
Self Informatics:

Considerations for Designing Technology which Supports User Reflection

Travis J. Brown
School of Informatics
Indiana University
901 East 10th Street
Bloomington, IN 47408
trabrown@indiana.edu

Overview

The abandonment of the individual in design is akin to the dismissal of the link when considering the chain. There is a symbiotic relationship between artifact and user, given that the user depends on the functionality provided by the artifact and the artifact depends on the user to give it purpose. “Good design solutions are always based on and embedded in specific problems [1].” I propose that individuals seek out designs which enhance their ability to self-express; however, by designing artifacts which are meant for human substitution rather than human extension, we run the risk of obfuscating the user’s original intent, forcing them to increase their dependence on the functionality provided rather than the functionality desired.

As an example, the traditional thinking with respect to social networking tools is that they allow for ease of communication and the development of stronger social networks, which result in more opportunities for self-expression and, presumably, a more lucid sense of self.

I argue that these tools more often lead to a muddled self-understanding, given that people are conscious of participating in a public forum resulting in not only superficial but artificial postings. In an attempt to prove themselves adequate if not superior in the community, participants are inclined to embellish their postings, resulting in self-delusion rather than self-discovery. I am an advocate of personalized, independent self-reflection to enable individuals to have a dialogue within themselves, which is best facilitated through the use of technology.

Background

I have focused my research in two sub-disciplines of Informatics—Human-Computer Interaction (HCI) and Complex Systems (CX)—in an effort to bridge the two. CX illuminates aspects of social networks as well as the human psyche, with the latter being more central to my research, while HCI provides the social and interaction design considerations necessary to ground my research in human extension rather than human substitution. This last point is the core of my research agenda and

what I term 'Self Informatics.' The abandonment of the individual when studying group dynamics has resulted in a relatively unexplored area worthy of additional study. I distinguish my research by emphasizing the fine-tuning of an individual's ability to be introspective and insightful.

Current Research

I have used the ethnographic tools provided in social informatics and the analytics available through business informatics to reveal niche areas in which interesting social dynamics might potentially unfold in an attempt to define the driving factors behind effective social networking mechanisms. Based on my preliminary research on the subject, I have found that there are two relevant data categories necessary for mapping personas and providing feedback based on those personas: (1) a historical record of values, activities and performance for an individual and (2) a robust data store that defines the personality schemas relevant to the context being studied. From career to personal relationship selection, once this information has been collected, these enhanced profiles can be made available to their owners to provide them a more objective vantage point into their own psyche. I am not arguing for design as science, as discussed by Cross in *Designerly Ways of Knowing*, but rather for the introduction of an increased focus on the experience of users to the discipline of design [2]. The underlying objective of the following studies is to identify new theoretical approaches to designing for increased user introspection.

Design Optimization

A critical element of effectively designing for the individual rather than the group is the ability of

designers to maximize the artifact's degrees of freedom so that the user can optimize the design for her purposes. "[N]o one in his right mind will satisfice if he can equally well optimize; no one will settle for good or better if he can have best. But that is not the way the problem usually poses itself in actual design situations [3]." By considering the factors driving the efficacy of design in various contexts, my hope is to gain an understanding of the 'levers' which might be made available to the user to allow for manipulation of the artifact's design.

As an example, viral marketing content is a phenomenon for which 'design optimization' is a relevant concept. Viral marketing has become a popular medium for transmitting information. Traditionally, the approach to designing viral marketing campaigns has been that the more engaging a particular piece of media is, the greater the likelihood that the material will be distributed by those individuals who have viewed it [4]. I propose that maximizing engagement can result in overengagement and, as a result, dampen the transmittability of the intended message.

I am interested in exploring the relationship between the marketing material and the marketing message, as well as the factors which drive their efficacy. My hypothesis is that the marketing material's popularity is driven by factors such as emotional gravity, visual impact and entertainment value, while the marketing message's transmittability is driven by factors such as message frequency, diversity of form and relevance to the marketing material. In turn, my primary research agenda is to explore the optimal levels for each factor

with the intent to maximize the efficacy of viral marketing campaigns.

The research that I have found on the subject of viral marketing focuses on viral marketing messages being spread via communal forums, such as blogs, or situations in which the marketing material is the virus, as is the case with the spread of applications like Gmail. When marketing mechanisms, such as videos or games are used, there is a tendency to focus on their popularity with consumers and to lose sight of whether those individuals who have engaged the marketing material have been sufficiently exposed to the inherent marketing message in order to be 'infected.' Due to this oversight, the prevailing logic is to maximize the popularity of the marketing material, giving little thought to the impact the design has on the message's transmittability.

The marketing message must be effectively incorporated into the marketing material in order to ensure its effective transmission to those exposed; however, saturating marketing material with the message can prove detrimental to the user experience, dampening the material's popularity as a result. In practical terms, this relationship suggests that if a message is too apparent in a piece of viral marketing material, then people will be disinclined to distribute it to their social networks. Similarly, the marketing material must be effective at attracting attention in order to be distributed; yet, marketing material which is too engaging can result in consumers overlooking the message altogether. This relationship implies that if marketing material is too engaging or not engaging enough, then the marketing message will not be transmitted. In turn, allowing the consumers of viral

marketing content to optimize the material according to their individual preferences will presumably result in improved dissemination of information and greater marketing efficacy.

The goal of the viral marketing study is to explore the notion of design optimization, develop appropriate constructs and establish a process through which a baseline design could be applied to an application while allowing individual users to customize their experience through minimal feedback solicited by the application. An intervention such as this would ideally lead to increased potential for user engagement by generating personal design schemas which would alleviate the user from having to tweak an application feature-by-feature to suit their preferences.

Social Networking for Improved Self-Reflection

Another study I am conducting involves gauging the benefits experienced by individuals actively using social networking sites to determine whether the social impact of participating in online communities is consistent with my hypothesis that members of social networks largely participate in such networks for the purpose of achieving improved self-awareness. Towards this end, I am studying the members of Ning.com, a social networking site which allows for the creation of separate social networks, and their transience when social networking. Given that Ning.com grants each user a single profile to be used across all social networks built on the site, the forum provides the unique opportunity to observe users' networking patterns.

By focusing on the behavior of individuals and observing their participation in existing networks as

well as their creation of new networks, my hypothesis is that social profiles can be revealed, allowing for the prediction of social networking behavior or link-prediction [5]. Social networking fundamentally involves the self-reporting of personal information by individuals, feedback regarding that information from community members, the review of that information by the respondents and the organization of likeminded individuals into groups based on these iterative loops. "From a design perspective, one of the most critical organizing forces is service. Social systems are organized and held together for the purpose of serving the needs and desires of people [6]." Studying social networks provides an ideal design problem space for exploring the self-discovery mechanisms which form the basis for designing for reflection on experience.

Psychic Sustainability

"There are two ways in which design processes are concerned with the allocation of resources. First, conservation of scarce resources may be one of the criteria for a satisfactory design. Second, the design process itself involves management of the resources of the designer, so that his efforts will not be dissipated unnecessarily in following lines of inquiry that prove fruitless [3]." I propose that sustaining the psychic energy of users is becoming increasingly important, given the myriad of artifacts competing for their attention. Sustainability is normally discussed in respect to the environmental impact of technologies and whether their life cycles can be maximized through more thoughtful design [7]. This field also explores the relationship between individuals and the technology they use in an attempt to gain a better understanding of the emotional connection that consumers have with their artifacts and what impact that has on the artifacts'

obsolescence. My interest in this topic addresses the sustainability of technology in respect to the depletion of users' psychic resources, meaning their capacity for information retention, maintenance and retrieval.

As an example, Twitter is sustainable in respect to the time required to effectively utilize its functionality. After all, each post is limited to 140 characters; yet, the application is not psychically sustainable due to the resources that are expended by community members in providing regular updates. In addition, while instant messages (IMs) between friends allow for a complete lack of formalism, as is the case in a casual conversation, Twitter broadcasts your IMs, known as tweets, to a public forum, which requires users to be more thoughtful in their responses, given that their tweets could be viewed by the entire community. I am interested in illuminating what I foresee as an inevitable manifestation given society's movement towards always being 'on,' connected to the Internet through some device, which is the shift in focus from the time spent actively participating in a given activity to the amount of psychic energy expended when contemplating the activity.

Future Research

By designing for communities rather than for individuals, we preclude users' choice of the resources most beneficial to their personal development. My objective is to identify the mechanisms which have the ability to facilitate individual reflection and awareness in order to encourage designers to incorporate such mechanisms in their solutions. Research in this domain will potentially evolve into mass-customization design techniques, facilitating deeper user engagement and co-construction of content.

Summary

Strengthening the node, or the individual, is key to stronger user-artifact relationships. In the field of complex systems, much effort has been spent in studying complexity from a macroperspective in order to observe the emergent behavior of the community; yet, the study of how to improve these networks by strengthening their members has been given far less attention. I intend to focus on the internal complexity of the individuals in order to provide mechanisms through which they can strengthen their sense of self, which will inevitably lead to their more deliberate participation in networks, strengthening the network as a whole. This approach is not limited to social network design but is merely one apparent example of a design problem which would benefit from designing technology for reflection on experience and developing awareness of oneself and others.

References

- [1] Friedman, K. (2003). Theory construction in design research: criteria: approaches, and methods. In *Design Studies* 24 (2003) 507-522.
- [2] Cross, N. (2001). Designerly Ways of Knowing: Design Discipline Versus Design Science. *Design Studies*, 17 (No. 3), Summer 2001, 49-55.
- [3] Simon, H A (1969) *The Sciences of the Artificial*, Cambridge, MA: MIT Press.
- [4] Leskovec, J., Adamic, L. A., and Huberman, B. A. 2007. The dynamics of viral marketing. *ACM Trans. Web* 1, 1 (May 2007), 5.
- [5] Liben-Nowell, D. and Kleinberg, J. 2003. The link prediction problem for social networks. In Proceedings of the Twelfth international Conference on information and Knowledge Management (New Orleans, LA, USA, November 03 - 08, 2003). *CIKM '03*. ACM, New York, NY, 556-559.
- [6] Nelson, H. & Stolterman, E. (2003). *The Design Way—Intentional Change in an Unpredictable World*. Educational Technology Publications, pg. 84.
- [7] Blevis, E. 2007. Sustainable interaction design: invention & disposal, renewal & reuse. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (San Jose, California, USA, April 28 - May 03, 2007). *CHI '07*. ACM, New York, NY, 503-512.