using Wave I of the National Longitudinal Study of Adolescent Health (Add Health), we investigate racial homophily in both social and sexual networks. Specifically, we examine how racial homophily in friendship networks of American adolescents affects their choices of the racial characteristics of their sex partners. To isolate the effects of racial homophily in friendships, we also assess how opportunities for interracial dating are restricted by school composition, the local availability ofpotential sex partners within schools and specific grades. We hypothesize that the size of a racial category in a school will be positively associated with the likelihood that a member of that category will be chosen as a sexual partner. We also expect that imbalanced sex ratios will be positively associated with the formation of interracial sexual relationships. Finally, we suggest that racial homophily in friendship networks will account for the observed homophily in sexual networks. We test these hypotheses via generalized discrete choice models, or mixed logit models.

Network Intergenerational Closure And Academic Achievement

Jennifer Glanville

Intergenerational closure, or the extent to which parents interact with the parents of their children's friends, is highlighted in the literature on adolescent development and academic achievement. As Coleman argued, closure enables parents to better monitor their children's activities and provides for stronger norm reinforcement. However, the empirical evidence on the effects of closure on adolescent academic

achievement has been mixed. Using the National Longitudinal Study of Adolescent Health (Add Health), the present study makes two improvements over previous operationalizations of closure. The Add Health measure captures frequency of interaction, rather than the more typically used number of friends' parents known. In addition, using Add Health enables me to measure intergenerational closure at the level of friendship networks. In other words, I calculate the average level of parental communication with parents of the adolescent's friendship network. I find that this network level measure of intergenerational closure predicts higher grades, net of the more typical measure that only taps the respondent's parents' relationships with other parents. I also test the hypothesis that closure better enhances academic achievement when parents and children are embedded in networks with strong pro-school norms. I find that closure positively interacts with the average grades of the students' friendship network, suggesting that closure has a stronger positive influence when adolescents' friends are high achievers.

E: Catalina

Knowledge and Perception
(Wang)

Knowing Who To Know In Knowledge Sharing Virtual Communities: Use Of Structural Roles Information And Social Network Analysis

Jc Wang, Jong-Chang Ho

Inquiry and response, or knowledge sharing, in virtual community can take three forms: anonymous inquiry, know-what search, and know-who search. Posting questions in a forum and waiting for volunteers to answer is anonymous inquiry. Know-what search refers to keyword or content-based search where information is found by keyword matching. However, knowledge, for most of the time, is stored within people. Transferring and acquiring knowledge directly from people will achieve better results than searching it from documents or databases. Virtual Communities provide effective platforms for interaction and play pivotal roles in making provision for the basis of analysis as all the ask-response paired relationships are automatically recorded. Information stored in the interaction platforms consists not only knowledge contents, but also the information of knowledge providers and searchers' network positions, connective relationships, and network structures. In this paper, we demonstrate how to apply social network analysis to analyze the interaction data for generating the "role information" of the knowledge searchers and providers. Integrating concepts of uncertainty in knowledge searching and sociometric used in social capital, we develop a mechanism for role matching in knowledge search for each questions posed. Roles identified in this approach including central, network entrepreneur (e.g. spanning structural holes), neighboring mediate (e.g. knowledge gate keeper), and resource competitor (e.g. structural equivalent players). The result is demonstrated and visualized in a web-based community platform and tested in a real-world programmer forum-based community.

Social Structure And Perception Of Informational Diversity

Inga Carboni, Kate Ehrlich, David Millen

People who are central in a workgroup may perceive the functioning of the group more positively than people in peripheral roles. This lack of awareness may have negative consequences for group outcomes. If central members, who are more powerful than peripheral actors (Leavitt, 1951), do not perceive breakdowns in group functioning, the group may not discover that it is operating at a suboptimal level. For example, informational and functional diversity in groups has been associated with innovation, creativity, and complex problem-solving (Nemeth, 1986; Williams & O'Reilly, 1998). However, diversity can only benefit groups if information is communicated and discussed (De Dreu & West, 2001). If peripheral members feel that their opinions are not valued, they may be unwilling (or unable) to make unique contributions to the group. To understand how centrality may be related to perceptions of group functioning, we conducted a study of a small global sales team who worked together on some accounts and

separately on others. The study used a combination of bounded and personal network questions to look at networks of communication, awareness, information sharing and accessibility. We asked each person to indicate their level of agreement with statements about whether problems are discussed openly and honestly and whether diverse perspectives are valued. We found a significant effect of communication and information degree-centrality and a trending effect of centrality in the accessibility network, on perception of openness of discussion and value of diversity. These results suggest that people who believe that diversity is valued are also people who communicate more with others, are more likely to be contacted for information by others, and are somewhat more likely to be perceived as accessible.

What You Know Is Who You Know–Patterns Of Relations And Ecological Knowledge Distribution Among Small-Scale Fisherfolk In An East African Village

Beatrice Crona, Örjan Bodin

Social networks are one factor determining the flow of information within communities and as such may be important in determining successful implementation of community based management. This study investigates the local ecological knowledge held by groups of fisherfolk using different gear types and operating in spatially distinct subsystems of a coastal seascape in southern Kenya. It further attempts to link the distribution of local ecological knowledge among groups to structure in the social network. Results show a good understanding of general ecological processes among all groups but differences in knowledge with respect to the distribution of some economically and ecologically important species as well as their associated life histories. Furthermore, such differences in specific ecological knowledge are also reflected in the structure of the social network. These results suggest a potentially important role of social network structure in determining the distribution of ecologically relevant knowledge in a community highly dependant on a complex and dynamic natural system. Network structure may thus be one significant factor to consider in order to successfully implement adaptive community-based resource management.

F: Marina

**Sports
(Lusher)**

Individual And Team Attitudes Towards Women In Elite Level All-Male Sporting Teams

Dean Lusher, Garry Robins, Peter Kremer

The attitudes and behaviours of men towards women are an important societal issue and have attracted recent negative attention to various football codes in Australia. While only a minority of elite level sportsmen may be implicated in extreme behaviours, a central issue is how the norms that permit such behaviours – even among only a few – are developed and maintained. In this study of elite level all-male sporting teams we examine the range of player attitudes towards women and relate them to the social structures of the team using a variety of social network methods including exponential random graph (p*) models. In these models, we include player attitudes as node level variables together with the new p* specifications proposed by Sniders, Pattison, Robins & Handcock (2005). For the purposes of this presentation, we focus on models for one team as a case study. We find that central individuals within the team tend to hold less misogynistic attitudes than those on the periphery. These peripheral members are likely to be younger men and not highly central in networks examining playing ability, influence within the team, or admiration from others. They engage more readily in negative behaviors with other team members, such as having differences of opinion, avoidance of others, and putting others down, quite often directing these behaviors towards other individuals with similar opinions towards women. Nevertheless, when structural core-periphery tendencies are controlled with the new model specifications, these players have a significantly greater tendency for mutual friendship relations with each other, suggesting that attitude maintenance and friendship relations may be mutually reinforcing. The attitudes of these more peripheral players seem not to be influenced by those of their more senior and central peers, indicating that

more general norms of behaviour within the team may have an overriding effect. The younger players may be bringing to the club attitudes that were associated with their high status within secondary school hierarchies. For attitude change to occur, these players may need to move from the periphery to more central positions within the team structure, where they may come to identify more closely with publicly espoused club values.

Network Analysis Of Basketball Passing Patterns

Alan Reifman

From a 1980 analysis of a soccer match by Gould and Gatrell to a SOCNET discussion thread on the Euro 2004 soccer tournament, the idea of treating ball passes between athletes in team sports as links between nodes has periodically inspired network researchers. As opposed to long-term linkages such as friendship choices, athletes' passes represent rapid real-time decisions, an interesting area in its own right. Learning how these decisions affect team success could be another benefit of this research. Accordingly, I present results of a pilot study of how teams in the 2003 National Collegiate Athletic Association men's and women's basketball tournaments passed the ball. Each assessment involved mapping from player to player (with directional arrows) each pass made by a given team in the first four minutes of a game, based on videotapes. I concentrated on the first four minutes because teams would likely at this stage be executing their coaches' pre-game strategies; further, the necessity of repeatedly replaying the video to verify passing sequences resulted in each four minutes of game time taking up to 30 minutes to code. Ten assessments were completed (three teams on two occasions each, and four teams once each). Three areas were examined: consistency of teams' passing configurations from one game to another (for the teams that were observed twice); concentration of ball passing (outgoing and/or incoming) in one or two players' hands vs. balanced distributions; and the presence of cliques. Syracuse, which won the men's championship, exhibited in both its observed games balanced ball distribution (e.g., a narrow range between the most and least active players' involvement in passing) and an extensive system of three-player cliques. Texas, another men's "Final Four" team, showed a contrasting pattern of concentration of the ball within a single passing dyad.

Who Passes To Whom: Analysis Of Optimal Network Structure In Soccer Matches

Jegoo Lee, Stephen P. Borgatti, Jose Luis Molina, Juan J. Merelo Guervos

The purpose of this research is to explore whether there are significant relationships between communication structure and performance of teams. In this paper, we consider network centralization / concentration as a factor explaining the relative performance of teams in a soccer tournament. Matches in the UEFA 2004 tournament were studied. The statistical results suggest that both differences in out degree centralization and differences in core/periphery concentration are related to a relative team performance. This suggests that the presence of a coordinating role in a team has an effect on performance. However, the special nature of the dataset creates a number of problems for the statistical analysis, and a secondary goal of this research is to establish an appropriate methodology for handling these kinds of data.

G: Esplanade

Trust and Social Capital
(Van De Bunt)

A Model And Exploration Of Within-Groups Social Capital

Harry J. Van Buren III

There has been in recent years increasing academic and popular attention given to a concept called "social capital." Social capital—especially at the organizational level—has the promise to become an important theoretical framework for management scholarship and organizational practice. To explore the within-groups social capital model developed for this project, a study of six Episcopal Church parish governing boards (called vestries) in the midwestern United States was undertaken. Thirty-one respondents provided usable data. Follow-up interviews with parish priests were also conducted. Within-groups social capital—defined as a discrete group's ability to agree upon and effect common goals through the trusting relationships among its members—is proposed to be linked positively with group performance, although the effective use of external ties is also proposed as a moderating variable. Two precursors of within-groups social capital are proposed to exist: ideological homophily (agreement on common values germane to the group) and philos ties (in which there is interaction, affection, and a relationship that has lasted over time). There was some observed relationship between within-groups social capital and its two proposed precursors, in addition to an observed relationship between within-groups social capital and group performance. Network-oriented measures of social capital were not positively associated with any of the variables in the study, although a social capital scale did isolate two previously-identified components of social capital at collective levels of analysis: associability and resilient trust. External ties did moderate the relationship between within-groups social capital and group performance, as hypothesized.

The Evolution Of Intra-Organizational Trust Networks: An Empirical Test Of Four Theoretical Trust Mechanisms

Gerhard Van De Bunt, Rafael Wittek, Maurits De Klepper

In this paper we present and test four theoretical mechanisms that suppose to explain interpersonal trust. Here we apply these theoretical claims on the development of closed intra-organizational trust networks: 1) Sharing group theory suggests that trust is a result of high functionally interdependencies between organizational members. 2) Cognitive dissonance theory hypothesizes that trust is a result of mainly two (endogeneous) network mechanisms, reciprocity and balance. 3) The homophily hypothesis claims that trust is a result of shared attitudes, views, preferences, et cetera. 4) The control literature relates several sources of control to trust: formal control, informal direct control, and informal indirect control. Here we focus on the formal hierarchy, gossip behavior (i.e. indirect control via third persons), and structural hole theory. Data is collected in a German paper factory at four points in time during 1995 and 1996. De four above mentioned mechanisms are tested by means of the so-called actor-oriented statistical model (SIENA) as developed by Snijders and colleagues.

Toward A Theory Of Trust In Chinese Organizations

Luo, Jar-Der

The purpose of this research paper is to study how trust develops from various types of relationships within different Chinese organizations. For Chinese, generally, there are three moral bases for trust relations, pao, lun and tung. Fei proposes the theory of cha-shiuh-ger-jyu illustrating that a Chinese divides his or her social ties into several circles and different circles imply different moral standards. The inner-most circle

generally consists of family members and "simulated family ties. This circle is good fit for "need principle". That is, the needs of "family" members should be satisfied, and their behaviors should be trusted without any doubt. The principle of lun describes the standard behaviors in the relations of this sort. Emotional supports make favor-exchange relations turn to be "family members".Insiders, including friends and persons to whom one feels particularly close, fit in the next ring under favor-exchange principle, by which trust can be built up from frequent exchange of favors. Pao is the social exchange of advice and information in Chinese organizations.Persons who fit in the outer-most ring under fairness principle may come to be personally trusted general ethic principles of fairness and the conservative process of repeated exchange. Outside the outer-most ring are strangers. Economic exchange and cooperative actions require minimal trust, but strangers are not trusted at all by Chinese. So tung, or the ways finding common grounds, is used for strangers from outside to become out-group members. Social similarity is a strong base to form group identification. In this paper, four hypotheses are built. There were three research sites used in this study. Advice-exchange hypothesis was confirmed, and emotional-support hypotheses passed the examination only in the case of Taiwanese City Government. An interesting finding is that no factors could lead the Mainland Chinese to trust each other's honesty, except providing information to them.

Saturday 4 Afternoon: 4:00-5:30

A: Redondo 2

**Multiplexity
(Fonti)**

A Multiplex p2 Model

Bonne J.H. Zijlstra, Marijtje A.J. Van Duijn

The p2 model is a statistical model for the analysis of social network data. The dependent variable is a binary network, or directed graph, on a given set of actors. In the p2 model, differences between actors in attractiveness and productivity (outgoingness) are modeled by random effects, possibly after regressing them on actor attributes, with parameters for the variances and the covariance of attractiveness and productivity. The model further includes parameters for density and reciprocity which can be related to dyadic explanatory variables. An extension to the p2 model will be presented for multiplex networks. Random effects are included for attractiveness and productivity for all dependent networks. These random effects are assumed to come from a multivariate distribution. Hence the relation between attractiveness and productivity for different binary networks can be examined. Apart from the extended random effects, this model also includes parameters for the density and reciprocity. All parameters can be related to covariates. For the multiplex p2 model MCMC estimation is used. The model will be illustrated using an empirical dataset.

Multiplexity In Network Research

Maurits De Klepper, Gerhard Van De Bunt, Peter Groenewegen

Recent attention for multiplexity stems from several scholars who argued that doing more research on multiplexity would lead to a better understanding of network effects. They refer to multiplexity as the multidimensionality of social relations in the broadest sense. The lack of attention over the last thirty years is the result of the extensive data-collection that is necessary, and the limited measures and methods that were available. Furthermore, it is fairly difficult to discern relational contents. This paper contributes both theoretically and methodologically to the problems arising from multiplexity research. Theoretically it clarifies the concept of multiplexity, and gives suggestions how to categorize multiple relations. Methodologically, this paper provides statistical methods to test patterns of multiplexity and to assess properties of multiplex networks. Finally, an empirical investigation of multiple methods on a dataset of multiple relations is presented. The data is collected at a Dutch general hospital at four moments in time.

When One Relationship Is Not Enough: Toward A Theory Of Multiplex Embeddedness

Fabio Fonti

Networks have recently become prominent among the mechanisms used to understand differences between organizations. This is probably a due response to the need for understanding an economic world which is increasingly relational in nature. In many of these studies, the focus has been on the association between the organization and its embeddedness with regards to one of the critical relationships within its network (such as communication or knowledge transfer). While these works help in exploring the effects of network structure on organizations, they however do not capture the inherently multivariate nature of organizational networks. That is, the fact that within the same organizational network each actor is simultaneously involved in many types of relationships, which all at the same time affect its choice of action.The goal of this work is to introduce multiplex embeddedness (defined as the degree of an organization's involvement in critical relationships -- such as communication, interorganizational trust and knowledge transfer -- within a given network) and investigate its effects on organizational performance. More specifically, I examine the influence of multiplex embeddedness on the economic activity of an organization under two different situations (strong condition and weak condition). While multiplex embeddedness in the strong condition has a positive effect on performance, the relationship between multiplex embeddedness and performance in the weak condition is negative. Results from a 12-month field study of a whole industry strongly support my hypotheses and represent a call for additional work in this area.

B: Bay
Economic
(Bandelj)

How Does Network Centrality Affect Strategic Assets Acquisition? Evidence From Soccer

Daniele Mascia, Vanina Torlò

The resource-based theory has pointed out the foundamental role assumed by strategic assets to obtain competitive advantage (Dierickx & Cool, 1989; Barney, 1991; Grant, 1991; Amit & Schoemaker, 1993). Following the literature, strategic assets refer to those key resources that a company may own or have access to, and that are critical to a company's development and success (Wenerfelt, 1984). Within the context of corporate management a resource may be thought of as unique; if it is difficult to obtain or develop, it is difficult for competitors to copy and it is vital to the development of the company (Barney, 1986; 1991). In particular, causal ambiguity represents one of the most important obstacles in identifing strategic assets because of difficulties for management to recognize the most valuable resources (Reed & DeFilippi, 1990). The lack of information for management and, even more, for competitors does not allow to ascertain strategic assets (Lippman & Rumelt, 1982), thus limiting replication initiatives or other efforts, i.e. acquisitions. This study investigates the role of network prominence in gaining relevant information for the identification of strategic assets. Network prominence concerns the most central position assumed by organizations inside their network, taking in consideration specific relational contents. In particular, it is assumed that Bonacich-centrality measure (Bonacich, 1987) is a good indicator of organizational prominence because of its attitude to represent those nodes with the most control of information inside the network (Wasserman & Faust, 1994). Given this, the most valuable resources could be recognized by those organizations characterized by higher levels of centrality assumed in the market of key resources. This in turn gives rise to the opportunity to reduce information asymmetries along time, thus enabling strategic resources market intelligence (Makadok & Barney, 2001).Considering the soccer industry, our empirical analysis examines one of the most important key assets in this sector: the soccer players. Following a social network approach, player's transfers between single UK Premier League's soccer teams have been surveyed during the seasons 1994/95-2003/2004 (source: www.soccerbase.com), in order to detect the most prominent teams inside the network. A regression analysis is then conducted to evaluate the impact of

Bonacich-centrality of soccer teams on their performance (number of points gained). Other covariates are included in the study: overall costs sustained for assets acquisition, number of loans, negative and positive turnovers, etc. The results are expected to show a significant impact of the soccer teams' network prominence assumed in the network of players' transactions on their performance.

Networks, Culture Or Politics? Sociological Approaches To Markets

Nina Bandelj

What is a market? This paper compares the economic and sociological approaches to markets. In particular, after explicating the economic perspective which views a market as an abstraction equilibrating supply and demand through a price mechanism and largely dissociated from actual social interactions between people, we review theoretical contributions of three prominent economic sociologists: Harrison White (1981a, 1981b, 2003), Viviana Zelizer (1988, 2004) and Neil Fligstein (1996, 2001). We argue that while all these theorists uncover social foundations of markets, each focuses on one social force as paramount in explaining how markets operate, be it networks, culture or politics. In light of this observation, we propose a multidimensional view of markets that goes beyond privileging one aspect of social life over others and integrates the three key mechanisms that structure market exchange: social structures, cultural understandings and distributions of power. While market exchanges are social relations that have structural properties, they also require attendant frameworks of understanding that enable actors to make sense of their role position. At the same time, any single position in the structure of social relations comes with differential power resources vis-à-vis actors in other positions, and cultural understandings legitimize authority of some actors more than others. Thus, every market exchange will be simultaneously influenced by social structures, cultural understandings and distributions of power. Market exchanges in foreign investment transactions are used to illustrate the utility of the multidimensional view of markets.

The Evolution Of New Entrant's Trading Networks In A Market

Otto Koppius

The network approach to markets has yielded significant insights into the ways that various interorganizational networks influence market behavior. Most of the research thus far has measured the (market) network at a single point in time, either as an independent or a dependent variable. This leaves open the question of how market networks evolve over time, for instance in response to the uncertainty that is inherent in any market. One type of organization for which this is a particularly salient issue, is a new entrant in the market. In this study I use transaction-level data from three years of trading at a large Dutch flower auction where several new organizations entered the market. The analysis reveals the use of different networking strategies by these new entrants: some initially focus on establishing a network of a few strong (high-volume) ties, whereas others focus on a network of many weak (low-volume) ties. Changes in network strategy are observed that are consistent with a shift in the sources of market uncertainty over time, suggesting a coevolutionary view of network strategy and market behavior.

C: Redondo 3

**Risk Networks
(Friedman)**

Infection discordant injecting dyads and HIV/HCV injecting risk among young drug injectors in New York City and Marseilles

Alan Neaigus, V. Anna Gyarmathy, Anne M. Lovell, Vera Frajzyngier

Objective: To compare among young injecting drug users (YIDUs) in New York City (NYC) and Marseilles the extent of HIV and hepatitis C (HCV) infection discordant injecting dyads and, among the uninfected, receptive syringe sharing in these dyads.

Methods: YIDUs were recruited from non-treatment settings in NYC, 1997-2001, and Marseilles, 1997-1999. They were tested for HIV and HCV and asked about the HIV/HCV infection status of their injecting partners, and receptive syringe sharing with partners (ever in Marseilles; last 30 days in NYC). The unit of analysis is the injecting dyad. Statistical significance ($p<0.05$) was determined by GEE.

Results: In NYC, 177 YIDUs (69% male, mean age 22 years, 97% injecting le 6 years) reported 353 injecting dyads; in Marseilles, 43 YIDUs (77% male, mean age 27, 37% injecting le 6 years) reported 93 injecting dyads. HIV prevalence was 3% in NYC and 51% in Marseilles ($p<0.0001$); HCV prevalence was 37% in NYC and 69% in Marseilles ($p<0.0001$). Within injecting dyads of the HIV uninfected (NYC, n=349; Marseilles, n=42), 3% of YIDUs in NYC reported HIV infected partners, and in Marseilles, 36% ($p<0.0001$). Within injecting dyads of the HCV uninfected (NYC, n=221; Marseilles, n=23), 11% of YIDUs in NYC reported HCV infected partners, and in Marseilles, 70% ($p<0.0001$). Receptive syringe sharing in HIV discordant injecting dyads was 17% in NYC and 13% in Marseilles ($p=0.9113$), and in HCV discordant injecting dyads, 20% in NYC and 38% in Marseilles ($p=0.2695$).

Conclusions: Differences in HIV/HCV infection risk among YIDUs in NYC and Marseilles may be a function of differences in the prevalence of infection discordant injecting dyads. Intercity and international differences in infectious disease dynamics among YIDUs may be influenced by their risk network characteristics. Preventing HIV/HCV transmission requires targeting infection discordant injecting dyads as well as reducing injecting risk behaviors.

Risk Networks, Infectious Diseases, Social Norms, Risk Behaviors And Health Activism "Intravention"

Samuel R. Friedman, Melissa Bolyard, Carey Maslow, Pedro Mateu-Gelabert, Milagros Sandoval

Background: Both sexual activity and injection drug use can spread diseases such as HIV, hepatitis B and C, and syphilis. The relative probabilities of sexual versus injection transmission varies among these diseases. Although STIs such as herpes simplex virus Type 1 (HSV-1) and Type 2 (HSV-2), gonorrhea, and chlamydia seem not to be spread by injection, HSV-1 and HSV-2 seem to be more prevalent among young adult injection drug users (IDUs) than among young adults who do not use "hard" drugs. Similarly, men who have sex with men (MSM) tend to be more likely to be infected with many of these disease agents.Methods: Data were collected in an impoverished minority section of Brooklyn, NY, from 465 subjects through a sexual and injection network survey in 2002 – 2004 that over-sampled IDUs and participants in gay sex party scenes as index cases. "Youth" are defined as <25 years old; "elders" as 25 or more. Results: Many IDUs, MSM, and WSW (women who have sex with women) had sexual and/or injection links. Network distance from the "core" set of {IDUs and/or MSM) was associated among elders with lower rates of infection with HIV, HCV, HBV, and coinfection with (a) HIV and HCV and (b) HCV and HSV2. Among youth, network distance from the "core" set of IDUs and MSM was associated with lower rates of infection with HIV, HCV, and HSV-2, and coinfection with (a) HCV and HSV-2 and (b) HIV and HSV-2.Among both youth and elders, greater distance from the core was associated with external norm factors (measuring opposition to high-risk sex and opposition to drug use) and having fewer friends who use drugs. Among youth but not among elders, distance from the core was associated with having fewer sex partners in the last 3 months and with lower probabilities both of having sex at a group sex event in the prior year and with being a "health activist". Conclusion: Risk network position is associated with infection with non-curable viral diseases that are transmitted sexually as well as by injection; but not with the probability of current infection with curable STIs. The norms of those with closer sexual ties to the core seem to be less protective, and, among youth, their sexual behaviors are riskier. On the other hand, health activism (defined in terms of urging others to engage in safer behaviors) is more common in or near the core, suggesting that those at highest risk engage in other-directed prevention efforts.

Marginalized and socially integrated groups of IDUs in Hungary potential bridges of HIV infection

V. Anna Gyarmathy and Alan Neaigus

Background: The discrepancy in HIV rates among Eastern and Central European injecting drug users (IDUs) suggests that in addition to risk behaviors, social contact patterns also play an important role.

Objectives: We identify two groups of IDUs in Budapest, Hungary, marginalized M-IDUs and socially integrated SI-IDUs, and compare their HIV/HBV/HCV social and risk network characteristics, risk behaviors, and travel patterns.

Methods: Between 05/2003 and 01/2004, 29 non-treatment recruited young IDUs in Budapest participated in ethnographic interviews and focus groups.

Results: The mean age was 23.6 years (SD=3.6); eight were female and two Roma/Gypsy. Most injected heroin (n=23) and/or amphetamines (n=10) in the past 30 days. M-IDUs had no legal employment, whereas SI-IDUs had regular well-paying jobs or were students. Both M-IDUs and SI-IDUs shared injecting equipment on occasion and used condoms rarely. M-IDUs had large, dense social networks of "buddies" and smaller risk networks of "friends". SI-IDUs had two separate large, dense social networks of "buddies", one comprising M-IDUs and the other non-IDUs; and smaller risk networks of "friends". The drug risk networks of both groups involved mixing between SI-IDUs and M-IDUs. Both groups reported monogamous sexual relationships, but these were often with partners from different groups. M-IDUs traveled within Hungary with other M-IDUs whereas SI-IDUs traveled to Western Europe, where they sometimes injected or had sex with non-Hungarian partners. Neither group traveled to high HIV prevalence areas in Eastern Europe.

Conclusion: If an HIV epidemic among IDUs in Hungary is not prevented, SI-IDUs may form a potential "bridge" of HIV infection between higher-risk IDU populations and the lower-risk, general population, while M-IDUs may become cores of infection with subnetworks (friendship "cliques") of intense interaction and explosive outbreaks of HIV. Different approaches may be appropriate for M-IDUs and SI-IDUs to prevent HIV.

D: Redondo 1

Learning and Performance in Organizations
(Comas)

Learning Cliques: Balancing Exploitation And Exploration As A Network Problem

Jordi Comas

One of the key problems in organizational learning is the exploitation-exploration [E-E] tension. This paper will show how March's problem of managing the E-E tension for can be recast as a problem of managing sub-group cohesion and centralization. A key insight March developed is that an organization's ability to do one type of learning precludes doing the opposite. Exploiting existing knowledge today makes it harder to explore tomorrow. In network terms, I suggest that exploration depends on sub-group cohesion with relatively short average geodesics, while exploitation depends on greater centralization and hence less sub-group cohesion. To see how the E-E tension can be translated into a network question, I start with the finding that higher connectedness leads to less variation in each actor's knowledge. Lower variation will preclude the potential of a particular actor in a particular sub-group to develop or uncover the new knowledge that must be the basis of exploratory learning. At the same time, higher connectedness will improve the transfer of codified knowledge, trust, and localized norms, all of which will aid exploiting existing opportunities. The converse is true: lower connectedness leads to more variation in knowledge and also harder transfer and lower trust. This paper uses longitudinal network data of three relationships in four networks of equal size, combined with qualitative data about learning processes. These networks are short-term companies formed in an introductory management class where they are guided through a process that emphasizes exploratory and then exploitative learning. With this data, I address several related questions. 1) How does initial sub-group cohesion affect exploratory learning? 2) Does sub-group cohesion weaken as the organization shifts to more exploitative learning? 3) Does the balance between sub-group cohesion and centralization correlate to balancing the E-E tension?

A Relational Approach To Individual Performance: Evidences From A Study Of An MBA Program

Vanina Torlò, Silvia Profili, Alessandro Lomi

The theoretical interest and practical importance of explaining the variability of individual performance within organizations is widely recognized. Less frequently acknowledged in the organizational behavior literature is that individual performance might contain identifiable relational elements. This is particularly true when the process investigated is characterized by complex local dependencies like, for example, learning. The empirical occasion to reflect on these general issues is represented by the participants to a Master program in Business Administration (MBA) in one of the leading Italian Schools of Management. The sample consists of 79 full-time MBA students. We collected data through a questionnaire distributed during the last term of the program, designed to capture four dimensions of students' social life: advice, trust, communication, and friendship. The first two networks include relations through which individuals share valuable resources such as support, assistance, and guidance on issues that are task-related. We selected these contents in order to capture relevant dimensions of the students' work environment. Information on the remaining networks is collected to capture less instrumental interdependencies emerging among students based on communication and social activities. We measured performance of students in individual exams throughout the programs. The basic idea behind the study is that social settings can be usefully represented as multiplex and partially overlapping social networks of relations. Our basic hypothesis is that individual performance can be fully explained only with reference to positions in the space generated by these multiple networks. We use the data that we have collected to test this hypothesis in the context of a stochastic blockmodel analysis. The expected contribution of this study concerns three fundamental aspects of individual performance within organizations. First, the study builds on and extends previous research on the relation between position in social networks and individual performance in learning tasks. Second, the study contributes to the literature on performance measurement in experimental settings by distinguishing clearly between task-specific and general measures of performance. Third, the study illuminates a number of issues related to the identification of the complex microstructures behind individual performance in organizations.

Reversing The Flow Of Influence: Networks, Power And Resistance To Organizational Change

Susan Lynch, Bjorn Lovas

We consider how social networks affect the balance of organizational power, shaping management's ability to implement and employees' ability to resist formal organizational changes. We analyse the effect of a formal change in the product-market focus on 600 internal, work-related relationships of 59 partners in a global professional services firm. Our findings suggest that while an organization may have more power to influence change when working relationships are more embedded in the firm's social structure, individual power can operate to reverse the flow of influence in the network surrounding the relationship. An individual with power through providing irreplaceable resources, can use the dependency of others to influence surrounding contacts to support local resistance to changes. Implications for theory and practice are discussed.

E: Catalina

Knowledge
(Suseno)

Searching For Answers: Tracing The Paths Of Knowledge In A Dispersed Community

Binz-Scharf, Maria C., Lazer, David

It is widely accepted that knowledge sharing is the lifeblood of geographically dispersed communities. However, little research exists on how individuals search for knowledge within a dispersed community. For example, when do people seek information from online and offline reference sources, when do they post queries en masse to a listserv, and when do they contact other individuals? In particular, what determines the sequence of their search? Qualitative data from a community of professionals working in forensic laboratories across the US suggest that the search strategies differ according to the type of knowledge sought and the personality of the searching individual. More specifically, some individuals immediately contact peers, while others will only consult references and, at most, close confidantes, out of fear that publicly seeking information may reveal their ignorance. The paper concludes by offering suggestions for further research.

The Relationships Between Social Capital, Knowledge Acquisition And Relationship Outcomes In Professional-Client Networks

Yuliani Suseno, Dr Ashly Pinnington, Dr John Gardner

In this article, we explore the effects of how professionals form and use networks with their clients to add value to their knowledge and thereby influence professional-client relationship outcomes. The theoretical framework of this study proposes the relationships between two dimensions of social capital - the structural and the attributive dimensions of professionals' social capital, their knowledge acquisition, and the relationship outcome variables. By examining the relationship between social capital and knowledge acquisition, this paper attempts to provide justifications that social capital is needed in the creation of human capital (Coleman, 1988). In the age of competitiveness, individuals succeed because they constantly acquire new knowledge and use it more effectively and efficiently than others (Larsson et al., 1998). Knowledge that is embedded within an individual person is then applied and shared through one's social network as a source of the individual's and the firm's competitiveness and survival in this complex and dynamic economy (Matusik, 2002). Knowledge is conceptualised in this study within three domains: market, technical, and client-specific. Beyond building one's social capital and human capital, this paper explores the influence of both variables on the outcomes of these investments by examining the client networks within which these professionals are embedded in. Examining outcomes of these professional-client relationships provides a valuable contribution in a relatively unexplored area of research in the literature of professional service firms. Four relationship outcomes are examined, and these outcomes are: the professional's reputation, the professional's referrals or contacts to new business, the professional's achievement in reaching fee targets and obtain significant fee billings (or income), and the aspect of professional-client relationship continuity. Measuring these outcome variables on the basis of their client networks is important for professionals and the professional service firms in maintaining their existing client contacts, attracting new clientele base, and therefore, ensuring the sustainability of business.

F: Marina

**Global
(Barnett)**

Corporate Networks And Global Trade Regimes: Fortune 500 Firms In The U.S. Trade Policy Formation Process

Michael Dreiling, Derek Darves

This paper examines the network and organizational factors that influence corporate participation in the U.S. trade policy formation process. The organizational attributes, political donations, and network positions of Fortune 500 firms are employed in two models of corporate political activity: trade

consultation to the U.S. government and participation in interfirm lobbying alliances. Membership in the Business Roundtable, corporate policy planning network affiliation, and board of director centrality significantly increased the odds of corporate involvement in these political activities. Organizational indicators derived from neoliberal economic theory, such as size, product market, and numbers of foreign subsidiaries were also significant factors, although the effects of these variables were less marked when network variables were controlled for. The findings provide support for class-embedded accounts of state-corporate relations, and suggest a significant association between higher levels of firm embeddedness within intercorporate networks and the capacity to shape global trade policy.

Regional Stratification In The "New Economy": Analyses Of The Inter-Regional Venture Capital Investments

Young-Choon Kim

A boom in the regional high-tech industry has led to an increased interest in a relatively new form of financing, i.e. venture capital. Existing studies reveal that high-tech industry has been highly concentrated in a small number of regions. This high level of clustering is associated with the skewed distribution of venture capital investments. This paper examines the geographic concentration and dispersion of venture capital industry by analyzing county-level investment flows in the United States. Using the data on venture capital investment from the Securities Data Companies Platinum, I analyze the cross-county investment flows with network analytic techniques. First, I describe the regional hierarchy of one thousand counties by calculating three measures of centrality. Then, I employ blockmodeling to generalize the positions taken by each region in the venture capital industry. These techniques are used to trace out the structure of the financial flows in the "new economy" and locate regions in the context of a global hierarchy.

The Structure International Conflict--1993-2001

George A. Barnett, Jang Hyun Kim

Using data obtained from the Correlates of War Project (http://cow2.la.psu.edu/) and the tools of network analysis, the structure of international conflict is described for the period 1993-2001 for 145 nations. The results indicate that this network is very sparse; 42 nations had no conflict, and 36 only one bilateral disagreement. The network is centered by Yugoslavia (Serbia), Russia, the United States, Iraq and China. Most conflicts are regional. The paper evaluates both the liberal and realist (including Huntington's Clash of Civilizations Theory) perspectives as predictors of conflict. The results indicate that while both paradigms significantly predict conflict, neither is a very good predictor. A multiple regression model including permanent UN Security Council membership, physical proximity, whether or not a nation was a democracy, bilateral telecommunication and trade (imports and exports), and political alliances accounted for only 4.3% of the variance in the structure of international conflict, in spite of the fact that each variable was significantly related to conflict. The need for further research is discussed.

G: Esplanade

Labor Markets
(Nikkilä)

Brokerage Roles And Job Control

Riku Nikkilä

An actor's ability to broker flow of resources from one actor to another has been associated with advantages such as power and influence. This study focuses on brokerage roles in intra-organizational workflow networks and the extent to which occupying different roles associate with perceptions of job control and

growth opportunities. Drawing on the resource based view to social capital, it is proposed that transactions involving superiors are associated with perceptions of control and opportunities, since these positions provide workers with access to those who control organizational resources. That is, it is hypothesized that brokering flows between co-workers and superiors (representative/gatekeeper) or between superiors (consultant) is more strongly related to control and new opportunities) than brokerage within the co-worker group (coordinator). Data was collected on employees of two Finnish organizations; a high-tech electronic components factory (n=70) and a recycling machines factory (n=67). Relational data was collected on workflow and advice networks and attribute data on perceived control and growth opportunities, supervisor support and background variables. Preliminary results confirm the hypothesis that occupying either a consulting or gatekeeper/representative roles were associated with increased control and growth opportunities. However, only the consultant role remained significant when all roles were included in the regression. In conclusion, results suggest that brokerage roles can have beneficial outcomes for non-supervisory employees. In addition to the beneficial outcomes, possible liabilities (e.g. role conflict) related to brokerage are also discussed in the presentation.

Extending The Social Ledger: Negative Relationships In Workplace Social Networks

Giuseppe Labianca, Daniel J. Brass, David Krackhardt

We explore the role of negative relationships in the context of social networks in work organizations. Though network researchers have emphasized the social capital benefits and opportunities derived from positive interpersonal relationships, we examine the negative side of the social ledger. We define a negative relationship as recurring interaction at work between two people that involves personal dislike on the part of one or both for the other. We conducted a multi-method field study that sought to understand the meaning ascribed to negative relationships by respondents through qualitative analysis, and the location of negative relationships in the formal and informal workplace structure through quantitative network analysis. Results show that needing to go beyond the required workflow network to seek work-related advice creates a situation in which negative relationships develop.

Hiring On The Internet: Do Referrals Matter?

Valery Yakubovich, Dana Lup

The Internet opens new communication channels between workers and firms. Does this mean that personal ties become less important? We explore this question using a unique data set of hires at a virtual call center which recruits new agents online. We find that the role of personal contacts does not diminish but changes. Referrals are more likely to complete the application process within a required time period and perform better on tests. They more often apply the second time if rejected. When the likelihood of completing the application process and passing the tests is taken into account, there is no significant difference in the probability of getting an offer between referrals and non-referrals. The study's contributions to the literature on social networks in labor markets are discussed.

Sunday 1Morning: 8:00-10:00

A: Redondo 2

**Methods
(Dekker)**

Iterative Algorithm For Node Classification In Social Networks

Aram Galstyan, Paul Cohen

In this paper we study a problem of identifying a group of related individuals embedded in a larger population. We state the problem in terms of node classification in a social network, and present an algorithm that utilizes a simple iterative scheme to classify individuals based on their pattern of links in the network. Assuming that a correct classification of a small subset of actors is given initially, our algorithm defines an iterative scheme where the actors classified at each step of the iteration are used for classifying other nodes at the next time step. To test our algorithm we run it on a data set generated by the Hats simulator, which is a framework for studying proxy intelligence analysis problem. Our results indicate that despite its simplicity our algorithm performs remarkably well. We also develop an analytical formalism to study the properties of our algorithm and compare its results to the numerical experiments on randomly generated graphs.

Measures For Simmelian Broker Positions

David Dekker

Simmelian broker theory provides new insights in the consequences for actors that broker two or more cliques. However, no rigorous measures are available that allow us to measure to what extent actors obtain a Simmelian broker position. This paper derives such a set of measures. First, based on theoretical considerations several measures of Simmelian ties could be used (a Simmelian tie represents a pair that is embedded in a clique). For example, Simmel (1950) states: "Dyads thus have very specific features. This is shown not only by the fact that the addition of a third person completely changes them, but also, and even more so, by the common observation that the further expansion to four or more by no means correspondingly modifies the group any further." This could be interpreted as that it adds no information to consider the number of others with whom two actors both have ties if they share at least one. Hence, a binary value to indicate presence or absence of a Simmelian tie would suffice. However, for Simmelian broker theory it could be worthwhile to take into account the number of cliques that two actors share (cf. Krackhardt, 1999). Also, the value of the ties that connect two actors could be important as indicators of dependence (cf. Burt, 1992). Second, the paper derives relative measures of Simmelian broker positions, given network size. The main feature in this part of the paper is the determination of the maximum number of Simmelian broker positions, which is non-trivial. In the final part, the paper assesses validity of different measures on their ability to predict role stress and correlation with other network measures.

Measures Of Closeness Amongst Toronto Injection Drug Users

Naushaba Degani, Dr. Peggy Millson

Background: Injection drug users (IDU) are at risk for contracting bloodborne injections through their behaviours. Interventions that focus on individuals have led to some reductions but do not recognize that risk occurs within a relationship. Differences in relationships may be associated with risk and may vary by gender. One of the characteristics of relationships that is likely to influence behaviour is 'closeness', however this needs to be clearly defined. Objective: This presentation will describe the measures of closeness that were used and correlations between these measures. The intention is to develop a measure of closeness that is valid and coherent. Methods: The study is a cross-sectional survey of Toronto IDU. A convenience sample was recruited through service providers and agencies in the city. A number of methods were used to obtain a regionally diverse sample and equal numbers of males and females. Results: A number of measures of 'closeness' were included in the survey. This included one direct question on closeness and a series of true and false questions that tried to ascertain the nature of the relationships. Other measures that were included in the analysis were relationship type, multiplexity, duration and frequency of contact.

Significant And Stable Role Assignments

Juergen Lerner, Ulrik Brandes

Role assignments are partitions of the set of actors of a social network such that equivalent actors are similarly linked to other actors. Prominent formalizations of this intuitive notion, however, suffer from serious drawbacks. For a given network there is (in general) a huge number of possible role assignments, and little is known about how to choose an appropriate one. Moreover, the behavior of role assignments under perturbations (caused, e.g., by measurement errors) is not understood at all. Recently, we proposed structural similarities as a relaxation of exact equivalence. Here we characterize those similarities that, firstly, contain no arbitrary choice but are justified by the network structure itself, and secondly, are tolerant towards perturbations of the input data. We give (provable) bounds for errors caused by network perturbations. Finally, we show that error analysis can also discriminate the most crucial (existing or missing) ties in a social network.

B: Bay

Organizations
(Rice)

Individual Work Styles, Intra-Organization Networks, And Perceived Work Place Satisfaction

Dr. Mahbub Rashid, Dr. Craig Zimring

Effective intra-organization interaction networks are an important competitive advantage: they increase work efficiency, streamline decision-making, and facilitate innovation and improvement in organizations. Studies in behavioral psychology have shown that strong intra-organization networks are associated with workplace satisfaction, reduced turnover and higher retention rate. Individual work styles, i.e., the spatial and temporal dimensions of individual work behaviors, are important for they may be related to the strength and effectiveness of intra-organization networks. For example, individuals working in the same building and/or spending more time together may develop strong and effective interaction networks; individuals working with different groups may develop different interaction networks impacting their performance and productivity; and so on. Most research on information exchange networks has concentrated on describing the network structures of organizations to capture significant organizational processes and social behaviors. However, this research has not explored work styles at the individual level that may also be associated with the network structures. As a result, there is a lack of fundamental research into the relationships between individual work styles and networks and their impacts on individuals' perceived workplace satisfaction. This study investigates the relationships between individual work styles and intra-organization networks, and their association with individuals' work satisfaction in seven small to moderately large organizations. It investigates the effects of both spatial and temporal dimensions of individual work styles on intra-organizational network formations. It uses the self-reported data of individuals' networks, work style and perceived satisfaction collected using an internet-based survey questionnaire by our research collaborator - a leading furniture company. The self-reported network data is distinguished based on the rate and content of information exchange. Individuals' network properties in different networks are described using available network measures, such as betweenness centrality, closeness centrality, and degree centrality. The relationships between these attributes and the work style data are then studied using various statistical techniques and models. The study is important because it uses the theoretical insights of both network and behavioral studies to understand and explain the mechanisms for individuals' perceived satisfaction in workplaces. It is also important because it may show how intra-organizational networks can be made more effective through workplace design aimed at changing the spatial and temporal dimensions of work styles.

Organizational Cross-Unit Communication: The Influence Of Media Choice And Unit Network Position
On Communication Satisfaction, Timeliness And Effectiveness

Ronald E. Rice, Jennifer Lehr

There has been considerable research on individual-level attitudes, job positions, and network location on organizational communication outcomes such as satisfaction and effectiveness. However, little work has been done at the departmental or unit level of intra-organizational communication networks. This study integrates media choice, organizational outcomes, and unit-level network analysis. A survey was developed and revised which asked respondents of the headquarters of a major U.S. automobile company to answer seven questions about departments of each of the other 19 departments in the Headquarters of the organization based upon an average week. The individual-level data (individuals responding about departments) were aggregated at the Unit level. Example unit-level results include: E-mail is the primary channel of communication used (42%), followed by face-to-face (27%), telephone (25%) and meetings (6%). The main reason for communicating with other units is to share information (52%), as opposed to coordinating tasks (26%) or solving problems (22%). More use of email as the primary channel is associated with lower perceived timeliness of the other Unit's timeliness. The more that distance is chosen as the reason for using one's primary channel, the more people report the communication of other Units is less effective and less timely. The more that ease is the reason for using one's primary communication channel, the more likely one reports that the communication of other Units to be more effective and more timely. The more that one prefers not to change their primary communication channel, the more likely they will be to find the communication of other Units to be more effective. Analysis of influences of Unit network position (centrality, structural holes) on these communication outcomes is in process.

The Indirect Effect Of Leadership Style On The Task Dependency Network And Group Performance

Craig Schreiber, Kathleen M. Carley

Recent literature in leadership has begun to examine the indirect effect of leadership. This new focus looks at the bottom-up impact of leadership in contrast to the traditional top-down lens. This paper uses the new focus and explores the indirect effect of leadership. In particular, the impact of leadership style on the task dependency network and group performance is explored. The task dependency network is a digraph whereas an edge is defined as the task performance of person i being dependent on person j. Data was collected on one group performing the same task but which had a temporary change in leadership mid-stream. Results show that different leadership styles, autocratic vs. democratic, led to a shift in the task dependency network. This difference in the task dependency network is a bottom-up effect that can have an impact on group performance. In addition to the task dependency network, the cognitive social structure of the group was collected. Three networks - task dependency, actual knowledge and transactive knowledge (cognitive social structure and cognitive knowledge network) are used to represent the group in a computational model. Computational analysis is used to simulate the effect of the task dependency network change for two different performance goals – knowledge space exploration and knowledge convergence. Results show that the effect of leadership style on task dependency networks leads to differing effects upon performance for the two goals.

Towards An Extensible, Consistent Semantics Of Social Network Data

Maksim Tsvetovat, Kathleen M. Carley

Traditional social network analysis operates on a fairly simple semantic notion of nodes representing individuals and edges representing connections between them, thus forming a graph. Semantically, one can describe an edge of a social network as a pair of nouns (vertices) connected by a verb (edge). A collection of such edges forms a graph that can be described and analyzed using well-known social network analysis methods. Much research has been done relating meaning of vertices and their attributes to the shape and size their networks. However, while SNA methods tacitly acknowledge the existence of meaning of an

edge (hence separate analysis of friendship and trust networks, and so forth), little attention has been given to providing rigorous analysis of edge semantics. Moreover, many SNA measures are only mathematically defined on graphs that have been binarized and symmetrized - thus stripped of both edge values and directionality. We consider the verb connecting two vertices as a semantically loaded concept: an action that has meaning, occurs in time (momentarily or continuously), may have rich attributes and needs to be treated with analytical rigor. We propose a new social network analysis methodology which builds on findings in both the SNA community and the Artificial Intelligence community to provide a semantically consistent way to reason about properties and structure of rich network data. We demonstrate that the proposed methodology is capable of reasoning about rich social structure, simultaneously considering temporal and geographic information, as well as reproducing results of SNA, PCANS and MetaMatrix metrics.

C: Redondo 3

Communities of Practice
(Quan-Haase)

Going The Extra Mile: Engaging In Voluntary Knowledge Sharing In Communities Of Practice

Ines Mergel, Maria Christina Binz-Scharf, David Lazer

Online communities thrive on the active participation of their members. But what makes an actor a knowledge hub within a network? Whereas some actors actively post questions and answer questions of others, other actors passively absorb information that is posted within the community and do not participate actively in the exchange of knowledge, lurking or free riding most of the time (Nonneke/Preece, 2001, Preece 2000, Wellman/Guila, 1999). Depending on their personalities, members of online communities are willing to expose themselves in front of numerous unknown others – not knowing whether they can expect to receive an answer, nor whether others are concerned about the same issues and find their request or posting interesting as well. In this paper, we focus especially on those members of communities (1) who are willing to expose themselves, who actively contribute by asking questions, posting materials and providing knowledge they think is important for the community as a whole and (2) those actors who are willing to go the extra mile to respond to others' postings, voluntarily using their time to share their knowledge. Oftentimes, these two interaction patterns are not reciprocated. Prior research has mainly focused on processes and techniques of knowledge sharing but little research has been done so far on the individual behavioral patterns and incentives that trigger knowledge sharing activities and voluntary engagement. Moreover, most studies are trying to understand why people do not engage in knowledge sharing activities. Our focus will be on positive attitudes of voluntary engagement in knowledge sharing, and therefore observable behavior, of communities of practice. Applying a social network perspective on the knowledge sharing process, we explore the extrinsic and intrinsic incentives for unreciprocated knowledge sharing and the individual perceptions of role behavior within communities of practice.

How Computer-Mediated Hyperconnectivity And Local Virtuality Foster Social Networks Of Information And Coordination In A Community Of Practice

Anabel Quan-Haase, Barry Wellman

Computer mediated communication (CMC) has come to permeate most organizations through the internet and internal communication systems. Yet there is more assertion than evidence about how CMC actually affects work relations and organizations. We analyze a case study, comparing two departments of a high-tech organization. The organization is hyperconnected, with almost-constant email and instant messaging contact outweighing face-to-face contact. The organization is a local virtuality, in which globe-spanning CMC technology is principally used within departments of people sitting cheek-by-jowl. Yet glocalized

CMC also fosters boundary spanning: the ratio of CMC to face-to-face communication increases as the sociospatial distance increases from within departments to elsewhere in the organization (all based in one building) to outside of the organization. There is conservation of media choice: people who are contacted by one medium will respond by that medium. Although this hyperconnectivity can foster overload, it also builds trust and robust networks of exchange in internal communities of practice, especially among interdependent software programmers. While the firm is by no means a networked organization – it is a hierarchical bureaucracy – informal networks permeate the firm. Within the stable framework of departments, its employees communicate frequently and widely. In this local virtuality, there is little need to go to meetings, and there is little need to get up from desks because CMC provides employees with the flexibility and access to gain the information and coordination they need immediately – within and between departments. In short, while the firm is not a networked organization, it is highly networked, with CMC networks providing the means for information and social networking

Supporting Communities Of Practice With Social Network Analysis

Doug Rush

There is increasing recognition that communities of practice (CoP's) can add significant competitive advantage to organizations. CoP's can occur spontaneously or be formally developed as part of an organizational strategy. In either case, social network analysis (SNA) can be helpful as a method to diagnose the health of a community and to identify potential areas for intervention. SNA was used at Aventis Pharmaceuticals to assess a CoP of scientists all working in project teams focused on a single biochemical target family. The CoP was formed one year prior to the first SNA by identifying individuals working on targets in the biochemical family and through the formation of a core team of six individuals who would organize and lead community activities. A second SNA was conducted one year later to identify changes in the community network structure as a result of core team and community activities. Analysis of the data focused on the following network characteristics.- Central people- Brokers- Peripheral players- Fragmentation points- Personal networks The presentation will illustrate, with specific examples from the two SNA datasets, the results of analysis of each of these characteristics and how the results were used to design interventions to improve network characteristics.

D: Redondo 1

**Health
(Haines)**

Social Capital And Self-Reported Health

Valerie A. Haines, John J. Beggs, Jeanne S. Hurlbert

The concept of social capital has rapidly become part of the working lexicon of researchers studying the effects of social context on health–even though there is no consensus on how to conceptualize or measure social capital. Most of the research on social capital and health has been conducted by public health researchers who follow Putnam and consider social capital as civic engagement and trust. For these researchers, social capital is a characteristic of communities. We explore the need for and benefit from bringing in social capital that inheres in network context by developing and testing a series of models that explore connections among civic engagement, trust, resources embedded in social networks, and self-reported health. Our findings show that studies that focus solely on social capital as civic engagement and trust ignore information that is crucial to understanding the impact of social context on health. They also show that an adequate test of the value of bringing in social capital that inheres in network context must consider both the network structures that give individuals access to resources possessed by network members and the kind, amount and quality of those resources.

Improving Personality Disorder Assessment Through Social Network Analysis

Allan Clifton, Eric Turkheimer, Thomas F. Oltmanns

Personality disorders (PDs) are maladaptive patterns of behavior, cognition, and interpersonal functioning. PDs affect approximately 10% of the general population, and have serious implications for the health care system, including greater risk of mental disorders, poorer prognosis for treatment, impulsive behavior, unemployment, social isolation, interpersonal violence, and suicide. Accurate assessment of personality disorders is therefore a critical step in improving the overall treatment of mental health. Most research on PDs has been conducted on the basis of self-report, despite involving the way that one's behavior affects others. Although obtaining information from large groups of peers is preferable, it introduces complicating effects of group dynamics. In addition, in a large group of peers, not all raters will make equally valid ratings of all targets. In this paper we discuss the relationship between network structure and self and peer ratings of personality pathology in 21 groups of military trainees (total N=809). Dyadic PD ratings made by peers showed low correspondence to self-report. Partitioning networks into two cohesive subgroups increased both rater consensus and self-peer correspondence. Greater numbers of subgroups did not correspond to further improvements. We discuss social network analysis as a parsimonious way of incorporating aspects of Kenny's (1994) Weighted-Average Model of interpersonal perception.

Network Patterns In HIV/AIDS Prevalent Communities: Oshikuku, Namibia

Arul Chib, Kim Witte, Rachel Smith

Namibia has been ravaged by the HIV/AIDS pandemic. This paper examines the impact of a health-related mass media campaign intended to increase knowledge, improve attitudes, and foster positive behavior change in the township of Oshikuku. It proposes that the process of social change brought about by the mass media involves interaction among members of the social system, in addition to the direct effects paradigm. Social network analysis suggests that accurate knowledge about HIV/AIDS does not necessarily translate into the adoption of appropriate attitudes or behaviors, possibly as a result of the influence of opinion leaders in the community. These leaders, while being knowledgeable about HIV/AIDS, hold negative attitudes and do not practice appropriate behaviors. Secondly, as expected, women are subordinate in networks to males or to the prevailing hierarchy, thus jeopardizing their ability to make personal health decisions. The paper closes with a call for improved methods to examine the influence of social networks in the dynamics of social change.

E: Catalina

Representations and Visualizations
(Lloyd)

Design Team Interaction: Toward An Actor-Discourse Network Representation

Ben Shaw

Data was collected during working sessions of a high-performance concurrent design team (engaged in spacecraft design at Jet Propulsion Laboratory). The team's conversational and gestural interaction was analyzed, including their use of persistent shared external representations such as drawings, spreadsheets and CAD models. The mediating role played by artifacts and representations demands something other than a sender-receiver communication model. A coding scheme was developed to construct a bipartite network consisting of nodes for actors and shared referents in the discourse. Persistent shared representations are treated as actors alongside human participants. Arcs correspond to different communicative acts. Actors' relative spatial positions are thereby determined principally by their orientation to topics in the shared discourse. The primary interest was in correlating the behavior of animated network diagrams and network

metrics with results of the interaction assessed by observation, interviews and qualitative analysis. Animated network diagrams are found to convey information complementary to that obtained through conventional network metrics (e.g. degree and betweenness centrality). Results reflect the relative coherence of conversation, the level of engagement of different participants, their alignment with respect to each other and to different conversational topics, and the degree to which persistent shared external representations are integrated in the conversation. Besides the relevance to understanding design interaction over persistent shared representations, results highlight the utility of juxtaposed video and animated network diagrams. Also useful were affordances to vary the temporal window for network aggregation and to present layers of information pertaining to various types of actors and communicative acts. Issues raised for the use of animated network diagrams include the importance of a consistent "spatial metaphor" to provide an intuitive basis for making sense of the layouts. Opportunities and challenges are presented by the salience of change and motion in the animations. Limitations to the stability and interpretability of 2D layouts are explored with respect to initial conditions and the number of symmetrically-connected nodes.

Social Network Visualizations Of Usenet Newsgroups

Marc A. Smith, Danyel Fisher

Social network patterns in Usenet Newsgroups are created through multiple ties including replies to, is replied to by, is co-threaded with, is crossposted to. Building on the data generated by the Netscan Social Accounting Metadata engine and visualized using the JUNG graph drawing library several visualizations of newsgroup will be presented. The comparison of these maps helps to illustrate the variation between and across newsgroups, the presence of different kinds of structural roles, and the overall level of interconnection found in these social cyberspaces. The visualizations illustrate the kinds of roles that develop in these spaces, illuminating patterns of activity that identify distinct roles like "answer person" and "flame warrior". The relative population of these and other role types may offer a guide to the health and productivity of these computer-mediated collective efforts.

Network Dynamics of Organizational Routines

Daniel A. McFarland, Skye Bender-deMoll

We present a novel approach to analyzing the dynamic and distributed nature of interaction as it gets organized into routines. Using a dataset on over 800,000 turns of interaction in over 150 different high school classrooms, we visualize network dynamics of communication and model how various rules (scripts), claims (discourse), and interaction contexts (networks) routinize or scramble social behavior. We find that routines have their own logics of appropriateness that require lock-and-key usage of particular social forms in order for them to be successfully sustained. With regard to educational environments in particular, we observe a drift toward centralized routines because they are less prone to break down than decentralized endeavors.

Visualizing Signed Networks: An Exploration With Correlations In Voting On UN Resolutions

Paulette Lloyd, Jim Blythe, Jan de Leeuw, and Cathleen Mc Grath

We present visualizations of correlations in UN voting by member countries. We use a modified eigenvector centrality measure which distinguishes positive and negative relations to depict changing alliances over time. One of the challenges of visualizing these data is that they form a signed network, containing positive and negative relations. Most network layout routines treat positive and negative relations in the same way, often with misleading results. We introduce a modification to the Davidson-Harel annealing layout, used in KrackPlot, which treats positive dyads in the usual way but tries to maximize the length of negative dyads, subject to connection strength. Similar approaches can be taken with spring-embedder layout algorithms. We also introduce visual conventions for negative dyads. The

approach gives improved layouts that highlight some interesting patterns in the UN voting data. In particular, the US and Israel surprisingly do not vote similarly with the West, only dissimilarly to the East. Including negative ties and an algorithm that could distinguish them helped discover nuances in relations that might otherwise have been overlooked. The use of positive and negative ties is also instructive to see which countries change cliques post Cold War. For example, many of the former Soviet bloc countries are now aligned with Western Europe but some of the Central Asian countries and the Soviet Union itself remain outside of what is now a very cohesive European group.

F: Marina

Terrorists and the Military
(Bienenstock)

Operationalizing Terror In The Name Of God: Using Two-Mode Networks To Link Terrorism To Islamic Institutions

Elisa Jayne Bienenstock, Marc Sageman

Breiger (1974) in "The Duality of Persons and Groups" demonstrated how to use two-mode network data analysis to operationalize Simmel's (1955) insight that just as groups and institutions link people together, people are a conduit through which groups, institutions and events can be connected. Uniting two different two-mode networks that share actors provides an illustration of the utility of this concept. Actors are individuals implicated in terrorist events, directly or indirectly. The first matrix represents links between actors and a particular terrorist event; the second matrix represents actors' affiliation with Islamic institutions such as Mosques, or madrassahs. Network analysis identifies twelve specific Islamic institutions complicit in the proliferation of terrorism. Making explicit the connection between terrorists plots and a small number of specific institutions delineates between those institutions that are a threat from the vast majority of Islamic institutions around the world.

A Methodology For Analyzing Complex Military Command And Control Networks

David Jarvis

Military personnel are increasingly subject to multiple means of electronic communication for command and control (C2). The means are both synchronous and asynchronous and include email, chat, voice over IP and others. The analytical methodology offered through the study of complex networks such as the Internet, power grids, transportation networks, and patterns of social interaction can aid in the understanding of C2 systems used by military organizations. By analyzing the topologies of communication networks and developing metrics (e.g. number of nodes and links, their ratios, degree distributions, clustering, and neutrality), leadership, patterns of communication, vulnerabilities, and the level of collaboration in the network can be discerned. An analysis of a military email system will be presented with the data used obtained from a recent US/UK coalition naval exercise. Additional topics for discussion include collaboration patterns between the two country's networks, an analysis of various sub-network communication patterns, and questions regarding unique properties of military networks that are not seen in other social networks. This methodology can help engineers design better C2 structures by incorporating information about how people actually use electronic communication networks. This work was produced for the Navy Warfare Development Command in Newport, Rhode Island.

Revealing And Comparing The Organizational Structure Of Covert Networks With Network Text Analysis

Jana Diesner, Kathleen M. Carley

Network Text Analysis supports analysts in detecting the organizational structure of covert networks from textual data. We have formalized an approach for Network Text Analysis and implemented it into a software package referred to as AutoMap. We will report on the extraction of the organizational structure of three covert networks, which are Hamas, Al-Qaeda and Jamaah Islamiyah, with AutoMap. For each of the three groups we have one corpus with about 550 texts that were collected from a variety of sources such as LexisNexis, trial transcripts and research papers. The network data that we extracted from the corpora is multi-mode, multi-link, and multi-time period, and has attributes of nodes and edges. We will present results of the network analysis of the extracted data such as the identification of critical individuals in the networks and their linkage to knowledge, resources and other organizations, and compare the revealed structures in order to identify idiosyncrasies of each group. The network analysis was performed with ORA, a statistical toolkit for network analysis.

The March 11Th Terrorist Network: In Its Weakness Lies Its Strength

Josep A. Rodriguez

The central element that characterizes the new network society is precisely the increasing relevance of the network (relational systems) as a new organizational form structuring and articulating collective action. The terrorist attacks of September 11th and March 11th are clearly examples of this. One of the fundamental difficulties for understanding and dealing with these new phenomena is precisely their form and dynamics as networks, for which the dominant theoretical and methodological approaches found in Sociology (based on individual actors and categorical grouping) are not well suited. In this paper we analyze the March 11th terrorist network using the theoretical and methodological approach best suited to the phenomenon: network analysis. This approach allows us to analyze and visualize its composition and dynamics, the centrality of actors, and its internal cohesion. For this purpose we use relational matrixes, which contain the relationships (published by the mass media) among the accused, and specific statistical and visualization network programs (Ucinet6, Netdraw, Key Player).We analyze the action network (formed by the perpetrators) and its relation to the larger 11M network as well as the network of weak relations and its power. We look into the network after the attacks and discuss possibilities to weaken or/and fragmentate it.

G: Esplanade

Diffusion
(Valente)

Linking Networks And Cognition: An Automated Structural Approach To Assessing Teams Cognition

John Graham, Kathleen M. Carley

Individuals have mental models of who others know, what they are doing, what they know. We can think of this as their transactive memory. Within teams these models influence behavior, performance, and adaptability. For many teams, having a shared mental model is critical to higher performance and adaptability. An individual's position in the social network influences the individual;s transactive memory, and consequently the shared mental model of the team. Herein, we present a procedure for estimating the degree of sharing based on structural and demographic characteristics, test this using data from field studies, and demonstrate that non-invasive data collection and social network information can be used instead of labor intensive surveys to assess the level of sharing in the team mental model and the point of difference.

Like Text To Likes: Diffusion-Networks In Mobile Communication

Sebastian Schnorf

In modern information society relationships are increasingly maintained by mobile communication service. The following contribution examines social networks as they are reproduced by the usage of mobile phones. On the basis of anonymous transaction data of a school class and their communication peers, the qualities of those communication networks are described. Further analysis examines in what way these characteristics influence the diffusion of new services, like for example Multimedia Messaging Services or Mobile Internet applications. Results point at a homogeneous composition, individually distinctive and dynamic qualities of the personal networks. Adopter-Types show differences regarding these characteristics (see Rogers 2003) as well as in threshold values (see Valente 1995). Supplementary to the data analysis and explication of anomalies qualitative interviews were conducted with a sample of six individuals. This methodical approach clarifies the connections between "Face-to-Face"- and mobile communication network (see Wellman/Tindall 1993; Smoreda/Thomas 2001). The statements indicate that the social structure of mobile communication has potential to explain individual adoption behavior as domestication processes(see Ling 2004).

The Assist Intervention: Successfully Harnessing Informal Social Networks To Reduce Adolescent Smoking

Jo Holliday, Laurence Moore, Rona Campbell, Fenella Starkey, Suzanne Audrey, Nina Parry-Langdon

A Stop Smoking in Schools Trial (ASSIST) was a pragmatic cluster randomised controlled trial which evaluated of a novel approach to reducing the incidence of smoking amongst teenagers. At baseline the evaluation involved 10,731 Year 8 (12-13 years old) students in 59 secondary schools in South East Wales and the Bristol area of England. The intervention combined peer education with the diffusion of innovations theory and relied on influential students spreading new norms of smoking behaviour through their existing social networks. Following peer nomination, 'peer supporters' received two days of training out of school, followed by four in-school follow-ups over the subsequent 10 weeks. The training aimed to give students the information, skills and confidence to talk informally to their peers about being smoke-free. At one-year follow-up, self-reported weekly smoking prevalences by treatment group were 23.0% (C: 95% CI: 19.9, 26.6) and 19.0% (I: 15.8, 22.5) among the high-risk group (students who at baseline were ex-smokers, occasional smokers, or who had experimented with cigarettes) and 14.5% (C: 12.4, 16.9) and 11.7% (I: 9.7, 13.9) among all students. The fully adjusted odds-ratio for reporting weekly smoking at one-year follow-up was 0.75 (95% CI 0.57-1.00, p= 0.047) for the high-risk group and 0.77 (95% CI 0.60-1.00, p=0.046) for all students. These results are supported by cotinine-validated data. This presentation will describe the intervention and detail the one-year follow-up results. The use of social network analysis to (i) understand the inter-relationship between the intervention and social networks, and (ii) investigate whether the variable effect of the intervention across schools is related to the schools' social networks, will also be presented.

Usc School Of Dentistry Workflow Project

Thomas Valente, Peter Busse

Social network analysis has been used to understand the diffusion of innovations among American medical doctors (Coleman at al., 1966), Brazilian farmers (Rogers & Shoemaker, 1971), Korean women (Rogers & Kinkaid, 1981) and many other populations over the last 4 decades. Recently, these models have used measures of network centrality to improve health promotion efforts, primarily in medical and public health settings (Valente & Fosados, in press). We report on a study using opinion leaders to accelerate organizational change in an academic setting. The opinion leader model is used to diffuse an innovation among faculty members of one of the 56 Dental schools of the U.S. The innovation to be spread is defined as knowledge, attitudes and practices towards research activity. The study design involves 3 phases: (i) data

collection to establish baseline data; (ii) intervention in the form of a communication campaign targeting opinion leaders within communication, friendship and instrumental networks; and (iii) data collection at the end of the study to assess campaign effects and diffusion of the innovation. This study is currently at phase 1 and over 600 employees are being surveyed, including faculty and staff members. Study design and baseline results will be presented.

Sunday 2 Morning: 10:30-12:00

A: Redondo 2

**Methods
(Snidero)**

Estimating The Number Of Foreign Bodies Injuries In Childhood With The Scale-Up Method

Silvia Snidero, Bruno Morra, Roberto Corradetti, Dario Gregori

The foreign bodies injury in the upper areodigestive ways is a rare but not negligible event. This study is aimed in estimating the size of the population of people that had a foreign body injury using the scale-up method. This is a novel approach to estimate the size of hidden or hard to count subpopulations. This estimator is based on the concept of social networks: respondents are interviewed about the number of people known in several subpopulations (of known size) and a subpopulation E (which size is to be estimated).Assuming that the proportion of subjects belonging to E over the number c of people in the social network of a person is the same that in the overall population we get the scale-up estimate of the size of the target subpopulation E. All the otorhinlaryngologist of Piemonte –an Italian region- were interviewed about the number of people they know in several known subpopulations and the number of people they remember were hospitalized in their hospital for choking injuries in the years 1999-2000-2001 (the target subpopulation).This estimate was then compared with the hospital records of the Piemonte region about all injuries with ICD9 codes ranging from 931 to 934 which occurred in children aged 0-14 in the years 1999-2000-2001.

Social Network Measures For "Nosduocentered" Networks, Their Predictive Power On Performance

Lluis Coromina, Jaume Guia, Germa Coenders

Our purpose in this article is to define a network structure which is based in two egos instead of egocentered (one ego) or complete network (n egos). We describe the characteristics and properties for this kind of network which we call "nosduocentered network", comparing it with complete and egocentered networks. The key point for this kind of network is that relations exist between the two main egos and all others, but relations among others are not observed. After that, we use new social network measures adapted to the nosduocentered network, some of which are based on measures for complete networks such as degree, betweenness, closeness centrality or density, while some others are tailor-made for nosduocentered networks. Once we obtain all these measures, we specify a regression model in order to predict research performance for PhD students. We specify three models based on these social network measures and these models are used in different networks such as advice, collaboration, emotional support and trust. Data used are from Slovenian PhD students and their supervisors. The results show that performance for PhD students depends mostly of the emotional network, because it is significant for all three models. Trust and collaboration networks are significant for two models and advice is not significant for any model. As regards network measures, classic and tailor-made measures are about equally good. Measures related to the total intensity of contacts (e.g., density and degree centrality) seem to work best to predict performance.

B: Bay

**Organizations
(Hillmann)**

Emergent Role Structures In Economic Networks: Evidence From Overseas Trade Investment In Early Modern England

Henning Hillmann

An important problem in the study of social structure is whether observed patterns of relationships are the product of initial differences in individual characteristics, or whether they arise from interaction sequences. This paper addresses this question in the context of investment in the growing overseas trade in early modern England. Historical accounts maintain that the structure of trade investment emerged from initial differences among the two largest groups of promoters: Gentry investors were primarily interested in land acquisition and colonial settlement in the Americas, whereas City Merchants preferred seizing mercantile opportunities in the Levant and East India trade. By contrast, this study demonstrates that investment decisions depended significantly on the position of promoters in the evolving network of affiliations across companies. I analyze longitudinal networks of annual joint investment ties among over 6,000 entrepreneurs and investors, linked to all overseas trading companies known to be operating in the period 1575-1630. Cohesive blocking of the evolving network between companies reveals no significant differences in investment activities between gentry and merchant promoters over time. At the micro-level, event history analyses demonstrate that changes in the portfolios of short-term investors were influenced primarily by direct ties to co-investors in the same companies. By contrast, long-term investors gradually began to observe the behavior of their peers in equivalent network positions before shifting their investments. The study shows how macro-level network evolution operates on different micro-level mechanisms at different points in time: As promoters of ventures pursued their investment careers, a role-based model of investment strategy replaced a model based on direct relations and social origins (i.e. merchants versus gentry).

Entrepreneurship In The Knowledge Society: Analysis Of Entrepreneurial Network Evolution

Tobias Mueller-Prothmann

In the literature, entrepreneurs are characterized as people maintaining excessive networking activities. Generally, they have a high capability of taking advantages from hidden opportunities, are able to mobilize resources, to find opportunities to open up new markets, and to link existing products, services or ideas for new combinations. Taking these theoretical considerations as a starting point, the entrepreneurial networking activities among the participants of an advanced training program are explored through social network analysis. The advanced training program "Entrepreneurship in the Knowledge Society" aims at providing entrepreneurs with direction and assistance for their action within the knowledge-based economy. As the center of information and communication based services in Germany, Berlin and its entrepreneurs were hit hard by the burst of the new economy bubble. Especially Berlin's considerable entrepreneurial potential is currently hidden in dependent employment or in the stage of job search. In the advanced training program new insights about the knowledge society are transferred from academia to business practice by an interdisciplinary project team of the Information Economy Research Forum (IERF) at the Free University Berlin. The project is funded by the European Social Fund (ESF)for a period of 2.5 years and encompasses five classes à six months of blended learning. A strong focus is put on the training of the participants' communication skills. They learn a set of different communication methods and work in small groups to strengthen their relationships with each other. The social network analysis studies the initial relationships between the participants and their evolution during the six months period of each class. Results of the network analysis will indicate correlations between network evolution among the participants and their actual entrepreneurial activity.

Social Network Analysis As A Tool For Intra Organizational Development In An Aerospace Project Team Over Time And Role Commitment

Kristie Hansen, Dimitris Assimakopoulos

This doctoral research reports results from phase one of a two phased approach defining a model for high productivity and performance of cross-functional development teams in an aerospace engineering community. More specifically it explores cohesiveness and team dynamics over a 2-year period in a project team that recently designed and built a highly innovative propulsion system for a satellite to be sent to the planet Mercury. The focus team delivered this propulsion system ahead of schedule, below cost, and was considered a highly productive team within Aerojet, a large aerospace company. Ucinet is used to map k-cores, month by month, for the entire life cycle of the project, based on detailed company time sheets and in depth interviews with all core team members. The research focuses on analyzing the networks of heterogeneous engineers, with specific emphasis on social network dynamics for knowledge creation and sharing within and across team boundaries. Specific emphasis is also placed on team dynamics for developing a robust model to critically evaluate these findings in relation to other similar teams for the phase two analysis which is to be conducted in 2005. From the outset the findings show parts of the critical core team were not integrated through the entire program, but only during specific phases of the project. The research tries to tease out the lessons to be learned for other project teams at the company level and also discusses implications for theory and practice.

D: Redondo 1

**Health
(Mendel)**

Cross-Sector Networks Of Care For Multiple Health Morbidities: Service Landscapes For Persons With Hiv And Severe Mental Illness In Los Angeles And New York

Peter Mendel, Gery Ryan, Devon Brewer, Paul Koegel

A growing body of literature has examined the network characteristics of community health systems (Provan et al. 2002; Provan and Milward 1995; Wright and Shuff 1995; Goldman et al. 1994, 1992). However, current research is still limited in analyzing these local inter-organizational networks from the perspectives of the many service sectors accessed by persons with multiple health morbidities, such as HIV and severe mental illness (SMI), as well as their effectiveness in terms of health outcomes for individual clients. This paper provides a unique analysis and comparison of the service landscapes for persons with both HIV and SMI in New York and Los Angeles. In contrast to previous work, the study constructs the local networks of care using a representative sample of individual HIV-SMI clients in each locale, and includes data from service agencies across the mental health, HIV treatment, social service, and drug treatment sectors serving this population. The data, collected as part of an NIMH-funded study, include network linkages and organizational characteristics from over 65 programs per city (response rates of approximately 90%).The analysis will compare the composition and structure of service networks in Los Angeles and New York, supplemented by both key informant interviews on the community/network contexts and systematic qualitative data on service coordination gathered from each participating organization. This analysis will form the basis for future examinations relating network structure, network position and other characteristics of service organizations to objective as well as self-reported measures of individual health outcomes.

Mediating Role Of Network Density On The Effectiveness Of A Satellite TV Training Program

Valente, Thomas, Pentz, Mary Ann, Chou, Chih-Ping

This study is designed to test whether community coalition advice network structure mediates the effects of an intervention designed to increase the uptake of evidence based practices. We matched 24 communities and assigned them to three conditions (control, satellite TV training, and training plus technical assistance). Some 670 community leaders were interviewed at baseline and 450 at followup on their attitudes and practices toward prevention and asked whom in their coalition they turned to for advice about prevention. Data were aggregated to the community level. Main effects of the intervention were significant (β=0.38; p<.01, N=21), but decreased to non-significance when baseline (β=0.25; p<.21) and followup network density (β=-0.31; p<.01) were entered into the model. Structural equation modeling showed that the intervention increased density in the control sites. Optimal community network structures for the adoption public health programs are unknown, but it should not be assumed that increasing network density is appropriate. It may be that less dense networks are more efficient for community level program adoption

E: Catalina

Diffusion
(Still)

Spreading Disparate Ideas Among The American Business Community: How, When And What Kinds Of Networks Matter

Mary C. Still

Do the effects of networks on the diffusion of innovations vary by the content of what is diffusing? Do different types of ties vary in their relevance under shifting institutional conditions? This paper compares the diffusion of two disparate innovations among the American business community over the period 1985 to 2000. The novel activities under consideration, the Internet and Work/Life programs and practices, differ in theoretically important ways, with the Internet formally categorized as a technological innovation and Work/Life a cultural/human relations innovation. In the paper, the shifting logics around the innovations are followed over time as well as the networks between firms considering adopting them. Managerial networks are constructed over the 15-year period using senior management rosters and biographies, with ties between firms counted when senior managers move between them. Geographic and competitive ties are considered over time as well. Results show senior management and competitive ties have a strong effect on firm adoption; however, these ties are not uniformly influential across the time period. The importance of ties for moving activities between organizations depends on both the content of what is moving and the larger institutional conditions, suggesting future network research might focus on both innovation content and the larger institutional environment through which ideas are circulating.

What Are We Talking About? Multiplex Network Relationships In The Diffusion Of Elearning Practices

Ines Meregl

More and more public institutions of higher education are realizing that there is a need to integrate innovative technologies into their teaching curricula in order to enable students to access and review teaching content anytime and connect to each other outside the classroom. An increasing competition on the market of higher education, the internationalization of degrees, and the contest to attract the best students have initiated a discussion about flexibility of universities and content providers. Many public institutions of higher education have recognized this trend and are in the process of introducing new innovative practices to meet the changing conditions, which are generally referred to as eLearning practices. Besides the intended outcomes of digital student support and access to teaching content, applying eLearning practices and integrating them into the traditionally existing teaching routines challenges an organization in multiple ways. eLearning has the power to transform the ways faculty members interact with their students as well as with outside actors in the environment of the university itself. Professors are forced to rethink their pedagogical and institutional role to transfer traditional teaching content into online content. It has become necessary for professors to evaluate what kind of practices are suitable for their needs and appropriately adapt them into their existing routines. An active decision is needed to adopt or reject technological changes. The aim of this study is to understand the factors that influence or hinder this adoption decision process. To gain a deeper understanding of the patterns and success factors of the adoption of eLearning practices, I apply a social network perspective on the process through which innovative technologies and practices are diffused and adopted by faculty members. I conducted a social network analysis of relational data collected in a Swiss business school. To identify the adoption behavior of innovative IT practices, I studied the formal and informal communication processes of 98 professors. In order to assess the adoption behavior, I developed a unique research design, applying relational correlation and regression analysis and using QAP and MRQAP techniques to understand the influence of interactions on the decision to adopt an innovative practice. I detected formal, informal as well as intra- and interdepartmental social influences and mapped them using sociograms. Finally, I employed a triangulation approach; conducting additional qualitative interviews in order to make sense of the results and better understand the statements of the respondents. Overall, the objective is to understand the effects of social relationships on the decision making to adopt or reject interactive eLearning media in an institution of higher education. This study quantifies the social structures and examines how they affect respondents self-reported adoption behavior. The results show that the diffusion of eLearning practices within the studied business school follows two distinct pathways of adoption: a) adoption of traditional eLearning media, and b) the adoption of interactive eLearning media. For these two pathways of adoption that are found in the organization, I examined the multiplex network relationships using advice networks as well as social and professional knowledge exchange networks to understand how success stories and knowledge about eLearning is spread among faculty members. The result is a communication model of passive advice receiving from actors within the professional network and an active giving from social acquaintances. These highly unilateral and not reciprocated relationships are shown in a communication model of diffusion of eLearning information.

F: Marina

**Teams
(Ruediger)**

Career Affiliation Networks And Industry Evolution: The Emergence Of Self-Sustaining Biotechnology Clusters

Steven Casper

Much research in economic sociology has suggested that the development of flexible labor markets is a critical driver of innovative capacity among technology firms within regional clusters such as Silicon Valley. Moreover, the development of successful technology clusters is extremely rare. In the

biotechnology industry, for example, there may be fewer than five regional clusters of firms that have reached the critical mass needed to become self-sustaining. Using careers histories gathered from over a thousand managers employed in the San Diego biotechnology cluster over the last 25 years, the paper will document the emergence of a flexible career affiliation network in San Diego capable of sustaining dozens of high-risk firms. The paper will focus particular attention on how dense networks of ties linking managers within the cluster emerged. The paper will draw from theories of network emergence, examining data on both the structure of the network over time (i.e. "small worlds" theory) and the composition of the network (the organization of ties between scientists and general managers). It will also examine the link between human resource policies of companies within the cluster and the development of career-affiliation ties linking people within the region.

The Social Construction Of Public Policies And The Role Of Elites And Governamental Spaces In The Definition And Effectiveness Of Public Agendas

Marco Aurelio Ruediger

This paper seeks to analyse the social construction of public policies. Our focus refers to the role of government and academic elites in the construction of stabilisation, reform and development agendas. The Brazilian case will be used here as a proxy for developing countries. Government spaces, far from being seen as forums for the exercise of a republican life in the construction of alternatives of development, have been formed in Brazil, after the redemocratisation process that began in the 1980s, under the aegis of macro-economic policies that defined the shape of state reforms and the model of development. Thus, it can be seen that reform processes were not usually based on relatively transparent polyarchic processes, but were moulded by a complex but closed social network. This hindered the adoption of some reforms, even though it produced a desirable short-term insulation for economic stabilisation and the development of polemical privatisation policies. Therefore, in order to provide an empirical foundation for this study, we initially reconstructed and analytically mapped the central social networks in policy management in the Brazilian Central Bank and the Ministry of Finance over 10 years, related to the establishment of the successful economic stabilization and reform initiatives during Fernando Henrique Cardoso´s center-rigthist government. Afterwards, in an attempt to contrast it with more republican alternatives, we briefly compare this network to the experience and the effectiveness of the recently created Economic and Social Development Council, promoted for the Lula´s center-leftist government. Fundamentally, this perspective allows us to discuss the effectiveness of the two different networks in shapping public policies. The empirical method used here is based on a large research on the direct or indirect links between the various actors on both networks, complemented by an analysis based on metrics obtained from the use of social network analysis techniques.

G: Esplanade

Network Structures
(Galaskiewicz)

Studying The Shifting Ecology Of Consumption: A Study Of Youth Services In Phoenix-Mesa From Sunup To Sundown

Joseph Galaskiewicz, Olga Mayorova, Beth Duckles

During the course of a typical Saturday children and families utilize a variety of services and venues in their communities. This study examines utilization patterns of 1,036 children in the Phoenix-Mesa metro area during the fall and winter of 2003 and 2004. We collected data via phone on the hourly activities of children, where they partook in these activities, and who provided these services. We are particularly interested in the latter and distinguish between business, nonprofit, congregational, government, and household service organizational forms. Using hypernetwork sampling methods, we construct the interface between population segments (e.g., based on income, age, gender, race/ethnicity), types of activities (e.g.,

personal care, sports, entertainment, arts/crafts, academic, socializing, religion), and types of providers. We examine changes in the resource space, hour by hour, during the course of a typical Saturday. Once we take time into account, we expect to find little competition among forms. During the course of the day people pass from one organization type to another as they engage in different activities, e.g., sports in the morning (provided by nonprofits), lunch/shopping in the afternoon (provided by businesses), and socializing (provided by other households) and religious services (provided by congregations) in the late afternoon and early evening. What is less clear is when consumption is heterogeneous as opposed to homogeneous. That is, are there times and places where different groups (e.g., rich and poor) consume in the same venues and when/where each consumes with folks like themselves? Do providers specialize in activities or market segments? That is, do providers offer a variety of activities that cater to a given segment or do providers depend on different segments utilizing the same service – but at different times? Conceptually we see venues of consumption as sites of segregation and integration that affect how different segments come into contact (or avoid) one another.

Elite Women: An Analysis Of The National Network Of Interlocking Directorates

Olga Mayorova, Gwen Moore

In The Power Elite C. Wright Mills portrayed cohesive power elite, intricately connected in "a set of overlapping crowds" and circles. Since the 1950s numerous researchers have investigated elite networks in the U.S., few studies, though, have addressed women's access to such networks and positions. Earlier research showed women's rarity and peripheral position in elite positions and circles. Most of the previous research of women's access to power circles focused on one sector of the U.S. economy: the corporate sector. However, the governing network of the elite in the U.S. is not limited to this sector and includes other sectors such as government agencies and certain nonprofit organizations where women have achieved greater success and occupy important positions. Thus inclusion of the three sectors into a study of the national elite is necessary while evaluating of women's position in the elite. Previous studies have mostly limited their analysis to the count of board seats occupied by women in the network and proportion of women on boards. We go beyond these two measures of women's position and focus on two measures of centrality (eigenvector centrality and betweenness centrality) as they reflect on the volume of social capital available to members of the network. The network of the national interlocking directorates in this study included directors of the Fortune-100 corporations, trustees of the 100 largest nonprofit organizations and 12 most prominent think-tanks, as well as the positions occupied by these directors and trustees on the federal advisory boards. The results support previous research findings and show that women score less than men on both centrality measures. We conclude that women occupy only peripheral position in the elite circles and do not have full access to all the resources with which elite networks provide their male members.

Groups: Surface And Deep Structure

Kathleen M. Carley, Terrill Frantz, Jana Diesner, George Davis

Once network data on a group is collected, we often ask - what is the structure? That is, what are the sub-groups and how do they interact? Within SNA we have a number of partitioning and clustering algorithms for locating groups. A key limitation of these approaches is that they partition the group into distinct non-overlapping sets. A second limitation is that they do not take non-social network data into account when locating the groups. A third limitation is that, they often only pull out the surface structure of the group - that which is common to all - and don't provide guidance as to the deep structure. In this paper, using data on a large university department, these limitations are illustrated. Then we demonstrate how these limitations can be, at least partially overcome, using data on multiple networks - social and knowledge; segregating overly shared information, and using fuzzy set partitioning.

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**THIS PAGE
IS FOR
NOTES AND DOODLES**

The Visible Path Graduate Student Award

The newly-created ***Visible Path Graduate Student Award*** is given annually to a graduate student in recognition of research at the interface between inter-organizational science and social network analysis.

The award recognizes research on organizational science, in which social networks are used to improve individual and inter-organizational performance. For example, research focusing on how people in organizations, especially corporations, use their own social networks to accelerate strategic processes with people outside their organization would be eligible.

The award is for research by a graduate student and is administered by INSNA, the International Network for Social Network Analysis.   Students should submit a paper (written in English) to the committee before 1 September 2005. The awardee will be announced later in the fall, and will give a formal presentation at Sunbelt 2006 in Vancouver. The paper must be written between September 1, 2004 and August 31, 2005.   Eligible students must be first (or sole) author on the submitted paper.   Letters of support should be submitted as well. Submitted papers will be evaluated by a committee of four judges; their decision will be final. Judging will be on the basis of the level of originality in the ideas and techniques, the possible applications and their treatment, and potential impact. The committee may arrive at the conclusion that none of the submitted papers merits the award.

The award will made for the first time in 2005 and carries a $5000 prize plus paid expenses to Sunbelt.   Funds for the award have been provided by Visible Path Corporation, New York (http://www.visiblepath.com).

Address for submission (electronic submissions (.pdf files) required):
    Professor Ronald Burt
    Chair, Visible Path Graduate Student Award Committee
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Key to Session Labels and Schedule

Thursday	A	B	C	D	E	F	G
8:00 – 10:00	Thurs-A1	Thurs-B1	Thurs-C1	Thurs-D1.4	Thurs-E1	Thurs-F1	Thurs-G1
10:00 – 10:30	Break						
10:30 – 12:00	Thurs-A2	Thurs-B2	Thurs-C2	Thurs-D2	Thurs-E2	Thurs-F2	Thurs-G2
12:00 – 2:00	Halftime Activities (HT)						
2:00 – 3:30	Thurs-A3	Thurs-B3	Thurs-C3	Thurs-D3	Thurs-E3	Thurs-F3	Thurs-G3
3:30 – 4:00	Break						
4:00 – 5:30	Keynote Address						
Evening	Banquet Hospitality Suite						

Friday	A	B	C	D	E	F	G
8:00 – 10:00	Fri-A1	Fri-B1	Fri-C1	Fri-D1	Fri-E1	Fri-F1	Fri-G1
10:00 – 10:30	Break						
10:30 – 12:00	Fri-A2	Fri-B2	Fri-C2	Fri-D2	Fri-E2	Fri-F2	Fri-G2
12:00 – 2:00	Halftime Activities (HT)						
2:00 – 3:30	Fri-A3	Fri-B3	Fri-C3	Fri-D3	Fri-E3	Fri-F3	Fri-G3
3:30 – 4:00	Break						
4:00 – 5:30	Freeman Award Plenary						
5:30 – 7:00	Software Demos (SD)						
Evening	Hospitality Suite						

Saturday	A	B	C	D	E	F	G
8:00 – 10:00	Sat-A1	Sat-B1	Sat-C1	Sat-D1	Sat-E1	Sat-F1	Sat-G1
10:00 – 10:30	Break						
10:30 – 12:00	Sat-A2	Sat-B2	Sat-C2	Sat-D2	Sat-E2	Sat-F2	Sat-G2
12:00 – 2:00	Halftime Activities (HT)						
2:00 – 3:30	Sat-A3	Sat-B3	Sat-C3	Sat-D3	Sat-E3	Sat-F3	Sat-G3
3:30 – 4:00	Break						
4:00 – 5:30	Sat-A4	Sat-B4	Sat-C4	Sat-D4	Sat-E4	Sat-F4	Sat-G4
Evening	Hospitality Suite						

Sunday	A	B	C	D	E	F	G
8:00 – 10:00	Sun-A1	Sun-B1	Sun-C1	Sun-D1	Sun-E1	Sun-F1	Sun-G1
10:00 – 10:30	Break						
10:30 – 12:00	Sun-A2	Sun-B2	Sun-C2	Sun-D2	Sun-E2	Sun-F2	Sun-G2
12:00 – 1:00	INSNA Business Meeting						