WikiProjects as Complex Systems

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Abstract

Small group collaborations emerge in online peer-production systems as participants self-organize work activities around shared goals and interests. WikiProjects— emergent, persistent collaborations among Wikipedia editors—can serve as living laboratories for the study of complex sociotechnical factors related to group success in these environments. In this proposal I outline a research agenda designed to identify the role of local, global and contextual dynamics in the trajectories of different WikiProjects over time. This research has implications for the design of CSCW systems to support voluntary, distributed online collaboration.

Introduction

Research on the implementation of groupware systems in organizations [3] has demonstrated that in order to be successful, groupware must not only support the goals, needs and common tasks of individuals, but also support group-level processes, provide group-level benefits, integrate with local values and practices and facilitate group success within the context of the group's parent organization, broader community and their infrastructures. Supporting group collaboration in purely online work environments presents additional opportunities and challenges. For example, in voluntary online collaborations, groups often experience a high degree of goal-setting autonomy and freedom to shape their tools and practices to their own needs. However, these same groups may also struggle to maintain productivity, retain and recruit members and respond to internal and external change in part because they lack the external incentives and the support infrastructure of other working environments.

As with more traditional work groups, the success or failure of an online volunteer team such as a WikiProject can seldom be to reduced to a single variable. Each WikiProject is a complex system composed of people, tasks, tools and their relations; each project also is embedded within the larger system of Wikipedia that contains other projects, people and processes with which it constantly interacts.

Theory and Methods

Small Groups as Complex Systems (SGCAS) [1] is a theoretical framework for understanding the complex, dynamic and adaptive properties of working teams. SGCAS unites insights from social psychology, sociotechnical theory and complex systems theory to

facilitate identification of both individual variables that shape group processes and outcomes and the patterns that emerge from interactions among those variables. SGCAS recognizes three basic levels at which variables affect group dynamics: the *local*, *global,* and the *contextual*. In this project, I will analyze differences among WikiProjects over time at these three levels in order to identify variables and dynamic patterns that lead to or reflect individual projects' success or failure. I will use a mixed-methods approach that combines interviews with current and former WikiProject members, content analysis of WikiProject pages and member discussions, and quantitative analysis of behavior traces in order to model differences *among* projects and changes *within* projects over time.

Research Questions

In this project I first address questions related to the suitability of WikiProjects and SGCAS to my research agenda. Specifically, I argue that **a)** *WikiProjects are an appropriate setting for the study of voluntary online collaboration*, **b)** *SGCAS is a productive framework for studying WikiProjects*, and **c)** *current approaches to studying WikiProjects and Wikipedia do not account for important phenomena related to WikiProject behaviors and outcomes.*

Next, I identify a set of goals, characteristics and success metrics that are common to all WikiProjects. Then I articulate a set of research questions that address the role of *local*, *global* and *contextual* dynamics on project outcomes, and describe the research methods I will use in each investigation.

Research questions include:

- How are shared values communicated within projects, and how are values conflicts resolved?
- How does tool use address (and reflect) member needs and project goals over time?
- How do different projects recruit and socialize new members?
- How do projects negotiate boundaries and share resources with other projects?

Research Contribution

Previous research has demonstrated that SGCAS is a productive framework for identifying sets of salient design requirements in CSCW systems. [4][2] However, there is little research that evaluates how to deploy different research methods using SGCAS; that applies SGCAS in voluntary, distributed peer production systems; or that systematically compared the structures and strategies of multiple, parallel self-organized groups within the same online environment over time. The research agenda I describe here outlines a set of research questions and a mixed-methods approach for identifying patterns of group activity among WikiProjects which lead to positive group outcomes such as sustained productivity, new member socialization and persistence over time. These findings should yield generalizable insights into the design and organization of online collaborations beyond Wikipedia.

Works Cited

[1]   Arrow, H., McGrath, J. E., & Berdahl, J. L. (2000). *Small groups as complex systems : formation, coordination, development and adaptation*. Thousand Oaks, Calif.: Sage Publications.

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Candidate Bio

Jonathan T. Morgan is a Doctoral Candidate at the University of Washington's Department of Human Centered Design & Engineering, and a Research Fellow with the Wikimedia Foundation. His primary research interest is how groups of people collaborate online to create common goods or come to joint decisions. His two main projects right now are both related to Wikipedia. He works on the Teahouse, a space on Wikipedia designed to support new editors, especially women editors (who currently make up only ~10% of the Wikipedia editor community). He also studies WikiProjects, self-organized small group collaborations on Wikipedia, trying to figure out what makes the successful ones tick.

Jonathan is currently writing his dissertation proposal and will be working exclusively on his dissertation research by the date of the conference. He intends to submit and defend his dissertation by summer 2013.

Dissertation Research Artifacts

[Research Poster](#) describing my dissertation project, presented at the 2012 University of Washington DUB (*Design. Use. Build.*) Annual Retreat.

"[**Visualizing WikiProject Activity**]" and "[WikiProject Participation and Mentorship]" – reports of research activities undertaken as a participant in the 2011 Wikimedia Foundation Summer of Research.

[*VBAA: A Method for Surfacing Values in Distributed Online Collaborations*](#) – a position paper describing a novel values-sensitive discourse-analytic method, accepted to the 2012 *Values in Design Workshop* at CHI 2012

Anticipated Benefit of Attendance

Participating in the WikiSym 2012 Doctoral Consortium will give me the opportunity to receive feedback from leaders in the fields of CSCW and HCI. This particular conference will be an especially valuable experience for me because I anticipate that both the DC mentors and my fellow participants will have substantial research experience and design expertise in the area of wiki-based online collaboration in general, and Wikipedia in particular. I hope that the DC mentors and participants will give me feedback on how to conduct and present my research agenda in a way that allows my findings to be generalizable beyond Wikipedia and wikis in order to enhance the value of my contribution to design-oriented research on voluntary online collaboration.

Research Advisor Bio and Contact Info

Dr. Mark Zachry has been studying communicative practices in workplaces for more than a decade. His co-edited collection on communicative practices in the workplace, won the 2008 NCTE award for best collection in scientific and technical communication. He currently directs the Communicative Practices in Virtual Workspaces research lab at University of Washington. His projects within that group include investigations of uses of publicly available online services among

knowledge workers, and of communicative practices supporting collective work in online environments. PI Zachry has one active NSF award (*IIS-0811210*) studying work and reputation in distributed contributor systems and one upcoming NSF award (*IIS-1162114*) studying WikiProjects as virtual teams.

Dr. Zachry may be reached by email at *zachry@u.washington.edu* or by phone at 1-206-616-7936.

Candidate Curriculum Vitae
Peer-reviewed Journal Articles

Kriplean, T., Freelon, D., **Morgan, J. T.,** Borning, A. and Bennett, L. *Facilitating Diverse Political Engagement with the Living Voters Guide.* (2012) to appear in JITP: Journal of Information Technology and Politics 9(3)

Peer-reviewed Conference Papers

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Kriplean, T., **Morgan, J. T.,** Freelon, D., Borning, A. and Bennett, L. *Supporting Reflective Public Thought with ConsiderIt.* (2012) CSCW 2012: ACM Conference on Computer Supported Cooperative Work, Bellevue, WA.

Morgan, J. T., Mason, R. M., Nahon K. (2012) *Negotiating Cultural Values in Social Media: A Case Study from Wikipedia.* (2012) to appear in HICSS 45: 45th Hawaiian International Conference on System Sciences, 2012, Hawaii.

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Marin, A., Ostendorf, M., Zhang, B., **Morgan, J. T.**, Oxley, M., Zachry, M., Bender, E. M. (2010) *Detecting*

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Extended Abstracts *(light review)*

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Divine, D., **Morgan, J. T.,** Ourada, J. & Zachry, M. *Designing QBox: A Tool for Sorting Things Out in Digital Spaces.* GROUP 2010: Proceedings of the ACM Conference on Supporting Group Work, November 7th-10th, 2010, Sanibel Island, Florida.

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Invited Research Presentations *(presenting author listed first)*

Gokhman, S., **Morgan, J. T.,** Sirjani, B., Zachry M.(2011). *Marking Territory: Exerting Control over the Shape of Scientific Knowledge in Wikipedia.* Annual Meeting of the Society for Social Studies of Science (4S), November 2-5, 2011, Cleavland, Ohio USA.

Morgan, J. T.,, Halfaker, A., van Liere, D., Geiger, S., Kaelin, F., Kill, M., Luca Ciampaglia, G., Pinchuk, M., Walker S., Walling, S. *Brown Bag: Wikimedia Foundation Summer of Research.* August 25th, 2011, San Francisco, CA, USA

Morgan, J. T., *Sorting Things Out in Social Media: Adapting Content Anlaysis for Industry UX Research.* NSF Social-Computational Systems (SoCS) Program Workshop June 9th, 2011, Minneapolis, MN, USA

Morgan, J. T., Oxley, M., Zachry M., Bender E. M., Hutchinson, B. (2011). *Authority Claims as Identity Markers in Wikipedia Discussion Pages.* GURT 2011: Discourse 2.0, Languages and New Media. Georgetown Roundtable on Languages and Linguistics, March 10th-13th, 2011, Georgetown University, Washington D.C., USA.

Morgan, J. T., Mason, R. M., Nahon, K. (2010). *It's Not for Us, It's for Them: A Case Study of Wikipedia Values in Practice.* IR.11: Association of Internet Research (AOIR) Conference, October 21-23, 2010, Gothenburg, Sweden.