

**Cornell Microsoft International Symposium on
Self-Organizing Online Communities**

March 29-31, 2007
423 ILR Conference Center

Abstracts

Thursday, March 29

Theory and Facilitation 1

The Networked Household

Tracy Kennedy and **Barry Wellman**, University of Toronto

We argue that many households do not operate as traditional densely-knit groups but as more sparsely-knit social networks where individuals each juggle their own agendas and schedules. Individuals, rather than family solidarities, have become the primary unit of household connectivity. At a time when many people enact multiple, individual roles at home, in the community and at work, we ask: How do adult household members communicate with each other? How do adult household members use ICTs to organize and coordinate their leisure and social behavior both inside and outside the home? How do adult household members use ICTs to share things with each other? Interviews and surveys conducted in 2004-2005 in the Toronto, Canada area of East York examine how household members network with each other and how individuals have supplanted households to become portals of communication and information. Our analyses show that households remain connected - but as networks rather than solidary groups. We show how networked individuals bridge their relationships and connect with each other inside and outside the home. ICTs have afforded household members the ability to go about on their separate ways while staying more connected - by mobile phone, email and IM - as well as by traditional landlines. In such ways, rather than pulling families apart, ICTs often facilitate domestic cohesion.

MTML meets Web 2.0: Theorizing social processes in multidimensional networks

Nosh Contractor, University of Illinois, Urbana-Champaign

Advances in digital technologies (e.g, Web 2.0) invite consideration of organizing within communities as a process that is accomplished by global, flexible, adaptive, and ad hoc networks that can be created, maintained, dissolved, and reconstituted with remarkable alacrity. Increasingly these networks are multidimensional including individuals as well as digital artifacts and concepts.

This presentation makes the case for a new generation of theorizing about social processes in these multidimensional networks. It proposes a contextually based multi-theoretical multilevel (MTML) model to investigate the dynamics for creating, maintaining, dissolving, and reconstituting these social and knowledge networks in diverse communities. Using examples from his research on communities involved in disaster response, environmental engineering, public health, economic resilience, and MMOs (massively multiplayer online games), Contractor illustrates the potential of the MTML framework to model how the self-organization of social and knowledge networks

are enabled by Web 2.0 technologies.

The Evolution of On-Line Community Networks

Peter Monge, University of Southern California

Organizational communities are typically defined as populations of organizations that are tied together by networks of relations in overlapping resource niches. Traditionally, evolutionary theorists and researchers have examined organizational populations that comprise organizational communities focusing on their properties rather than the networks that link them. However, a full understanding of the evolution of organizational communities requires insight into both organizations and their networks. Consequently, this article presents initial efforts to apply evolutionary theory to organizational and community networks. It focuses on evolutionary principles, including variation, selection, and retention, that lead to the formation, growth, maintenance, and eventual demise of network linkages. This perspective allows us to understand the ways in which community survival and success are as dependent on their organizational linkages as they are on the organizations they connect.

Theory and Facilitation II

Conversation & Commitment in Online Communities

Robert Kraut, Carnegie Mellon University

Brian Butler, University of Pittsburgh

Moira Burke, Carnegie Mellon University

Lisa Joyce, University of Pittsburgh

Kimberly Ling, Carnegie Mellon University

Xiaoqing Wang, University of Pittsburgh

To be successful, online communities must select appropriate members and develop their commitment. In the early stages of this process, an online community and a potential member mutually evaluate each other, estimating the potential benefit each can derive if the newcomer joins. Membership is offered and accepted only if the estimated benefit exceeds some threshold. According to Moreland and Levine's socialization theory, potential members are likely to base their assessment of the benefits on the ways they are treated during initial social interactions. These interactions provide both immediate reinforcement and evidence about benefits the community is likely to provide in the future. Consistent with this reasoning, an analysis of almost 41,000 messages from 99 Usenet groups shows that individuals are much more likely to post again in an online community if their initial post received a reply. Moreover, the effect of getting a reply was much bigger for newcomers than for individuals with prior history in the community. Replies had a larger impact on commitment to the community when the replier's visibility was higher and the reply's content was more positive and inclusive.

Just as newcomers evaluate a group from initial interactions, so too groups and their existing members assess newcomers and decide to engage them based on the newcomers' initial conversational attempts. Groups are suspicious of newcomers and hesitate to help them. Newcomers can overcome this suspicion in part by introducing themselves, signaling their connection to the topic around which the group is organized and to the

group itself. Introductions signal legitimacy and commitment. Two studies show that self-introductions boost the likelihood that a community will respond to newcomers. First, an analysis of the 41,000 messages shows that introductions referencing lurking and a personal connection to the topic of discussion increase the likelihood of getting a reply. Machine learning detects introductions automatically within the text. Second, an experiment in which introductions are added or removed from previously posted messages and reposted to Usenet groups shows that introductions referencing the group history cause an increase in reply counts but that introductions referencing the central topic of the group do not.

Managing Social Capital as a Complement to Financial Capital to Make Software Successful (—or, Is What All Software Producers Have in Common That They Pay Too Little Attention to Sociologists?)

Bryan Kirschner, Open Source Software Lab, Microsoft

Over the last ten years, popularization of open source software (OSS) has contributed to a growing body of research on social dimensions of software production and use—such as user-to-user technical support and the transition of users of software to user-innovators or direct contributors of code. These phenomena are not exclusive to narrow definitions of free/libre or open source approaches, however. As archetypal “open source” producers—like JBoss—hire full-time staff assigned to facilitate community participation and companies—such as Microsoft—take historically proprietary technologies in whole or in part open source, a theoretical framework accommodating increasingly “hybridized” cases becomes more relevant to the industry as a whole.

At the Open Source Software Lab at Microsoft we have found a theoretical approach which recognizes a common need to mobilize contributions through both *financial and social capital* has explanatory power for a range of open source and mixed-model scenarios in which producers of software are balancing efficiencies from centralized coordination with aspirations for universal participation. Within this framework, applying social networking concepts and analytical methods appears to offer exciting opportunities to inform decisions to better help software succeed with users and users succeed with software.

We will share archetypal cases and our perspective on trends in information technology (IT) and invite research perspectives on what we view as the increasing applicability of social sciences research to this evolving landscape

Facilitation and Contribution

Voluntary Associations: Community, Contribution and Rights

Jeff Ubois, Internet Archive/UC Berkeley

Networked organizations and individuals operate simultaneously in two systems of exchange that might loosely be termed as the "market economy," and the "gift economy." The tensions between market and gift economies are intensified by rich media, and by expanded access to archives and other forms of collective memory. This presentation will explore the effects of rich media and memory on institutions (and individuals who work

in them) using cases and examples.

Manipulation-Resistant Reputation Systems

Eric Friedman, **Paul Resnick**, and Rahul Sami, University of Michigan

This chapter is an overview of the design and analysis of reputation Systems for strategic users. We consider three specific strategic threats to Reputation systems: the possibility of users with poor reputations starting afresh (whitewashing); lack of effort or honesty in providing feedback; and sybil attacks, in which users create phantom feedback from fake identities to manipulate their own reputation. In each case, we present a simple analytical model that captures the essence of the strategy, and describe approaches to solving the strategic problem in the context of this model. We conclude with a discussion of open questions in this research area.

Producing Online Information Pools: The Effects of Social Psychological Incentives on Contribution

Coye Cheshire and Judd Antin, UC Berkeley School of Information

A growing number of new systems on the Internet create what we call information pools, or collections of information or information goods that can act as collective goods. Examples of information pools include collaborative editing websites (e.g. Wikipedia), peer-to-peer file sharing networks (e.g., Napster), and multimedia contribution sites (e.g. YouTube). Following current theory and research, we argue that extremely low costs of contribution combined with very large networks of distribution facilitate the production of many types of online information pools-despite an abundance of free-riding behavior. This paper presents results from a series field experiments that examine the effects of various social incentives on contributions to an online information pool. In particular, we demonstrate that feedback such as gratitude for current contributions, historical reminders of past behavior, and a ranking of one's contributions relative to those of others can significantly increase repeat contributions. However, the positive effects of such incentives may be partially mitigated by the context of interaction or an individuals' identification with the collective good in an online system.

Friday, March 30

Methods

Expertise Networks in Online Communities: Structure and Algorithms

Jun Zhang, Mark S. Ackerman, **Lada A. Adamic**, University of Michigan

Web-based communities have become an important place for people to seek and share expertise. We find that networks in these communities typically differ in their topology from other online networks such as the World Wide Web. Systems targeted to augment web-based communities by automatically identifying users with expertise, for example, need to adapt to the underlying interaction dynamics. In this study, we analyze the Java Forum, a large online help-seeking community, using social network analysis methods. We test a set of network-based ranking algorithms, including PageRank and HITS, on this large size social network in order to identify users with high expertise. We then use

simulations to identify a small number of simple rules governing the question-answer dynamic in the network. These simple rules not only replicate the structural characteristics and algorithm performance on the empirically observed Java Forum, but also allow us to evaluate how other algorithms may perform in communities with different characteristics. We believe this approach will be fruitful for practical algorithm design and implementation for online expertise-sharing communities.

Integration and Exclusion – A Network Analysis of Wikipedia Discussions

Elisabeth Bauer, C. Stegbauer and A. Rausch, Frankfurt University

The online project Wikipedia calls itself the encyclopedia that "anyone can edit". Without centralized guidance and clear hierarchies, thousands of volunteers around the globe build the encyclopedia - and not only the encyclopedia itself but also the body of rules and procedures by which it is organized. In our research we aim to explore the structure of cooperation in Wikipedia. How are people encouraged to contribute, who decides about the content of an article? Which editorial roles exist in the community and how are they assigned? To find answers to these questions we look into the discussions pages which accompany Wikipedia articles. In a network analysis of these pages we seek to reveal the underlying processes of integration and exclusion and the distribution of editorial roles and authority within the community.

Many Eyes: A Site for Social Data Analysis

Fernanda Viegas and Martin Wattenberg, IBM Visual Communication Lab

While visualization is traditionally viewed as an efficient way of transferring a large amount of information from a database into an individual's head, we believe that visualizations become far more powerful when multiple people access them for collaborative sensemaking. To test this hypothesis, our lab recently launched Many Eyes, a public web site where users may upload data, create visualizations, and carry on discussions. This presentation describes the first two months of user activity in the site. So far, users have uploaded data and created graphics on everything from DNA microarray data, to co-occurrences of names in the New Testament, to personal gift-giving networks. Apart from being a tool that allows anyone to engage in data analysis, our preliminary results show that Many Eyes is used for a variety of goals ranging from journalism and advocacy to personal expression and social interaction.

Interaction

Challenges in the Qualitative Study of online Communities

Nancy Baym, University of Kansas

Qualitative researchers face a number of common struggles in trying to make sense of online communities. This paper draws on a collection edited by Nancy Baym and Annette Markham which is nearing completion, to identify some of the key questions with which researchers struggle and argue that it is not a question of finding the true answer so much as the best answer given the specific research question and research context.

Visualizing Speech

Karrie Karahalios, University of Illinois

Speech research has been conducted by a minority and has not reached its full potential. Today, the prevalence of Voice Over IP with systems such as Skype provide the next wave of speech interfaces that are being adopted by the critical masses. Using voice to communicate is easier than typing - we have thousands of years of experience talking. It is less invasive than vision (although not completely private); and computationally visualizing voice can provide many social cues and feedback that are not easily perceived in traditional face-to-face interaction. This paper outlines a challenging goal of combining the ease of voice with the visual feedback of graphics to create a new communication medium. In a sense we are creating a graphical language for visualizing communication. We aim to use different versions of this graphical language for mediating remote and co-located conversation, for creating learning tools for acquiring new language skills and conducting speech therapy, for creating new visualization techniques combining time and phase analysis, and for novel methods of archiving audio, speech, and voice.

Self Perception in Online Interaction

Andrew Fiore, UC Berkeley

How can we characterize the breadth of cognitive and interpersonal phenomena that influence people's perceptions and expectations of one another in a mediated environment for finding romantic partners? A variety of theories and empirical findings from the communication and social psychology literature suggest ways to conceptualize the process of presenting oneself, perceiving others, searching for viable matches, and making the transition to face-to-face interaction. For example, "marriage market" models provide a lens for understanding the process of searching (and the anxieties it might entail); once users have identified promising potential mates, Walther's theories of social information processing and hyperpersonal interaction describe how optimistic perceptions can inflate expectations prior to meeting in person. I will describe how the convergence of these and other theoretical perspectives lead us to a multifaceted, ecologically valid approach to studying online relationship formation.

Saturday, March 31

Implications for Future Research; Theory and Methods in Large Scale Analysis of Online Communities

Ravi Kumar, Andrew Tomkins, Cameron Marlow, Yahoo Research

We begin with a discussion of trends in online user-generated content, then turn to an analysis of three example datasets. The first is understanding the formation and evolution of online contacts and their impact on the structure of the network at large; we use the Flickr social network and analyze its temporal micro-evolution. The second is modeling the easy navigability of social networks; we use the LiveJournal blogging network, along with the geographic user profiles, for this problem. The third is studying the message posting behavior of members who belong to online groups; we use the Yahoo! Groups data to study this behavior. We anticipate a lively discussion.