

Tugging at the Seams: Understanding the Fabric of Social Sites

Clare J. Owens

University of Southampton
Highfield, Southampton
SO17 1BJ, UK
clare@ecs.soton.ac.uk

David E. Millard

University of Southampton
Highfield, Southampton
SO17 1BJ, UK
dem@ecs.soton.ac.uk

Andy Stanford-Clark

IBM ®
Hursley Park Road, Hursley
Winchester, SO21 2JN, UK
andysc@uk.ibm.com

Abstract

Social networking websites are increasingly popular, yet it can be difficult to understand the way in which people use these spaces. This paper presents a systematic deconstruction method which grants insight into the nature of a given experience, and shows how this knowledge can be used to reconstruct experiences in new contexts.

The authors apply the method to some facets of social sites, discussing how the functionality might be reconstructed in different contexts such as ubiquitous computing. We evaluate the method and discuss the findings, noting that if social material can be provided in new contexts, many more people can be included in interactions which are currently limited to the web.

1. Introduction

A great variety of communication technologies are in day-to-day use: these include more traditional technologies such as email and landline phones, fully established tools such as mobile phones and instant messaging (IM), and newer items including social networking sites and blogs. Understanding this new arena of social interaction can be problematic; additionally, a large chunk of society is excluded from these facilities for social interaction. For example, in general elderly people face a range of obstacles to the uptake of technology [10].

This latter issue is increasingly important, especially given the trend for ageing populations across the western world, and the geographical dispersion faced by many families. Technologies built without due consideration can exclude 'non-standard' users, whether due to impairments, economic considerations or cultural aspects. Meeting these considerations when building any system requires a holistic outlook and an inclusive approach to design [11].

By fully understanding the experiences offered by social websites, it is possible to re-imagine those experiences in new contexts, perhaps using technologies with which these offline people are familiar. Opening up fresh communication channels could help improve their general wellbeing, for example improving contact with family and

enabling access to the online content and communication facilities which so many of us take for granted.

Note that technologies in domestic environments need not be staid or predictable: they can be used in creative and ludic ways. For example, Gaver et al [4] present the Drift Table, an electronic coffee table which displays slowly moving aerial photography. The movement of this photography is controlled by the distribution of weight on the table's surface. Gaver et al used the table to investigate ludic activities: activities motivated by curiosity, exploration and reflection.

Another project of Gaver's was the History Tablecloth [5]: this was a flexible screen printed with electroluminescent material to form a grid of lace-like elements. When objects were left on the table, cells beneath them lit to form a halo that grew over time, showing the flow of objects.

Paulos [13] discusses the importance of play, illustrating its relevance to pervasive tasks such as blogging, tagging and message play. As can be seen, re-imagined functionality need not be limited to standard use of standard technologies.

To achieve our goal of broader access to online content, it is necessary to rebuild the web-based social fabric offered by social sites. Our vision comprises a social fabric - an interface and social model - supported by a messaging framework. The social fabric enables communication and browsing, facilitated by the messaging framework, which allows interaction via any of a number of communication channels. The combination of these two layers allows the realization of visions such as this:

Gerald is an elderly man, who lives alone in a flat. He has no interest in computers, but is happy to benefit from services enabled by technology. For example, he is very interested in seeing photographs from his grandchildren's sports day. A digital photo frame is installed on his wall; when Gerald's son Matt uploads photographs from the sports day to a social networking website, the pictures are displayed in turn on the display.

Later that day, Gerald's grandson Billy types him a message about the sports day. Gerald doesn't access his

messages on a PC. Instead, the message is translated into an audio file and read to him via his telephone. Gerald listens to Billy's message late in the day, when Billy is probably asleep. Gerald records a reply, a voice message for Billy to receive in the morning.

Gerald is also interested in a small community of ex-pat friends of his, who live in Spain. He plans to travel to visit them one day, but meanwhile he follows updates about their day-to-day lives online. Gerald accesses these updates via a teletext¹-style display on his television.

Clean separation of the messaging and social aspects allows appropriate focus on each part: the underlying messaging infrastructure can easily be used in other domains, while the social fabric can be developed as a discrete concern, with due consideration given to issues such as how it will be used, the interface and HCI aspects, and ethical considerations.

This paper presents a systematic deconstruction process for understanding a given experience, and shows how the results of the process can be used to reconstruct experiences in new contexts. Section 2 describes existing work, and Section 3 describes social networking websites. Section 4 explains and applies the deconstruction process to this functionality and is followed by Section 5, which discusses the process and results. Finally, we discuss future work and evaluate our contribution.

2. Related Work

There are many definitions of social networking websites. Golbeck et al [6] suggest that dating sites such as Match.com are not social networking websites, while other sources [1] suggest they are. Social websites may have different focuses, for example towards blogging, careers, religion or general social interactions. We consider social networking websites to be sites which offer a specific focus upon networking and communication.

User experience of these websites appears to vary wildly, according to the specifics of the site and the way in which it is used. Types of use include searching for new friends, maintaining existing relationships and investigating people met offline [7].

It would appear that existing, widely-accepted usability guidelines (such as Nielson's ten guidelines [12]) are not applicable in this new area. According to those guidelines, Facebook is terribly designed (for example, its design is not "aesthetic and minimalist"), and yet its success suggests that it is certainly not hard to use [7]. Understanding the modern day web experience may help drive more holistic design guidelines.

¹ Teletext is a text-based television information retrieval service, which runs in the UK.

Reaching this understanding may not be simple. Experiences which superficially appear similar may manifest differently in different media. This is demonstrated by Dix's work on Christmas crackers [3]. A cracker is made up of an inner tube wrapped in brightly colored paper. When pulled by two people, it splits into two uneven parts, making a bang as it does so (caused by a small chemical mechanism called a cracker snap). Crackers generally contain a paper hat, a small plastic toy and a motto or joke.

Dix wanted to create virtual crackers on a website. Rather than trying to emulate real crackers, Dix succeeded in capturing aspects of the experience of pulling crackers, and translating those to the medium of the web. He did this by deconstructing the experience of pulling a cracker, and then reconstructing it in the new medium. By deconstruction, Dix refers to "taking apart, teasing out the strands that make something what it is ... and, in this context, especially those that make something 'work' as an experience or as a designed artefact."

There are two aspects to the deconstruction, which are consideration of surface elements and experienced effects. An example surface element of Christmas crackers is that they are traditionally 'cheap and cheerful': thus the webpage for virtual crackers was simple, with cheerful graphics. An aspect of the experience of pulling a Christmas cracker is the shared nature of the experience. To incorporate this, the virtual cracker system would not allow the sender to see the contents of the cracker until the recipient had 'pulled' it (by clicking on a link).

Deconstruction is one method for understanding the experience of using social networking sites. An alternative approach involves Actor-Network Theory (ANT). This emerged from the work of Callon [2] and Latour [9], and models the flow of interactions and processes between actors. An actor may be one or many humans, an artifact, standard, text or graphics. ANT gives a process-based perspective on interactions between users, and insight into how networks grow and are used to achieve goals.

ANT models the process by which people are recruited into a network. It appears most relevant when considering social networks from a perspective of overall growth. Modeling individual use may be more difficult, because people use social sites holistically. As observed by Hart [7], they tend to 'hang around' and see what's happening, rather than going in, solving a problem and getting out - which is the type of action that ANT is suited to modeling.

Note that this 'hanging around' on social sites links with Gaver's previous comments [4]: it appears that using social websites is a ludic activity, motivated by curiosity, exploration and reflection.

3. Social Sites Described

It is important to deconstruct appropriate aspects of the social networking experience. To facilitate a suitable focus in this work, the authors systematically surveyed a set of social sites to understand what functionality is available.

Abram and Pearlman [1] explain what Facebook is. In the course of this explanation they list other social websites: MySpace, Friendster, Orkut, LinkedIn, Windows Live Spaces, Bebo, Meebo, Match, and QQ. These sites differ: for example, Match is a dating tool, MySpace focuses on music and LinkedIn provides career-related networking.

The authors examined the homepage of each site. Each offers an array of features and functionality: we consider items linked prominently on the home page (links visible without scrolling down) to be major features, and other functionality as peripheral. Examples of peripheral functionality are 'to do' lists on Bebo, birthday listings on Facebook, and classified adverts on MySpace. (Note: Meebo and QQ simply provide Instant Messaging functionality, and so are not further examined here.)

It was necessary to normalise the language used by these websites: for example, many sites include upon profile pages a 'scrapbook', 'wall' or 'whiteboard'. This is a space for friends (and the profile-holder) to leave notes. We refer to this as 'public messaging'.

Functionality common across the sites was: a profile, including a microblog; a friends list; public and private messages; photos; applications; groups (or 'forums' or 'communities'); and news feeds. There were exceptions: LinkedIn, Match and Twitter do not supply all of this functionality. This is presumably because the functionality is not always relevant to LinkedIn and Match (photographs are rarely relevant in careers-related discussion, and Match users probably don't want messages to be public); Twitter has always aimed at being a lightweight social service.

Common items in profiles are: name, picture, age, gender, relationship status, location, free text (e.g. to list interests or quotes), contact information (e.g. email address, IM username, URL), listings of schools/workplaces, and a current 'status' (a microblog). Again, there are exceptions, notably LinkedIn (which does not include personal data such as age and gender) and Twitter, which provides a very lightweight profile.

4. Deconstruction

4.1 Methodology

Dix's approach to Christmas crackers involved deconstructing a real-world experience and reconstructing it in a digital context, the web. We plan to deconstruct a

digital experience (using social sites for communication and awareness of friends' activities) and reconstruct it in a different digital context, providing that information and interaction via novel pervasive channels.

Deconstructing the overall experience of using social networking websites, which offer a plethora of communication and awareness tools, is a problematic task. This is because use of each of these appears to produce an experience perhaps greater than the sum of its parts. Deconstructing the browsing of a social website is almost equivalent to deconstructing the browsing of the web: both items are comprised of many nodes and connections, points of functionality and diversion, and huge quantities of data. Given this, the authors chose to pick out several key aspects of functionality common to social websites and deconstruct their use.

The first step towards this process was to survey the functionality offered by a range of social networking sites, and analyze which functionality is key across this range (see Section 3). The next step is to examine the surface elements and experienced effects of this functionality, in order to abstract it for transfer to new media. The methodology for this process is thus:

- 1) Describe the chosen functionality and the experience of using it
- 2) List surface elements of the experience, such as the nature of the design (e.g. 'simple') and the action (e.g. 'quick and easy')
- 3) List experienced effects of the experience. For example, these might include 'sharing', 'openness' and 'sociability'
- 4) Consider how to translate the surface elements and experienced effects to the new modality

The lists generated in steps (2) and (3) describe the experience in an abstracted manner, away from the constraints of the original modality (here, the web page).

We deconstruct public messaging and microblogging, which are similar in some respects: both involve sharing a small quantity of text in a fairly public way. It is hoped that deconstruction shows the differences between these. In addition, we examine photo sharing, chosen as it provides a contrast to the other two items.

After each deconstruction, we talk about the properties one might observe in a reconstructed instance of the experience, before presenting an example reconstruction.

4.2 Deconstruction of Public Messaging

As described, social sites often provide a 'wall', 'whiteboard' or 'scrapbook', where friends and the profile-

holder can leave notes. Variations include the ability to augment these notes with HTML formatting or images. Note that surface elements might distinguish between different social sites – for example, the greater richness of HTML functionality might allow more expressiveness. However, for the purpose of brevity, this analysis concerns public messaging across all social sites.

Surface elements:

- Quick and easy (users see a list of previous messages, a text box for typing a new message and a button to post the message)
- Communicating (one to one)

Experienced effects:

- social connectedness (conversing, or letting someone know they are in your thoughts)
- being overheard
- anticipation of a response
- uncertainty (will there be a reply? When? Who else will read the message, how will they respond?).

Were we to reconstruct this functionality in a pervasive environment, the above elements and effects must be considered. An implementation accounting for this deconstruction might provide a very simple, clean interface for entering public messages and clarity that the message is public (through showing previous messages left by other people, and perhaps on first use a brief explanation of the mechanism).

One way to implement this in a new context might be to install a display screen on the door of someone's office. Passers-by may press a button to record a message for the office's owner ("Hi Andy! I dropped by to chat about X, but you weren't here. Catch you later!"); the last ten messages are played in a repeating loop.

4.3 Deconstruction of Microblogs

Microblogging involves posting very succinct text updates, generally limited to 160 characters. Java et al [8] suggest that the constraint on message size increases the speed of communication. They theorize that the constraint on message length lowers the time and thought investment from a microblogger (as opposed to a traditional blogger), reflected in microbloggers tending to post more frequently than bloggers, daily rather than weekly.

The presentation of microblogging differs in different sites: for example, it is foregrounded in Twitter (where it is the primary functionality), but mixed with other information in Facebook.

Surface elements:

- Quick and easy (a text box to enter new material, a button to post the text).
- Communicating (one to many)

Experienced effects:

- reaching out and broadcasting information
- presence in the community – consolidate online identity by adding more data
- openness about current experiences
- anticipation of responses
- uncertainty about responses and audience: especially if privacy settings are low, and anyone can access the content. Even if a very specific group of people can access the content, it is not guaranteed that they will do so, and thus uncertainty remains

Reconstruction of these elements and effects in a new environment would again include a very simple design allowing the composition and posting of microblogs. It is important to incorporate clarity about the audience, as controlled by privacy settings such as "friends only", "friends of friends" or "anyone".

One reconstruction of this functionality might see the microblogger wearing a t-shirt which incorporates a scrolling text display² displaying their most recent post.

4.4 Deconstruction of Photo Sharing

The majority of the sites surveyed allowed users to upload and caption photos, which can be commented upon by the photo's owner or other users. Again, functionality differs across sites (e.g. Facebook allows users to 'tag' friends in photos).

Surface elements:

- a (generally complex) photo upload process, the option to annotate images with text, the ability to view photos
- sharing past experiences

Experienced effects:

- reaching out and broadcasting information
- presence in the community – consolidate online identity by adding more data
- openness about past experiences
- anticipation of discussion about these experiences
- reminiscence

² Such t-shirts are currently on the market: they use thin battery-powered LED displays to show short messages.

- uncertainty about responses and (depending on privacy settings) audience

Again, reconstruction should incorporate the above items. There must be a method for placing photos (and annotations) in the shared space, perhaps involving photo selection via an appropriate interface (e.g. computer monitor; TV screen; digital photo frame). Users must be able to browse and annotate their online photos, and be notified if people comment. These functionalities combine to allow users to feel that they are sharing memories.

A reconstruction might involve a novel tabletop which displays a random sequence of photographs uploaded by the table's owner.

5. Discussion

This paper analyzed Dix's method of deconstruction and broke it down into a simple methodology, which we have applied to several aspects of social networking websites. This helped us consider how to apply the functionality in new contexts.

The deconstruction method provided useful information. Applying the method in a systematic, repeatable manner exposed emerging themes common across the items of functionality: for example, communication or sharing of material were common surface elements across the items considered. The public nature of each task is of note: experienced effects across all items include being open/overheard, anticipation of responses and not knowing who (beyond the intended recipient) will see the content. Lack of certainty about one's audience also increases uncertainty regarding what manner of response will result, and when.

Experienced effects are a useful tool for distinguishing between apparently similar actions. For example, our analysis of public messaging and microblogging included very different experienced effects (social connectedness compared to broadcasting information and consolidating one's online presence).

It seems likely that the elements and effects associated with each item of functionality are more widely experienced when using social sites. For example, not all actions directly consolidate one's online identity, but many do: consider microblogging, blogging, photo sharing and filling-in a profile.

So, deconstruction is useful for comparing multiple items in order to elicit commonalities and differences. One tripping point was a temptation to be too literal when considering surface elements. The phrase 'surface

elements' refers to obvious, surface aspects of an item's design - for example, 'simplicity', 'tacky' or 'easy'. There is a temptation to be more literal, and list items such as 'textbox and button': however, these are the implementation of a surface element (in this instance, 'simplicity').

As well as finding the process useful for identifying themes, the authors found the task of re-imagining experiences far easier having abstracted those experiences. For example, it seems like a very big step to move from 'microblogging' to 'a scrolling display on a t-shirt'. However, the steps from 'microblogging' to 'brief one-to-many communication' to 'a scrolling display' seem much smaller and more logical.

Further lessons learned are the importance of accounting for all aspects of an experience - that is, the experienced effects as well as the surface elements. It is straightforward to reason that a novel interface should offer a similar surface design to its web-based equivalent; however, it is less easy to account for the emotional implications of a transaction, such as the expectation of replies.

Having deconstructed three aspects of functionality, one can consider the overall social networking experience. Profiles are equivalent to a physical presence, and microblogging allows 'glimpses' of a person as they go about their daily life. Messages roughly equate to spoken conversations, held in public or private, while photo sharing is similar to seeing the moments in question as they happen, or sharing physical photos. Groups can equate to badges or opinions, or active discussion forums.

By including interactions between mutual friends and friends-of-friends, and by including text, images and groups, these websites begin to form a metaphor for village life. The sites instill a feeling of community and connectedness, not solely through direct chat, but through the combination of the above effects. A user on a social website won't generally just view a private message, or a photo, or a friend's status, but will instead see a combination of microblogs, images, messages, upcoming events, and so on. In a sense, they are seeing a personally-crafted, up-to-date bulletin board about their contacts, augmented with direct messages.

6. Future Work

We have referred to a messaging infrastructure which supports our social fabric. This infrastructure decouples information from its original modality: for example, the content of a chatty email is the text, which as well as being displayed on a computer monitor could be printed out, displayed on a television screen or vocalized on a landline phone with text-to-speech technologies. The authors have built a working prototype and simulation environment.

The next step is to finish deconstructing the web-based social networking experience, and design the social system which will use the messaging infrastructure. The social networking experience is generally subjective and ill-defined, resulting in challenges measuring the success of any system. Deconstruction is one technique which can bolster our efforts. Other techniques (such as applying ANT) provide alternative perspectives.

Additional work may dig deeper into user awareness and understanding of social networking. For example, a public message thanking a friend for dinner is different from a private message with the same content: the former message broadcasts to friends of both parties that they had dinner together. How do experiences at each 'end' of a social interaction vary? That is, how do message senders and recipients experience matters? What about people who witness interactions between others?

Finally, the authors would like to consider whether a logical, step-by-step methodology can support reconstruction of experiences.

7. Conclusions

Systematically deconstructing experiences allowed the authors to analyze the experience of using social websites in order to translate this experience to new modalities. Use of the approach helped clarify its strengths and weaknesses as a design tool.

The functionality offered by social websites appears to map to various physical experiences such as conversation (direct or overheard), shared moments and seeing friends carry out actions. The overall effect is not unlike that of walking through a village populated by one's contacts, and observing (and participating in) actions and conversations.

In parallel, the authors have prototyped a framework to convey and translate messages between multiple modalities, based on preferences and context. A more sophisticated system is planned.

Access to the described social experiences forms the core of the social fabric supported by the messaging infrastructure: combining the two layers gives a fully-fledged multimodal social fabric. This is motivated by the ideal of allowing people without use of digital technologies to access (and return) communication and social information which originated with these technologies.

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8. References

- [1] Abram, C. and Pearlman, L. 2008. Chapter 1, The Many Faces of Facebook. In *Facebook For Dummies*, Wiley.
- [2] Callon, M. 1986. Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St Brieuc Bay. In John Law (ed.) *Power, Action and Belief: A New Sociology of Knowledge* (Routledge).
- [3] Dix, A. 2003. Deconstructing Experience – pulling crackers apart. In *Funology: From Usability to Enjoyment*, M Blythe, K. Overbeeke, A. Monk and P. Wright, Eds. Kluwer, Dordrecht, the Netherlands, 165-178.
- [4] Gaver, W., Bowers, J., Boucher, A., Gellerson, H., Pennington, S., Schmidt, A., Steed, A., Villars, N. and Walker, B. 2004. *The Drift Table: Designing for Ludic Engagement*. CHI, Vienna, Austria.
- [5] Gaver, W., Bowers, J., Boucher, A., Law, A., Pennington, S. and Villar, N. 2006. *The history tablecloth: illuminating domestic activity*. Designing Interactive systems, University Park, PA, USA.
- [6] Golbeck, J. *Web-Based Social Networks: A Survey and Future Directions*. Technical report.
- [7] Hart, J., Ridley, C., Taher, F., Sas, C., Dix, A. 2008. Exploring the Facebook Experience: A New Approach to Usability. In *Proceedings of NordiCHI 2008*, ACM Press, 471-474.
- [8] Java, A., Xiaodan, S., Finin, T., Tseng, B. 2007. Why we Twitter: Understanding Microblogging Usage and Communities. In *Proceedings of WebKDD and SNA-KDD workshop on Web mining and social network analysis*, August 2007, San Jose, California, 56-65.
- [9] Latour, B. 1987. *Science in Action: How to Follow Scientists and Engineers Through Society*, Open University Press.
- [10] Namazi, K.H. and McClintic, M. 2003. Computer use among elderly persons in long-term care facilities. *Educational Gerontology*, 29, 535-50.
- [11] Newell, A.F. and Gregor, P. 2004. Design for older and disabled people - where do we go from here? *Universal Access in the Information Society*, 2, 1, 3-7.
- [12] Nielsen, J. 1994. Ten Usability Heuristics, useit.com (accessed 16/01/09) www.useit.com/papers/heuristic/heuristic_list.html
- [13] Paulos, E. 2003. *Mobile Play: Blogging, Tagging, and Messaging*. Ubicomp.

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