Sean Munson | Research Statement

I design, build, and evaluate systems designed to promote socially desirable outcomes while respecting individual autonomy. In particular, I focus on applications that help people make behavior changes that enhance their health and wellness and applications that increase the diversity of news and opinions people consider. I study the application of several social influence tactics and theories [1] – including public commitments, social proof, and social comparisons – to the unique affordances of technology-mediated settings by building prototypes and conducting field experiments.

My results will help researchers and designers better understand how to apply social influence in social software. As technology increasingly mediates daily interactions, it becomes more important to understand how systems persuade or influence their users to behave in certain ways [2]. Because any system in which users make choices creates a decision environment with its own particular influences [3], this topic is important whether designers are deliberately trying to nudge people toward certain behaviors or whether those nudges are unintended consequences.

BALANCE: Political Diversity in Online Environments

When political discussion includes diverse points of view, societies make better collective decisions and these choices have greater public legitimacy [4]. I study both the diversity and range of political discussion that currently occurs online [5], the political opinion diversity that people prefer in online news aggregators such as Digg or Reddit [6], and both algorithmic and presentation techniques to nudge people to read more diverse news [6,7, figures 1 & 2]. This project has been funded through a Yahoo! Key Technical Challenge grant and NSF IIS award #0916099, co-authored with my adviser Paul Resnick and fellow graduate student Daniel Zhou.

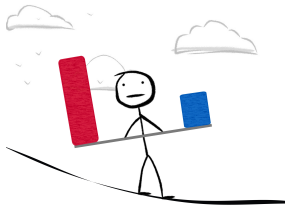

Fig 1. In a current BALANCE study, we explore whether feedback on the slant of one's news reading history promotes more balanced reading.

Fig 2. In another variation, the predicted bias of articles is show to readers. This widget has been available as a Google gadget since 2009.

Health and Wellness

My dissertation research focuses on how social software, particularly existing social network sites, can support health and wellness. Thus far, this work has been split between studies to identify people's existing practices (what works well, and challenges and opportunities that new designs and systems might address) [8] and studies to test features and designs in the field [9, 10]. These systems include:

- *3GT:* Based on the positive psychology exercise "Three Good Things," my first Facebook application, *3GT* [9, figure 3] allowed people to record positive things that happened to them every day and the reasons why they happened. People who participate in this activity can train themselves to focus more on the positive aspects of life and dwell less on the negative. Offline, individual participation in this activity has been shown to reduce symptoms of depression and increase happiness [11]

  In a variation from the original activity, which is completed as a private exercise, *3GT* users can share their positive experiences with other users of the application or post them to their Facebook NewsFeed. I had hoped that this would lead to more social interaction around positive experiences post-

ed to the NewsFeed, either through likes or comments, thus causing people to focus even more on what was going well, and possibly increasing the effectiveness of the intervention. *3GT* was available to Facebook users from July 2009 to July 2011. Though participants improved on standard self-report measures of depression and happiness, and appreciated the convenience of Facebook integration, they were reluctant to share their good things in their feeds for fear of boring their friends or appearing boastful. They did, however, find other people's shared good things to be compelling reading, and wanted to see more. I plan to re-design 3GT based on the lessons learned before re-deploying it and, finally, testing a social version against a private, but also online version, in a controlled trial.

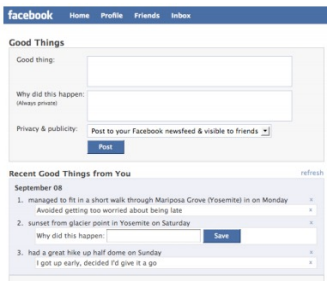

Fig 3. *3GT* users post good things and reasons in Facebook, with options to keep them private, share with friends using the app, or make them public on their NewsFeed.

- *Steps:* Users of the second Facebook application, *Steps* (figure 4), can upload data from Omron or FitBit pedometers, set walking goals, track their progress and view progress of others in the application, and make public or private commitments to walk a certain amount or meet a certain number of daily goals over a week or a month.

Fig 4. *Steps* tracks users' walking from uploaded or entered pedometer data, lets them set goals, make commitments, and compare with friends.

- *GoalPost/GoalLine:* Working with Sunny Consolvo, I designed and developed *GoalLine* as a mobile application to help people set physical activity goals, record their activities, and view their progress toward these goals on their iOS device. This application was also the first test of allowing users to simultaneously pursue two goals (e.g., a "stretch" and a "fallback" goal). Study participants reported that being able to pursue two goals was helpful, and that it helped push them to do a bit more or to keep up some minimal effort even when they did not do all they had planned for the week. I will test this feature in a future controlled field experiment. Users of the *GoalPost* version could also share these goals, their activities, and progress (or lack thereof) on their Facebook NewsFeed using the application's Share feature (figure 5). These apps were deployed for a four-week field trial with 23 participants [10].

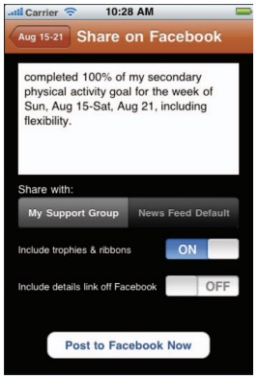

Fig 5. *GoalPost's* share screen allows users to select and edit what they share, with whom they share, whether to include trophies & ribbons they earned, and whether they wanted to make the full post available on Facebook or keep the data elsewhere.

Through this work, my colleagues and I have identified a number of challenges and issues with how current social network sites and health and wellness applications support sharing and goal achievement. These include how people build and shape the network of people with whom they share health information, how, where, and when they share, and how to use public commitments effectively. While many persuasive application developers, particularly in the health and wellness space, are using social features in their applications, they are often doing so without a clear understanding of their benefits and drawbacks, and I believe that this at times may be harmful: people may bore their friends, embarrass themselves, or come across as boastful, or they may get social benefits without actually doing the work to achieve the health and wellness benefits [12].

My dissertation follows up this exploratory work by beginning a thorough experimentation with different design choices for a few common features in social, persuasive systems. I am beginning with the *Commitments* application, which allows users to set goals. There have been mixed results about the effectiveness of publicly commitments. Conventional wisdom says that public commitments will help people achieve goals, as they will want to appear consistent with their goals, and others may hold them accountable [13, 14, 15]. Other re-

search says that people can obtain many of the social benefits of achieving a goal simply by sharing their intention, and thus are less likely to follow through [16].

Commitments will allow systematic investigation of sharing options: who to share with and whether to announce the commitment and/or whether to pre-commit to announcing success or failure at the end. It will also allow systematic investigation of the effects of allowing multiple concurrent goals, and different reward or penalty options. Subjects will be randomly assigned to different conditions within this design space. In those cases where commitments are made repeatedly (e.g., weekly walking goals), subjects will be reassigned to different conditions in different weeks, allowing for within-subjects comparisons. I anticipate deploying this application around the new year, in order to recruit people who wish to make and keep resolutions.

My work in the health and wellness space was initially funded with a grant from the Rackham Graduate School, and we have since received additional funding through Intel.

Other Work

In addition to the health and wellness and political domains, I have worked in a variety of other domains. I am passionate about designing and building systems that help connect people and spark either short term social interactions or build community, both as a research goal and as a way to strengthen the organizations and institutions to which I belong. At both Boeing and the School of Information, I have deployed and studied wikis as a communication and collaboration tool [17]. Also at the School of Information, I participated in the design and deployment of a series of public displays (figure 6). This work exemplifies the type of research I enjoy: I built systems and then deployed them in the field for several months, the systems were beneficial for the community, I was able to mentor an undergraduate in the research, and we drew generalized lessons for the future design and deployment of such systems [18].

Fig 6. *SIDisplay* is powered by Twitter and displays posts from community members at various locations in the School of Information. An open source version, *@display,* is available.

With researchers at Intel and the University of Washington, I used a survey to explore people's attitudes about the increasing online availability of certain types of public records [19]. Previously, I designed a location based services platform as part of my undergraduate capstone project, and also as part of some unpublished work during my time at Boeing's Payloads Concept Center (e.g., figure 7).

Fig 7. In this experience prototype of *Flight Portal*, passengers could leave and share annotations about the landscapes and buildings below, building a memory for the aircraft.

Future work

In my future work, I expect to continue to build and carefully evaluate, through laboratory and field experiments, systems that nudge people's behavior. Ideas of location and place continue to be very interesting to me, and it is hard for me to imagine not returning to this topic in the future. Within the broad areas of human computer interaction and social computing, I expect that behavior nudges, privacy, sharing, diversity, and community will continue to be the primary themes of my work going forward.

Though creating and testing new systems is my favorite style of work, I have learned that this often requires conducting descriptive studies of people's existing behavior and preferences along the way, and will continue to do that as well. With others, I have been working to build community around this style of

investigation of persuasive technology, both in the health community and more broadly, and I am co-organizing two workshops at CSCW 2012 with this goal.

Some of the most exciting work done and to be done in this space connects people with a variety of backgrounds and training. My love for this kind of work drew me to Olin College, where I helped to design an engineering curriculum built around treating technologies as part of socio-technical systems before joining the inaugural freshman class, and then to the School of Information at Michigan. I hope to return to an engineering program -- learning through building and getting systems in front of people is where my heart lies -- while continuing to collaborate across disciplines. This makes me very excited about the Human Centered Design and Engineering Department, which has strong faculty and students. I anticipate natural collaborations in the health and wellness domain with Dr. Julie Kientz's CHiLL lab. I also expect to find complementarities between my interest in diversity and inclusion and Dr. Beth Kolko's Design for Digital Inclusion Lab and between my interests in behavioral nudges and work on collaboration and work practices by Drs. Charlotte Lee, Mark Zachry, and Cecilia Aragon. The HCDE department is also well connected to researchers who are equally adept with theory and technology across the university, with structures such as dub to promote that collaboration.

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