
Supporting and Transforming Leadership in Online Creative Collaboration

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Abstract

Behind every successful online creative collaboration, from Wikipedia to Linux, is at least one effective project leader. Yet, we know little about what such leaders do and how technology supports or inhibits their work. My dissertation investigates online creative collaboration in the novel context of animated movie-making, focusing on the role of leadership. I first conducted two empirical studies of existing leadership practice in online communities of animators. I am currently designing two Web-based collaborative systems based on these findings. My evaluation compares both systems with existing practice to elicit broader principles of online creative collaboration.

Keywords

Animation, creativity, leadership, online creative collaboration, open source, social computing

ACM Classification Keywords

H.5.3 Information interfaces and presentation (e.g., HCI): Group and Organizational Interfaces.

General Terms

Management, Human Factors, Design, Experimentation

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Phase I (2006-2009)

I studied existing online creative collaboration practices in the domain of animation, focusing on the role of leaders and the challenges they face.

Phase II (2009)

I'm designing two systems to support online, collaborative animation projects, each with a very different approach to leadership. One system is built into Newgrounds.com. The other, Pipeline, will be OSS.

Phase III (2009-2011)

I will use quantitative and qualitative data to contrast leadership models in Pipeline vs. existing practice, gain fundamental insights into how to use information technology to support new kinds of creative production, and shed light on issues of creative collaboration and HCI.

Figure 1. Dissertation timeline.

Introduction & Motivation

Whether it is Wikipedia editing, open-source software (OSS) development, or *World of Warcraft* guild raids, the power of rich online collaboration tools and ever-broadening access afforded by networked computers and high-speed Internet connections has captured the attention of the CHI community [2,3,4]. In just a few short years, an impressive and growing body of research in HCI and other fields has accumulated to explain how online collaboration works as it does. If the success of online collaboration is indeed one of the big surprises of the 21st century [1], our deepening understanding of *why* it succeeds is just as fascinating.

One of the most surprising aspects of online collaboration remains the governance of volunteer participants, particularly the role of the leader. While much contemporary rhetoric surrounding online collaboration (and the Internet, generally) emphasizes its fundamentally democratic underpinnings, empirical studies present a more complicated picture [10]. Leadership, in various forms and to varying degrees, appears in online collaboration of every sort.

In *online creative collaboration*—that is, online collaboration with the purpose of creating new artifacts—leadership has been empirically studied primarily in the contexts of Wikipedia and OSS projects [6]. This literature reveals a common theme: as projects grow in popularity and scope, a corresponding influx of new volunteers requires more complex organizational structures [2,5,8,9]. Thus, the importance of leadership in online creative collaboration grows concomitantly with its success.

Despite this importance, little is known about leadership in online creative collaboration outside the contexts of Wikipedia and OSS projects. Yet this phenomenon encompasses a much broader set of human activities than only encyclopedia writing and software development. How might groups of people use the Internet as a medium through which to collaboratively create art, music, or stories, for example? And how might we further refine HCI theory and practice through the design of socio-technical systems to support this type of creativity? As Shneiderman argues, the HCI community is uniquely equipped to foster *mega-creativity*—helping more people to be more creative more of the time [11].

Inspired by these ideas, my dissertation investigates online creative collaboration in a new context—animated movie-making—with a focus on supporting and transforming leadership (see Figure 1). My initial work has been two empirical studies of existing leadership practice in this context, reviewed in the next section. I am now designing two Web-based collaborative systems based on these findings to understand the impact of different leadership models on online creative collaboration. I outline my design and evaluation plan for this system in the last section.

Results to Date

To expand our knowledge of leadership in online creative collaboration, I conducted an empirical study of leadership in three online communities whose members collaborate over the Internet to produce computer-animated short movies called *collabs* [6]. The main focus of the study was Newgrounds,¹ a popular

¹ <http://www.newgrounds.com/>

1. Completion

Collab participants only release “completed” work, while Wikipedia and OSS projects have multiple, frequent releases and are never completed.

2. Originality

Collab participants strive for originality above all else, while Wikipedia bans original research and most OSS projects attempt to create free alternatives to existing commercial products.

3. Subjectivity

Collab participants defer to the leader’s creative vision, while Wikipedia editors seek neutrality and OSS developers opt for the “technologically superior” option.

4. Ownership

Collab participants insist on attribution and defend the integrity of their work, while Wikipedia and OSS projects embrace open source/open content principles and deemphasize individual credit.

Figure 2. Four key differences between collabs, Wikipedia, and OSS development (from [6]).

online community of animators with over 1.8 million registered members and over 160,000 member-uploaded animated movies and games. The study produced four main findings:

1. Few collabs produce a completed animation.

Less than 20% of collabs produce a completed animation, yet completion is everyone’s goal. Collab participants were unanimous in their belief that leadership is the single most important factor affecting the outcome of a collab.

2. Collab leaders are crucial, but overburdened.

Leaders do the bulk of the work in a collab. In addition to the role of creative director, the leader also acts as screenwriter, producer, casting director, editor, and any other responsibilities that may arise during production.

3. Collab participants have little technological support.

Collabs are organized in basic discussion forum threads, which serve as the locus of activity from start to finish. Leaders shoulder the burden of manually maintaining group awareness, managing digital assets, and acting as a single point of contact for collab participants.

4. Collabs have different needs than Wikipedia or OSS.

Collabs clearly fall within the boundaries of online creative collaboration, but they differ from Wikipedia and OSS development in at least four key ways: completion, originality, subjectivity, and ownership (see Figure 2). The context changes how people collaborate.

In a second empirical study, I sought a deeper explanation of why some collabs succeed, yet most fail [7]. I quantitatively analyzed almost 900 collabs, using content analysis, logistic regression, and other

statistical tests. I found that it was possible to predict how likely a collab is to succeed by examining its early organization and structure, its leader’s history of contributions, and patterns of activity within the collab.

With these findings in mind, I worked with the Newgrounds staff to develop tools for their website geared towards helping members create successful collabs. A main feature of these tools was the ability for collab leaders to precisely specify how much control they had over each part of the system. Thus, leaders could run collabs where they had near-total control, where control was mostly decentralized among all collab members, or any combination in between.

Next Steps & Expected Contributions

My current work involves building a second web-based system, Pipeline. Like the tools I developed at Newgrounds, Pipeline is meant to help animators create successful collabs. However, Pipeline takes a radically different approach to achieving this goal. Rather than fine-grained access controls, Pipeline takes a more lightweight, open, wiki-like approach. By default, leaders and regular members share most of the same powers. Pipeline will also be released as an OSS platform that any person or existing online community can appropriate and modify.

Evaluation Plan

My general research questions center on the impact of technology on supporting and transforming leadership in online creative collaboration (see Figure 3). A mixed-methods evaluation has guided the design process of Pipeline and allow me to address these research questions. RQs 4 and 5 will be addressed with in-depth interviews, participant observation, and log file analysis

1. What are the challenges to leadership of online creative collaboration? (*Completed*)
2. What are the predictors of successful online creative collaboration leaders and projects? (*Completed*)
3. How can we design new technological support for online creative collaboration? (*In Progress*)
4. How do leaders of online creative collaboration adopt new technological support with respect to their existing practices?
5. How does leadership centrality affect online creative collaboration *processes*? (e.g., completion time, success ratio, communication structure, # contributors, etc.)
6. How does leadership centrality affect online creative collaboration *products*? (e.g., quality [ratings], popularity [# views], consistency of style, duration, etc.)

Figure 3. Research questions.

of Newgrounds and Pipeline collab members and their work. RQ 6 will be addressed with content analysis, expert review, and community review of completed Newgrounds and Pipeline collabs.

For both qualitative and quantitative data, I will be able to compare existing leadership practices, Newgrounds collabs, and Pipeline collabs with varying degrees of leadership centrality. These comparisons will allow me to understand the particular effects of technological support and different types of leadership on a collab's production and outcome. Ultimately, this evaluation will address the broader question, "For what purposes is online creative collaboration useful, and how can we best support the practices of leaders and others who participate in it?"

Expected Contributions

My thesis will offer new insights into fundamental issues of online collaboration in creative contexts, both in terms of concrete design implications for socio-technical systems and a deeper theoretical understanding of how people work together creatively. Specifically, I will contribute (1) a rich description of existing practices surrounding online creative collaboration in the novel context of animated movie-making; (2) a set of empirically validated design principles for supporting online creative collaboration in this context; (3) a comparative investigation of the effects of leadership centrality on online creative collaboration; and (4) a Web-based collaboration system, Pipeline, released as OSS for anyone to use and modify. In the long term, I envision a multitude of studies in various contexts, gradually increasing our understanding of the potential and limitations of online creative collaboration.

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