Designing for Place-Based Social Interaction of Urban Residents in México, South Africa and Australia

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ABSTRACT
The design of technology to facilitate social interaction of urban residents is increasingly important for many countries around the world. México and South Africa are particularly prone to issues that stem from urban densification and a lack of adequate affordable housing. Governments look to ICT to take on a mediating and facilitating role. This paper reports on research-in-progress of a tri-continental study. The external factors and aims of this pilot project identifying local case studies to prepare for a larger and longer term international comparison of local community networking approaches are examined. It is argued that by careful attention to cultural and social assets in the community, innovations will be engendered which enhance economic and social development. Preliminary design implications for the support of neighbourhood interactions across different socio-cultural contexts are presented.

Author Keywords
Community Networks, Residential Neighbourhoods, Interaction Design, Community Informatics, Urban Renewal, México, South Africa, Australia

ACM Classification Keywords
H.5.3: Group and Organization Interfaces – *collaborative computing, web-based interaction*.

INTRODUCTION
The design of technology to facilitate social communication and interaction between residents in urban populations is an increasingly important aim for many countries around the world. Mexico and South Africa are particularly prone to issues that stem from urban densification and a lack of adequate affordable housing. Governments look to ICT to take on a mediating and facilitating role.

ICT systems designed to enable and support community networking contribute to the efforts of governments and non-government organisations in this context. With technological products such as community portals in particular, it is not just a matter of making communication solutions more accessible or affordable to less privileged residents, but to design those products and services with an understanding of their living conditions and educational, environmental and economic challenges. Such concerns must be carefully studied in order to not only derive the requirements for the technology, but also to inform the design of the environments in which such products will be utilised.

This research project follows such an approach at the intersection of new media opportunities and the challenges of urban renewal. It creates an advanced cross-disciplinary understanding of how urban residents in Australia use new media and network ICT systems (e.g., internet and mobile phone applications) to facilitate access to and effective use of the social, cultural, educational and economic assets in their residential locale (Foth & Adkins, 2006). The main site of study chosen for the Australian component of this project is the Kelvin Grove Urban Village (KGUV) in Brisbane, the result of a new generation of heterogeneous urban master-planning with a high proportion of residential usage. It is the first inner-city development of its kind in Australia, where a government and university have come together to plan and build an integrated community in an innovative way that comprises educational, residential, health, retail, recreational and business opportunities. The KGUV project started in 2001 and the last development stage is scheduled for completion in 2009.

The project aims to develop a better understanding of the different socio-cultural factors that impact on communication and interaction between urban residents and their implications on new media and ICT systems design by collecting and analysing research data across three diverse countries. It also seeks to examine how the design of new media and ICT systems, devices and applications can be informed by research to achieve balance between the opportunities offered by interactive services and locative media and issues of privacy and security they create. In addition, the study will also conduct preliminary field work to prepare for a longer term international comparative analysis of local approaches towards community networking in order to identify best practice and to explore the transferability of research findings.

This paper reports research-in-progress and presents preliminary design implications for the support of neighbourhood interactions across different socio-cultural contexts. The main objective of this paper however, is not to report on final figures and results, but to present a research design situated in the nexus of information systems and urban sociology. The paper's purpose is to

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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 potential for appropriation at other sites.

BACKGROUND: URBAN RENEWAL

Australia is one of the most urbanised countries in the world in terms of the high proportion of urban dwellers among its total population. Approximately two-thirds of the total population reside in major cities (Australian Bureau of Statistics, 2004). Current projections for South East Queensland (SEQ) are 3.71m residents by 2026, an increase of around 1.05m people, or almost 50k each year on average (Queensland Government, 2005, p. 5). Figures for Mexico and South Africa are even more dramatic. Mexico City is the second largest urban area in the world, and the estimated housing backlog in the City of Cape Town, South Africa, is 150,000 houses. The highest concentration of overcrowding are found in the south-eastern areas of the city, such as Mitchells Plain, Khayelitsha and parts of Atlantis. Open spaces are also under threat from the growth of informal settlements. Community facilities are under-utilised. This constitutes a waste of valuable resources which the City of Cape Town is keen to address in preparation for the FIFA Soccer World Cup to be held in South Africa in 2010.

Local governments are aware that the continuation of the low density urban sprawl is not sustainable. These trends have global economic relevance and reflect the changing role of cities internationally. Compact city policies are being developed and implemented to deal with population pressures and urban expansion. Brisbane is one of the most pressured given its long history of low density urban sprawl and now its status as the second highest growth region in the world. Randolph (2004, p. 483) argues that, "the language of community has come back with vengeance in policy areas that ignored it for many years. Cities are becoming, perhaps more than ever before, collections of distinctive communities and neighbourhoods, all the more differentiated as the cities grow in size and complexity. As the city expands, people remain focused on their small part of it."

Mixed-use residential developments such as the KGUV are 'a small part of it'. Regarded as a new way to make urban densification socially sustainable, they provide the immediate surroundings in which location-based interactions with other residents occur and communicative ecologies and social networks emerge (Foth & Hearn, 2007, forthcoming). The strategies proposed in these policies open up new research questions to find ways to use interaction design to solve issues of living together creatively and population diversity.

Gleeson (2004) gives examples of the prevailing attitude of developers who confuse 'planning for community' with 'master-planning community' and the associated negative impact on community development efforts. QUT and the Queensland Department of Housing are going new ways with the KGUV development in that they recognise that "community development involves human horticulture, rather than social engineering" (Gilchrist, 2000, p. 269). However, they require internationally informed research to deliver a theoretically and empirically grounded understanding of how urban neighbourhoods can be assisted to grow in healthy ways by the use of innovative cultural community development approaches. Our research seeks to verify to what extent these proposed strategies translate into greater social inclusion, fair access to and smart use of information and services, urban sustainability and healthier local economies. By attending to these objectives from an international perspective, the project promotes cultural community development and discusses findings with a wider audience of developers, policy makers, government, urban planners and architects who are concerned with cross-disciplinary links, urban planning and the engagement of urban communities.

Furthermore, the potential of any technical infrastructure (pipes, ducts, wires, networks) will not reach its full capacity for the benefit of the community unless users are able to engage with meaningful applications and relevant content (Gaved & Foth, 2006). Thus, 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 socio-culturally meaningful local content solutions and applications on the other. We hope to gain a better understanding of these broader social trends influencing urban populations in order to inform the design and development of future content applications.

APPROACH

This study brings together researchers from three continents in a collaborative project. In addition to the existing case study of the KGUV in Brisbane, Australia, this project enables the exchange of experiences and research findings from local case studies in South Africa and Mexico. Preliminary findings will be used to determine the suitability of these case studies to form a larger and longer term collaborative research project to conduct an international comparison of local community networking approaches that allows for the exchange of research data across different socio-cultural and socio-economic parameters. We collect and analyse baseline research data to inform the preparation of the longer term study. Two potential case studies have already been identified. They complement the Australian case study in regards to demographic parameters (income, social standing) as well as the range of housing solutions provided (township, gated community, open community).

Case Study South Africa: ICT for All

South Africa is undergoing rapid urban renewal in preparation for the FIFA Soccer World Cup to be held in the country in 2010. The Government sees the World Cup as a unique and exciting opportunity to launch a national *ICT for All* campaign. The ICT infrastructure promised to support the World Cup and the transmission of games across the globe will be used to provide the ICT for All infrastructure and underpin the campaign. The idea is to

kick-start the campaign by piggy-backing on the World Cup ICT infrastructure program. However, access is only one issue, and of little real use in addressing equity. To be of lasting benefit, access needs to be situated within a process that builds understanding and participation in the effective use of ICT (Gurstein, 2003) in ways that support the major national goals of shared socio-economic growth, participation in the democratic process and increasing self-reliance. These themes are now dominant South African national priorities.

The study looks specifically at opportunities of low-cost ICT to support education and facilitate community networking in Khayelitsha, the country's third largest township, on the outskirts of Cape Town. Khayelitsha, a Xhosa name meaning 'New Home', accommodates between 500,000 and 1 million people and runs for a number of miles along the airport road which most visitors to the Word Cup 2010 will use to enter Cape Town. Khayelitsha was established during South Africa's apartheid era and has become a focus for socio-economic development initiatives. The ethnic make-up of Khayelitsha is approximately 90% Black African and 10% 'Coloured' Muslims, with Xhosa as the predominant language. The majority of residents live in close proximity to each other in informal, wooden or iron-paneled homes built on infertile ground. A major effort is underway to provide basic services to this urban community. Designing ICT-enabled approaches for community development and participation in the emerging Information Society and, more specifically, the World Cup 2010, is a major challenge for South Africa's government.

We are in the process of conducting interviews with leaders of selected ICT community projects in Khayelitsha to gain a better understanding of the factors and settings which impact on the ability of Khayelitsha residents to establish and maintain social networks.

Case Study México: Technology-Based Housing

An innovative approach to environment design is currently shaping the efforts of a housing community in Tecámac, Mexico. Conectha (for Connect Habitat) – in partnership with Intel, Microsoft, the Mexican government, a local builder, and a local computer company – are creating a new generation of technology-enabled houses in a secure community for people with low-incomes in the City of Tecámac. The environment design approach followed by Conectha focuses on designing communities which integrate technology (e.g., wireless internet, low cost computers, security cameras) to create a community environment that meets specific needs of low-income consumers such as physical security, safety, local schools, electronic shopping, a community centre for entrepreneurial activities, etc.

The project is building 1,800 houses – complete with wireless capability, a computer, and free Internet access (for six months) – selling for about US$ 25,000. Nine hundred houses have already been sold and are under construction. The houses are about 30 square meters or more, with 2-4 bedrooms. The community will be walled with security and will have a school located within so that children do not have to go outside the community for their education. The Mexican Ministry of Housing is supporting the project and providing loans for the houses. The houses are offered with a US$ 500 Intel-based computer manufactured by Texa, a local company in partnership with Intel. The computer will be connected to the Internet by Conectha who also provide a set of additional services including: community information, e-mail, educational content, on-line ordering of grocery and other products, and access to security systems.

The study of the Tecámac community is led and informed by the work of Venkatesh (2006). It is an ethnographic investigation aimed at understanding the experiences around the creation of technology enabled communities for low-income consumers. The study involves 40 families in the community as well as the companies and agencies involved with the site. The project team is currently consulting with community members as well as representatives of Texa to explore best ways to adopt the *Urban Tribe Incubator* (Foth, 2006a). This design approach complements conventional broadcast-style features to support collective interaction with features that foster a peer-to-peer mode of interaction and social networking.

We recognise that urban communities cannot be examined in isolation. This project seeks to avoid regional isolation by supporting the exchange of research findings internationally. It also seeks to avoid conceptual and methodological isolation by employing a communicative ecology approach (Foth & Hearn, 2007, forthcoming) which promotes an innovative perspective that recognises residents' use of both old and new media for social interaction. A combination of qualitative (interviews, focus groups) mixed with some quantitative (survey) methods will be employed to gain a rich understanding of the local communities and surrounding environment. Finally, action research (Foth, 2006b; Hearn & Foth, 2005) establishes an over-arching framework that allows for a direct participation of residents and community members in the research and integrates them in the process of inquiry and reflection.

PRELIMINARY FINDINGS AND OBSERVATIONS

Our examination of the South African cast study identifies three key issues that are inline with findings in many similar situations: Firstly, there is a pressing need for affordable, two-way voice communication, especially in the most impoverished areas. Few people in the sites examined had land lines at home, public phones were often vandalised (with the exception of those located in containers operated by mobile phone companies), and very few low-income or unemployed people could afford airtime vouchers to make outgoing mobile phone calls.

Second, the low levels of ICT uptake appear to be a result of affordability; poor literacy levels; logistical constraints related to poverty; and lack of infrastructure. There were cases particularly amongst the unemployed, illiterate, HIV+ individuals living in small shacks within un-serviced areas that did not have access to any sort of ICT.

Third, generally with the exception of non-English speaking impoverished individuals, the number of people reported as able and willing to use the internet far exceeds the capacity of public access points in these areas and modern broadband ICT infrastructure does not exist.

Hence, it is axiomatic that access and effective use are foundational to our ongoing strategy. However, our initial results also illustrate that understanding the value of existing forms of local communication (face-to-face, radio, print and TV) will amplify the value of internet and mobile phone based approaches.

The Tecámac case study adds another dimension to our analysis because its focus on using ICT to gate the community and ensure privacy and security is different from the Australian case study's direction, which promotes openness, permeability and inclusiveness. This provides us with an opportunity to collect and analyse further research data to gain a better understanding of how a balance between the opportunities of interactive services and locative media on the one side and issues of privacy and security on the other can be achieved.

The individual observations at each of our case studies to date lead us to propose a interaction design framework that is based on principles of inclusiveness. In order to avoid considering a newly provided community network system in isolation, we invoke the concept of 'communicative ecology'. This model informs our HCI research and design by integrating three dimensions: 'online and offline', 'global and local' and 'collective and networked' which are conventionally seen as dichotomies. This more holistic model helps us better appreciate the dynamic inter-relationships between different communication technologies and between different social dimensions found in the interactions of urban residents. It informs the creation of gateways and interfaces between existing social networks and communication systems on the one hand and the new community networking systems as a local communication hub on the other.

CONCLUSIONS

Social isolation and 'non-connectedness' have high social and economic costs (DCITA, 2005). This research seeks to deliver a greater understanding of what brings co-located people together socially and how to create safe and secure neighbourhoods. Drawing on economic, urban and social sciences, this research project delivers outcomes which assist efforts to facilitate urban neighbourhood community building with new media and network ICTs.

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