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Designing social tools for the bees, the buzz and the beehive

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ABSTRACT

Urban master-planned communities, designed for demographically mixed populations, do not necessarily give rise to meaningful social interactions that enable residents to take advantage of social and cultural diversity. This paper discusses design considerations emerging from an ongoing case study that investigates how living in a diverse master-planned community influences residents' communicative ecology. The challenge of the study is to create a design intervention that can not only facilitate the collection, visualisation and analysis of data for researchers, but also promote social connectivity among residents of the Kelvin Grove Urban Village (KGUV), Brisbane, Australia. By leveraging mashups and interest in participatory culture, it may be possible to create a novel dynamic visualisation that can capture the social, discursive and technological characteristics—"the bees, the buzz and the beehive"—of urban communities. This has the potential to create a powerful analytical research tool for user-centred, participatory research that brings us one step closer to understanding the ever-changing communicative ecology of our research participants. It may also reveal innovative ways in which we can use social media to support the social sustainability of diverse urban neighbourhoods.

Categories and Subject Descriptors

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous

General Terms

Design, Experimentation, Human Factors, Theory.

Keywords

Communicative ecology, participatory research, social media, urban informatics

1. INTRODUCTION

Social media is rapidly changing the way in which urban residents socially interact and communicate. Human-computer interaction (HCI) researchers must remain engaged in the development of appropriate data collection, visualisation and analysis tools to support research into these changing practices. While qualitative data analysis software, such as NVIVO or

Atlas.ti, accommodate multimedia data, they are not useful when the data required to answer research questions is scattered across multiple devices and applications, and hidden inside the walled gardens of social networking services, such as Facebook. In addition, these software packages fail to support the co-analysis of data by participants, a critical part of participatory action research and participatory design approaches [4].

The aim of this paper is to explore issues and provoke discussion around the design of applications to promote both social connectivity amongst diverse urban residents and facilitate the collection, visualisation and analysis of data for researchers. An ongoing case study of Kelvin Grove Urban Village (KGUV), Brisbane, Australia, is firstly introduced as a context for this discussion. Next, the principles of communicative ecology are presented as a conceptual framework. The metaphor of "the bees, the buzz and the beehive" refers to the three layers of the communicative ecology model: the bees being the social actors, the buzz referring to the topics and content of communication and the beehive being the technological infrastructure. Herz coined the metaphor "harnessing the hive" to refer to the community-driven development of massively multiplayer online games [5]. Similarly, by leveraging mashups and interest in participatory culture [7], we may be able to create a novel dynamic visualisation of local social interaction. This has the potential to create not only a powerful analytical research tool but it may also reveal innovative ways in which we can use social media to support the social sustainability of the KGUV.

2. RESEARCH CONTEXT

2.1 Rationale and Setting

The KGUV is a high-density urban master-planned community located 2 km from the central business district of Brisbane, Australia. This mixed-use property development, inspired by new urbanist principles, seeks to promote social diversity by providing a range of housing from affordable to upscale. The estate's marketing rhetoric promises new residents a strong sense of community. However, little evidence exists to demonstrate that residents actually interact and communicate with people of other social and cultural backgrounds who live nearby. It is feasible that, rather than intermingling, they may be living parallel lives within the physical boundaries of this estate.

This ongoing study asks whether living in a demographically diverse environment stimulates social interaction between people of different backgrounds. It aims firstly to determine how and why residents interact and communicate with each other, if at all, and secondly, to decide what kinds of design interventions may be introduced to allow residents to benefit from the diversity of the KGUV. This case study is particularly suited to this research question due to the estate's design, as residents are currently divided between eight apartment blocks

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Figure 1. Kelvin Grove Urban Village.

(August 2008). Four of these are affordable housing buildings, which provide rental accommodation to low-income households receiving government rental assistance, and two are mainstream buildings, which house a mix of private tenants and owner-occupiers. There is also one student accommodation complex and one aged care facility.

2.2 Conceptual Framework and Data Collection

Communicative ecology is a conceptual model that refers to the relationships between the social interactions, discourse (content), and communication media and technology of individuals, collectives and networks in physical and digital environments [13]. The social, discursive and technological layers of the communicative ecology model—“the bees, the buzz and the beehive”—are seen to be intricately entwined and mutually constitutive.

In the KGUV case study, the social layer of the ecology is the current focus of a pilot investigation. Data will be collected from all four residential groups. Thus far, three student and three affordable housing residents have been interviewed using a convergent interviewing strategy. A further six residents will be interviewed—three from seniors’ accommodation and three from the mainstream buildings. The interviews start with the broad opening prompt, “Tell me about what it is like to live in the KGUV.” This is followed by several open-ended questions, which aim to elicit further information about their communicative ecology as it relates to their place of residence. From the audio recording, a diagram of their communicative ecology is created. This illustrates their wider personal network and their affiliations to both informal social groups and formal institutions. Layered upon this are details of the thematic content of their communications with proximate others. This includes both communications that are face-to-face or mediated by technologies, such as a mobile phone, a social networking site, or even pen and paper. This personal map of their communicative ecology is then verified with participants in a brief follow-up meeting. A short questionnaire is also used to collect basic demographic data.

Social media workshops, as a form of focus group, will also be conducted with each residential cohort to elicit a shared understanding of the local communicative ecology. Through this process, we hope to discover possible reasons why new

forms of social media may be accepted or rejected by certain residents and encourage or hinder social interaction between diverse individuals and groups. This will allow us to explore the hypothesis that the success or failure of place-based social media may be a question of how well it fits with residents’ pre-existing communicative ecologies.

2.3 Preliminary Findings

It is important to note that these early findings are presented here only to illustrate the significant research challenge of creating a design that will meet the requirements of the study and benefit its diverse participants.

The initial analysis of the residents’ communicative ecology demonstrates a trend consistent with the rising popularity of social media. Some, although not all, of the participants are managing relationships between proximate others online. The preliminary evidence suggests that online event planning and the sharing of information around social activities has become commonplace amongst the student population. For example, the student accommodation building has an active Facebook group that regularly seeks RSVPs to upcoming events. Students then leave messages to one another about such events on Facebook or MySpace, or by using instant or SMS text messages. Residents from affordable housing do not appear to have taken advantage of social media. Many of these residents use public computers within libraries or the KGUV Community Hub, to do online banking and email distant friends, as they do not have personal Internet connections. However, a diverse range of residents has expressed interest in social media and improving their computer skills [2].

The residents’ most actively used medium of communication is the mobile phone [2]. Even so, face-to-face communication is still the most likely mode of interaction with neighbours. However, simply encouraging residents to embrace social media and network within their buildings will not necessarily enable them to become aware and take advantage of the diversity of the KGUV population as a whole. In effect, it may digitally reinforce the development of social silos, which are specifically mentioned as being undesirable in the KGUV Master Plan [6]. For this reason, a neighbourhood-wide system is recommended.

Preliminary findings also indicate that residents agree that it is highly likely that there are other people living nearby who share their interests but there is no way to become aware of these potential friends beyond serendipitous encounters. Also, it is emerging that residents are often unaware of community activities that match their personal interests. In addition, they have limited means through which they can organise open, informal social activities through which they may come into contact with residents from other buildings.

3. HARNESSING THE BEES, THE BUZZ AND THE BEEHIVE

The interest residents have expressed in learning about social media, when combined with the ability to mash data from multiple sources, indicates that this is a viable research site in which to deploy a novel data collection and analysis tool that can also act as a social media platform for residents. However, there are significant challenges to overcome in order to make this tool inclusive, usable and of benefit to the diverse resident

population and simultaneously useful as a data collection and analysis tool to answer the broader research questions.

3.1 Participation

Shirky identifies that sharing and cooperation are two steps that precede collective action [10]. By providing a neighbourhood platform upon which sharing of information or digital objects, such as photos, can occur, it may be possible to spark intergroup cooperation, which may then take a natural course to collective action. This can be seen as a type of hands-off community development strategy where the reins are handed back to residents themselves to do with what they will. In this way, the users will be able to shape transitions between social relationships and activities rather than have certain patterns of interaction forced upon them. Although many of our participants may not be experienced in the use of social media, they have expressed that they value opportunities to upgrade their computer skills. It may be possible to harness participants' desire to communicate and share social objects, such as photos, and information using social media to create a mutually beneficial platform that remains suitable for the collection of rich multimedia data pertinent to the goals of this study.

For a tool of this nature to be successful, it must be designed in a way that it fits into the residents' existing communicative ecology. For example, the tool needs to be positioned where the users are going about their everyday social practices, either physically or digitally. For example, Cityware [8] does this by linking to users' Facebook accounts and making it simple for them to opt-in to the service. Bluetooth detecting nodes are positioned in physical locations where participants are going about their daily business. If users recognise an unidentified Bluetooth device as belonging to a friend that they have encountered, they can link it to their friend's Facebook profile. The friend is then automatically invited to join the system. This creates a viral, snowball effect that exponentially increases the number of participants. Unfortunately, if we take this approach in the KGUV we are likely to attract students and mainstream dwellers but exclude the senior and affordable housing populations, leading to further segregation.

Allowing participants to view the data pool and assist in co-analysis is also a critical part of action research. In this case, it might mean providing users' with access to the data online through social media and allowing them to engage in common online practices such as tagging or enabling them to discuss the data in online forums. However, this is in opposition to the idea that research data must remain confidential [9]. As university research ethics practices have not yet evolved to fully embrace this kind of participatory research, further negotiation is required in relation to initiating projects that engage in data collection using open, social media tools.

3.2 Mashups

With the emergence of social software, the Internet has been transformed into a networked platform that can incorporate mainstream user-generated data. Developers can now use innovations in Web programming to create customisable visualisation platforms using a base data layer, for example a map, timeline or social network graph. Using these base layers, users can generate custom applications, known as mashups, which combine their own data with the base data. The mashup phenomenon demonstrates that, given access to the tools, users

from a wide range of backgrounds will create web applications that link keywords and locations to a variety of data sets.

Current representations of communicative ecologies are limited to text and static, 2D diagrams (see Figure 1). Where these diagrams have provided a static snapshot, by its very nature, a communicative ecology is constantly in a state of flux. As people move into the neighbourhood and leave or as a new medium becomes popular it changes and shifts. The flows of communication are kaleidoscopic and ever changing. Dynamic, real-time information visualisations, for example cabspotting.org and wefeelfine.org, are able to capture these flows. If we can enable study participants to make ongoing contributions to or comments on research data, this can then shift the representation from being static to something that is enacted and emergent, much like the communicative ecology itself.

Ideally, the design will be based on an extensible platform to which additional features can be added in response to participants' requests, the researcher's needs and emergent uses. This more fluid and agile style of site development is essential as research has shown that, in any case, community websites are often reappropriated by users to meet their own needs rather than used in the way the developer intended [1]. If they don't adapt to fit user needs and patterns of use they are likely to sit dormant. However, this approach does require tolerance for unpredictable research findings.

Rather than creating stand-alone community websites, which are essentially one-system-fits-all, it may be better to create a set of online "community components" [3]. This means the design would be comprised of multiple interrelated modules that can fit within and between tools already present in the technological layer of residents' communicative ecologies. These modules could then be almost seamlessly integrated within their current patterns of communication. For example, this may mean creating a way to contribute to the system via SMS, email and instant messengers, a Facebook application and placing situated displays in high traffic areas, such as near the local supermarket or bus stop. The following section discusses a speculative design proposal that meets several aspects of the criteria introduced thus far.

4. THE VILLAGE BUZZ: UNITING THE BEEHIVES

In light of the preliminary findings, it is plausible that there may be a gap in the residents' communicative ecology that could be filled by a type of electronic noticeboard system, tentatively titled "The Village Buzz". The board could be used to post not only planned, formal events, such as upcoming art exhibitions, but also to propose informal activities on the fly. For example, someone may want to kick a football around the local park at 4 pm today but they lack a partner for this activity. They could SMS a notice that could be viewed either on a public display or sent to user's other active communication channels, for example, Facebook events notifications, as an RSS feed, or via SMS. Users could customise which activity notifications they receive by adding tags to a user profile. Concomitantly, the system could request basic demographic information. Events currently promoted via posters and flyers, such as movies in the park, may be used to seed the system.

A public screen could display these events on a timeline. The system could allow users to attach comments, hyperlinks and

photos of these activities via SMS or MMS as they happen, creating a dynamic, interactive visualisation of the social life of the KGUV in real time. According to Tufte, “detail leads to personal microreadings, individual stories about the data...[such] designs also allow viewers to select, to narrate, to recast and personalize data for their own uses. Thus control of information is given over to *viewers*” [12]. By allowing participants to add their own microreadings of the data, the researcher will be able to build a more nuanced understanding of diversity and the communicative ecology. By enabling participants to effectively “colour in” what would normally be an impersonal series of one-to-many announcements, the noticeboard becomes a way to create a collective memory of the village filled with rich multimedia narratives of daily social life.

An ecological research approach is, by nature, holistic and has the potential to create a large volume of highly detailed data. In the design of a system to support this type of research we need to consider how to facilitate both microanalysis, where we can focus in on specific information and, also macroanalysis, where we can view the data in context. In this proposed system, semantic zoom may be achieved through the use of folksonomy or keyword search of the contributed text. Visual zoom could be achieved by allowing users and researchers to bring forward visual elements as related to time using distortion techniques, such as a bifocal display, or X- or Y- distortion [11].

Allowing residents to tag or comment on events will also lead to multiple interpretations and serve as a form of informal co-analysis of the data. This may be further facilitated through an open discussion board where users can discuss and provide feedback on the system.

5. CONCLUSION

In this paper, communicative ecology has been introduced as a useful conceptual lens through which to examine the social, discursive and technological aspects of urban social networks which can then underpin the design of new locally-appropriate social tools, which may serve the needs of both HCI researchers and urban residents. The design of a social system that can harness the bees, the buzz and the beehive to meet the needs of both researchers and diverse participants is both an immense challenge and also an intriguing opportunity. It has the potential to result in a dynamic, interactive visualisation of a communicative ecology that could be a powerful tool for data analysis and communication of results. However, further thought and discussion is required concerning user motivations, behaviours and privacy concerns, and the best form of information visualisation for this project. This tentative exploration is only the first step in a necessarily fuzzy and complex experiment. We could consider the experiment a success if researchers could collect sufficient data to answer their research questions and if participants were able to use the design to make new connections in order to benefit from the social and cultural diversity present in this urban environment, thus enhancing the social sustainability of the KGUV.

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