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M Foth

Queensland University of Technology, m.foth@qut.edu.au

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RESEARCH TO INFORM THE DESIGN OF SOCIAL TECHNOLOGY FOR MASTER-PLANNED COMMUNITIES

Foth, Marcus, Institute for Creative Industries and Innovation, Queensland University of Technology, Musk Ave, Brisbane QLD 4059, Australia, m.foth@qut.edu.au

Abstract

Developers and governments around the world are struggling to achieve socially sustainable neighbourhood communities in master-planned residential developments. This paper discusses research in progress that seeks to conceptualise the organic development of community in these sites as 'communicative ecologies'. Focusing on the network qualities of social interaction in communities of place, the research informs the design of proof of concepts of commercialisable new media and information and communication systems: peer-to-peer publishing tools, social networking applications and locative media. The project is informed by ethnographic work, rapid prototyping, evaluation cycles and sociocultural animation. Sustainability is pursued by working across community, business and government stakeholders to encourage social and economic innovation. The paper argues that by careful attention to cultural and social assets in the community, innovations will be engendered which enhance economic and social development. This will lead to greater social inclusion, fair access to and smart use of information and services, urban sustainability and healthier local economies. Understanding the opportunities afforded by digital augmentation of social networks will help urban residents negotiate the complex web of daily choices, access a greater social safety net and participate in the socio-cultural and socio-economic life of their neighbourhood and city.

Keywords: master-planned communities; social networks; community informatics; locative media; urban neighbourhoods

1 INTRODUCTION

Greenfield master-planned communities account for an increasing share of new urban developments around the world. Such developments create instant ‘communities’ in dense concentrations. In Hong Kong for example, new high-rise residential developments create instant concentrations of up to 10,000 people per apartment precinct (Forrest, La Grange, & Mgai-Ming, 2002). Developers and governments around the world struggling to achieve socially sustainable neighbourhood communities in these urban contexts, are increasingly considering the role of new media and information and communication technology (ICT). Conventional community technology solutions (such as community intranets) do not work by themselves mainly because they assume a ‘collective’ approach to building community and ignore new social structures that emerge in an Australian network society (Arnold, Gibbs, & Wright, 2003; Hopkins, 2005). This collective ‘if you build it, they will come’ approach does not reflect how neighbourhoods (real or virtual) grow into communities.

This paper discusses a research study currently underway to examine social networks of urban residents in the Kelvin Grove Urban Village (KGUV) – a master-planned residential development in inner Brisbane, Australia. The KGUV offers a unique and timely chance to theorise the way social networks grow and evolve around individual ‘capillaries’ which eventually become a community (Foth, 2006a). The study seeks to inform the design of proof of concepts of commercialisable new media and ICT applications that digitally augment the social spaces residents inhabit. In so doing the study identifies opportunities for the design of ubiquitous and mobile communication devices to support and accelerate the organic development of community. This new approach to community building emphasises networked individualism (Wellman, 2001, 2002) and utilises emerging technologies namely: Internet based peer-to-peer publishing applications (blogs, wikis, etc.); social network mapping applications; locative (GPS-driven) mobile technologies; interactive large-scale public displays; and new mobile content applications.

An over-arching action research based design process is used (Foth, 2006b; Hearn & Foth, 2005), necessarily incorporating extensive preliminary ethnographic work, rapid prototyping and evaluation cycles, creative content design strategies and sociocultural animation (Foth, 2006c). Sustainability will be pursued by working across community, business and government stakeholders to encourage social and economic innovation.

The specific aims of the study are to answer the following key research questions:

- How do urban residents connect with each other to create and maintain social networks and how can new media and ICT systems better support the interaction in those networks?
- How does private peer-to-peer interaction between urban residents differ from collective community interaction and what impacts does that have on new media and ICT design, social capital, local innovation and community efficacy?
- How can new media and ICT systems, devices and applications be designed to negotiate a balance between the opportunities of interactive services and locative media on the one side and issues of access, trust and privacy on the other?
- What is the role of locally relevant content (personal and community images and narratives) in the establishment and sustainability of meaningful social networks?
- How can new media and ICT systems be designed to inform social spaces for residents – private and public, and online and offline – towards facilitating social networking as well as civic engagement and local socio-economic innovation?

Mobile phones and internet-based communication technologies such as email, instant messengers and online chat are widespread in the developed world. A number of studies provide statistical evidence that they have become an integral part of the everyday life of many people (Fallows, 2004; Horrigan, Rainie, & Fox, 2001). The ability to communicate selectively, mediated, relayed and over distance impacts on the way social relationships are constructed and maintained. Recent studies show that

computer mediated communication and mobile communication are just two forms of communication amongst many, and that social relationships that originate from online interaction are taken into and continued in the offline world and vice versa (Hampton, 2004; Rice, 2002).

Castells (2001) speaks of 'portfolios of sociability' to describe the interwoven networks of kinship, friends and peers people create and offer a set of new qualities to the concept of 'community'. Social relationships before the emergence of ICTs used to be primarily from door to door and from place to place (Wellman, 2001). Calling someone's home phone connects the dialler to a place, with a typical conversation identifying caller identity. However, when calling a mobile phone, the conversation typically starts by identifying the person's location, since the mobile phone number uniquely identifies the person answering, but so far, not his or her location. In this context, Wellman (2001) speaks of person to person relationships and – facilitated through personalised ring tones, multiple email accounts, and instant messaging identities – role to role relationships. Wellman (2001; 2002) has recognised the shifting quality of communities from groups to networks and describes the dual nature inherent in an ego-centric yet still well-connected portfolio of sociability with the term 'networked individualism'.

In addition to these informational and locative functions of new technologies, ICTs increasingly serve a discursive function as well. This is being manifested in a variety of rapidly emerging content genres (e.g., digital storytelling, blogs, e-zines, etc.) which are deployed between individuals as well as in networks of individuals (Lambert, 2002; Matei & Ball-Rokeach, 2003). Digital content for mobile phones is a rapidly expanding sector which incorporate mass distributed content as well as niche 'local' applications (Davies, 2004; Kopomaa, 2004). Personalised mobile devices penetrate new geographical spaces with a need for innovative products and services that enable the consumption process to be applied in new social, cultural or psychological spaces. Users now have a means of group communication, media content access (entertainment, information, data) and the ability to manage their 'digital lifestyle' through SMS, mobile email, pictures and video MMS. These innovative though straightforward applications of locative media disguise evolving and as yet undetermined cultural and social applications as well as user-led innovations.

The aim of this paper is not to report on final figures and results, but to present an innovative research design situated in the intersection of information systems and urban sociology. The paper's purpose is to provide inspiration and stimulate an informed and constructive discussion and debate on the issues presented here in order to receive feedback, improve the research design and assess its applicability, transferability and appropriation at other sites.

2 STUDY DESIGN

Commercially successful systems designed to facilitate and support social networking in inner-city residential developments represent an imminent opportunity to bridge a gap in existing solutions. The significance of this study examining place-based social networking systems is threefold: First, existing CSCW (Computer Supported Cooperative Work) solutions can at best only be re-appropriated for use in purely social environments, because the original scope of application is regularly limited to business contexts. This substantiates a need to design purpose-built solutions that are customised for specific usage in a social as well as place-based milieu. Secondly, the ubiquity of new media and ICT is drawing attention to the hybrid nature and quality of 'community' that is both networked and individualistic at the same time. This has direct repercussions for creating appropriate conceptual models of sociocultural interaction to aid the design and development of innovative social networking systems. Thirdly, in the case of social networking systems for geographically proximate users, the focus is on local interaction which presents significant challenges and opportunities in regards to location-awareness, privacy, security, surveillance, and social control. Research to date has not been exhaustive in these fast-paced and cross-disciplinary areas.

The significance of this research is also evident by a stark contrast between the rapid development and uptake of 2.5 and 3G mobile technology on the one hand and a lack of socioculturally meaningful local content solutions and applications on the other. New generation mobile phones can store 3,000 songs, 40 minutes of video, receive radio and television broadcasts, and have mobile email and Internet. The growing social, cultural and economic impact of locative media solutions will take on greater significance in social and cultural life in the developed world as the major carriers commit to 3G or similar technology and look for appropriate social and local services and content.

2.1 Communicative Ecology as a Model to Inform Information Systems Design

Individuals in networks give rise to emergent collective behaviour. The peer-to-peer use of communication devices and applications such as email, mobile phones and instant messengers in combination with face-to-face interaction gives rise to a ‘communicative ecology’ of urban residents. We define it as a milieu of agents who are connected in various ways by various media making exchanges. Tacchi, Slater, & Hearn (2003, p. 17) suggest communicative ecologies as the “processes that involve a mix of media, organised in specific ways, through which people connect with their social networks”. This project will utilise and expand on this innovative holistic theory which recognises the importance of inter-relationships between different communication methods and between different social dimensions (Hearn, 2006, forthcoming). A communicative ecology has a technology layer which consists of the devices and connecting media that make communication possible; a social layer which consists of other people and modes of organising those people that are instantiated in a social way (e.g., social networks of friends, formal community organisations, companies, body corporates); and a discursive layer which is the content, that is, the ideas or themes that define the conversations and narratives of the ecology.

Furthermore, using the ecological metaphor opens up a number of new analytical paths to examine the nature of the population within each ecology – how the members of this population engage with each other. What are the rules of engagement? What are the boundaries of any given ecology, and how is the coherence of that boundary and the stability of the ecology maintained? The study examines sustainability issues of an ecology and in particular, analyses how different agents in an ecology move, act and survive. A grounded theory of these social and discursive structures will broaden our understanding of how the ecology works and prepare the ground for innovation in the design of appropriate new information systems.

2.2 Methodological Considerations

The project methodology integrates community development and systems design approaches. It incorporates Network Action Research, Participatory Design, Cultural Probes and Rapid Prototyping. For this project to produce rigorous research as well as deliver meaningful outcomes to KGUV residents, it is imperative to engage with all project stakeholders, especially KGUV residents, throughout the project. Thus, the project employs and further improves an innovative research methodology that synthesises best practice community development approaches with human-centred, participatory design methods. The methodology builds upon aspects of the Asset-Based Community Development approach (Kretzmann & McKnight, 1993; Pinkett, 2003) to identify, map and mobilise community assets. In a network society, community assets are not only the formal skills of individuals and the tangible associations and institutions in a given locality, but more and more the informal social clusters and intangible social networks that people create and maintain. The project innovates community asset mapping by exploring how soft and weak assets can be elicited, connected, networked and harnessed to become strong and smart assets in the service of the individual and the KGUV. In the context of how members of a social network ‘connect’ a city, Watters argues that “social capital comes from much more fluid and informal (yet potentially quite close and intricate) connections between people. [...] Social capital could as easily accrue among a tight group of friends yet still have an effect on the community at large.” (Watters, 2003, p. 116). This project broadens understandings of community assets to include both tangible and intangible assets such as

associations, businesses and institutions (e.g., kindergartens and schools) as well as the diversity of formal and informal skills, explicit and tacit knowledge and memories of residents.

Neighbourhood animation that seeks to introduce community development strategies to establish a residential community traditionally followed a collectivist approach. This project recognises the importance of networks and peer-to-peer communication (Gilchrist, 2004) and will innovate urban community development methodologies by following a dual approach. This approach works towards collective interaction for discussion about place ('neighbourhood activism') as well as networked interaction for sociability in place ('social networking'). The first component encompasses anything from body corporate affairs, rent and utilities payments to repairs, street rejuvenation initiatives and lobbying activity. The motivation behind any issue that relates to the place that residents are collocated in stems from the shared interest in and common purpose of the urban neighbourhood site itself. The second component comprises the social aspect in that it seeks to raise awareness of who lives in the neighbourhood, provide opportunities for residents to find out about each other and voluntarily initiate contact with selected residents of choice. Personalised networking conducted within a defined geographical area will contribute to the creation of neighbourhood identity. Although emails, SMS texts, and instant messaging between two residents may look like a negligible occurrence compared to the 'critical mass' ambitions of collectivist approaches, such forms of peer-to-peer communication create social clusters, social networks and thus interwoven meshworks of networks and clusters which arguably present a new appearance of community (Arnold, Gibbs, & Wright, 2003; Rheingold, 2002; Satchell, 2003; Watters, 2003).

In order to establish a symbiotic relationship between the technical network development and the social community networking process, the asset mapping and community capacity building effort is accompanied by a participatory design process to develop the technical and interface aspects of the community technology (Botero Cabrera, Oilinki, Kommonen, & Salgado, 2002; Büscher *et al.*, 2002; Foth, 2004; Greenbaum & Kyng, 1991; Schuler & Namioka, 1993). This approach will employ Cultural Probes (Gaver, Dunne, & Pacenti, 1999) as a method to elicit research data relevant for design in environments that are usually challenging to observe. Probes are functional products with open-ended functionality that support user-led innovation and capture examples of social interactions. They offer an authentic insight into the user environment. Our participants will be given a variety of objects such as disposable cameras, notebooks, audio recorders, maps, photo albums, and postcards to record aspects of their social life and environment. The results of this approach will inform the development and ongoing refinement of a portfolio of use scenarios specifically designed to capture important aspects of the use of context in social networks over time.

2.3 Social Technology for Urban Residents

The common ground established by a shared address or locality per se is usually insufficient to give rise to community identity and a sense of belonging – especially in the case of master-planned residential precincts in the aftermath of urban renewal such as the KGUV. In the absence of an established community culture and history, neighbourhood community building efforts have to focus on cultivating the assets, skills and values that lay dormant in individual residents. The project methodology seeks to identify and build community capacity, that is, the awareness and ability of a community to effectively use their assets (Pinkett, 2003). The technology's premise is to enable personalised networking with proximate residents of choice. It must afford a flowing, cellular, organic lifecycle of social network formation and the interest-based clusters within them: they are born, they grow, they connect, they disconnect, they pause, they merge, they split, they die.

Building on design implications derived from current research findings, a set of integrated applications are envisaged to be developed. Some potential aspects of these applications are described here to illustrate the purpose, context and scope of the systems. However, this study's research findings will directly inform the design and development of these systems and thus, in the course of the study, systems may change. One of the core modules is likely to be a resident directory. A resident's personal profile may comprise information about skills, trade, interests, hobbies and contact details. The profile

becomes the virtual representation of a potential node that invites other residents to link to and from (cf. friendster.com, Google's orkut.com, etc.). The system does not require users to use the directory on a regular basis to interact with all other users (as is the case in conventional 'community intranets'). Rather, the system allows users to opt-in and opt-out as they please and as a need arises by facilitating personalised networking, that is, to voluntarily initiate contact and build social ties with people of their choice. Thus, the directory becomes the catalyst for personalised peer-to-peer social networks to form. The goal of a resident directory is not to facilitate residents initiating virtual contact first (although it can be used in this way), but rather to simplify the process of strengthening serendipitous social encounters that happen 'while walking the dog'. Without it, such informal contacts that could have the potential to develop into rich interaction, may remain superficial and transitory.

The technical layer of the communicative ecology to be researched will be dynamic. The system will be designed in a modular, scalable fashion so it is able to accommodate applications for the publishing of creative and local content (photo and video galleries, digital storytelling, etc.) – either in a broadcast-style collective one-to-many or many-to-many mode, or in a networked peer-to-peer mode of communication. This data will form the basis for the study of the discursive layer in the communicative ecology framework. The social layer will be visualised through integrated social network mapping tools as well as locative mobile technologies. We will also utilise a combination of interactive private displays (e.g., Internet fridge, 3G phones) and public large-scale displays to cater for a duality of purpose between community activism and social networking. We will expand on the conceptual advances we have made together with our colleagues at the University of Queensland (Foth & Brereton, 2004; Viller et al., 2004).

In the interest of producing commercialisable products, the study also investigates how innovative building management functions can be integrated into the system which allows residents to administer rent and utilities payments, review their outstanding balance, submit repair and maintenance requests and communicate with the onsite management and body corporate. Managers can access and edit building and payment reports online, communicate with residents and tenants by sending entry notices and other announcements. The functionality could also encompass a home and building manual that includes wire diagrams, paint codes, material definitions and guarantees, appliance warranties and operating instructions, contact details of contractors and suppliers, etc. This information is updated to account for renovations and alterations. The interface may also be used to control A/C, security, local telecom and webcams. Some aspects of such a system are already available; however, an integrated solution has not been developed and deployed yet.

3 OUTLOOK

For research-in-progress, it is better to conclude with an 'outlook' of what the research project hopes to achieve rather than definite conclusions. The project sets out to deliver a comprehensive understanding of the factors and conditions that stimulate an innovation culture in local communities in order to develop the creative city (Florida, 2003). Facilitating social networks, an increased awareness of individual and community skills and assets, and opportunities for sociocultural animation and creative expression will ensure social cohesiveness and well-being. The study aims to develop new understandings of how social network technology can be of service in encouraging urban residents to be creative and innovative in everyday life (Davies, 2003, 2004) and create new forms of capital investment to ensure more prosperous and socially-responsive communities. This will assist local and state government efforts to encourage public consultation, civic engagement, open debate and social capital (cf. Huysman & Wulf, 2004).

Social isolation and 'non-connectedness' has high social and economic costs. This research seeks to deliver a greater understanding of what brings collocated people together socially and how to create better functioning neighbourhoods. Drawing on economic, urban and social sciences, this research project assists efforts to facilitate urban neighbourhood community building with new media and information systems. Understanding the issues and challenges as well as opportunities and strengths in

forming a local meshwork of social networks will help urban residents negotiate the complex web of daily choices, access a greater social safety net, participate in the socio-cultural and socio-economic life in their city. This in turn will support greater social inclusion, urban sustainability and healthier local economies.

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