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Foth, Marcus and Sanders, Paul S. (2008) *Impacts of Social Computing on the Architecture of Urban Spaces*, in Aurigi, Alessandro and De Cindio, Fiorella, Eds. *Augmented Urban Spaces: Articulating the Physical and Electronic City*, pages pp. 73-91. Ashgate.

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# Impacts of Social Computing on the Architecture of Urban Spaces

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Manuscript submitted for publication in: Aurigi, A., & De Cindio, F. (Eds.). (2008, in press). *Augmented Urban Spaces: Articulating the Physical and Electronic City*. Aldershot, UK: Ashgate.

## **Abstract**

The development of increasingly compact cities draws critical attention to the design and architecture of apartment buildings and their role as elemental components of urban renewal. At the same time, new media and information and communication

technology afford networked individualism and emerging social formations that require a re-conceptualisation of the online vs. offline dichotomy. Public space is becoming a complex hybrid in which members of what Watters calls 'urban tribes' traverse seamlessly between cyberspace and physical space. This paper introduces an Australian case study of residents in three inner-city apartment complexes. Observations and interview results are used to illustrate the interaction between residents and public space, their friends, and their neighbours. The discussion of these findings highlights that there are unfulfilled promises and unmet challenges in the design and architecture of both virtual and physical public space to support the communication and interaction needs of urban dwellers. We suggest three areas of engagement: serendipitous encounters between residents, sociocultural animation of neighbourhoods, and digital augmentation of public space.

## **Introduction**

After the home and the workplace, public spaces are the most prominent building blocks of a city. They act as 'social catalysts', places where urban residents and members of neighbourhood communities meet to create and maintain social ties and friendships and engage in discussion and debate. They are paramount in establishing the identity and culture of a city and a sense of cohesion and belonging.

The emergence and uptake of new media and networked information and communication technology have added a range of online public spaces that provide opportunities for city dwellers to meet collectively, e.g., in chat rooms, discussion forums, community networks, digital cities and massive multi-user online games, as well as peer-to-peer through email, instant messengers and SMS (short message

service). Early pessimistic voices interpreted these forms of interaction as alarming expressions of increasing ‘individualism’ and ‘privatisation of leisure time’ that provide evidence for the disappearance of traditional forms of civic engagement and community values and for a strong decline of social capital in society (Putnam, 2000).

However, online participation in public spaces can facilitate new connections to work, education, civic participation and a healthy social fabric. Watters rightly 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)

The internet and mobile phones provide means for city residents to connect with each other and to negotiate face-to-face meetings and social gatherings that take place somewhere in the city. Hence, physical place is increasingly important not despite but because of the range of social ties, bridging links and local interactions that occur online (Fallows, 2004; Horrigan, 2001), an effect that has been termed ‘glocalization’ (Robertson, 1995; Wellman, 2002). These connections are created and maintained in both virtual and physical urban spaces and city residents traverse these worlds seamlessly as they are increasingly interwoven. Thus, it is time to depart from simple binary oppositions and compartmentalised dichotomies such as ‘physical place’ vs. ‘cyberspace’ or ‘online’ vs. ‘offline’ (DiMaggio *et al.*, 2001; Lovink, 2005) and embrace the complex hybrid nature of urban spaces.

The role that urban neighbourhoods play in this new era has changed. The premise that a strong place will ensure a strong community needs to be revisited. Previously, neighbourhoods were marked by central public places that provided traditional meeting

spots such as the market place or town square. These locations were used to meet with friends and peers. Mobile communications technology such as the mobile phone and SMS, and ubiquitous communications technology which can be accessed anywhere, such as wireless local area networks, are now enabling users to negotiate meeting places and venues on-the-fly anywhere and anytime.

Studying urban public space requires a cross-disciplinary approach with contributions from three main areas, that is, the people dimension (urban sociology, community development, communication studies), the place dimension (urban design, town planning, architecture), and the technology dimension (community informatics, interaction design, computer science). So far, much interest has focused on how new technology enables new forms of public space that digitally augment city life and lead to so-called 'digital cities', and how these spaces are designed, developed, maintained, used and administered effectively as well as what impact they have on the life of city residents. Surprisingly, the reverse direction, that is, the impact of new technology facilitating social networks and peer-to-peer interaction on the design and architecture of physical urban spaces, has not been met with the level of attention necessary to invoke a truly cross-disciplinary exchange that goes both ways.

The impact of new technology on residential architecture can be divided into three areas:

1. New technology enables innovation in production and construction. New materials and construction processes allow architects to design buildings that realise unique forms and shapes that had been impossible before. Prominent building works by Frank Gehry, Norman Foster and others are examples of this.

2. New technology is being implemented into buildings in a range of styles. The integration of universal ducts and wires to ‘future-proof’ the home and to provide local area connectivity, especially in master-planned community sites, is becoming a standard in new buildings, alongside electricity, gas and water. On the other end of the scale, interactive artistic experiments such as the Aegis Hyposurface (dECOi Architects, Paris, & RMIT, Melbourne) provide an artistic outlook of what the future of digital augmentation and integration may hold.
3. New technology is being used by urban residents for personalised networking to form social formations that are different from conventional images of ‘community’, ‘neighbourhood’ and ‘urban village’. Their use of new technology enables a fluid, swarming social behaviour that has implications on residential architecture and the design of urban space.

This paper is about the latter point, the new social formations as they emerge in three inner-city apartment buildings in Australia and the implications for the residential architecture of the public spaces in those buildings. We briefly outline the relevance and significance of this topic that is established two-fold by (a) an ongoing trend towards more and more compact cities in the light of urban renewal, and (b) findings from urban sociology that describe the emergence of networked individualism. These two notions are now discussed in turn.

### **Urban Renewal in an Australian Context**

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). In

South East Queensland (SEQ), a region of approximately 75 km radius around the City of 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 after Phoenix in the US. Current projections for the region are 3,709,000 by 2026, an increase of around 1.05 million people, or almost 50,000 each year on average (Queensland Government, 2005). The management of this growth has been the subject of a strategic regional plan, developed under the auspices of the Office of Urban Management of the Queensland Government. This document provides some statistical data as the backdrop rationale for urban renewal in SEQ towards higher densification of inner-city areas.

SEQ has experienced high and sustained population growth since the 1980s, growing at an average of 55,300 persons each year between 1986 and 2004. The estimated resident population of the region in 2004 was 2,666,600. (Queensland Government, 2005, p. 14)

The projected population increase, combined with the continuing trend towards smaller households, will require an estimated 575,000 new dwellings in the region by 2026. There will also be a greater demand for a diversity of housing forms to match the needs of changing household structures, particularly an increase in one- and two-person households. (Queensland Government, 2005, p. 16)

The Queensland Government as well as local government representatives are aware that the continuation of the low density urban sprawl in the SEQ region is not sustainable. A range of implications have been proposed in the Regional Plan such as the implementation of policies to ensure that new developments are contained within the existing urban footprint of the region, protecting areas of urban landscape and rural production, and delivering more compact and higher density residential solutions. A further complexion relating to residential trends that have been identified here is the proliferation of large detached dwellings on small lots. Statistics indicate that family

sizes in these large homes is decreasing with a tendency to single and couple occupancies and a related strong demand for one and two bedroom units.

At the same time recent economic trends in Australia have seen a rapid escalation in real estate value to a point where entry level residential accommodation in inner-city areas is becoming unattainable for the average income earner. More and more households with limited resources are excluded from high amenity areas in the inner city and gravitate to areas offering relatively low housing costs in city fringes and new greenfield estates (Healy & Birrell, 2004). Issues of affordability and density in residential accommodation further impact on strategies for urban zoning as well as future typologies in the design and delivery of adequate residential stock.

These trends that are similar in other urban and residential areas elsewhere in the world have global economic relevance and reflect a changing role of cities internationally. In Australia, compact city policies are being developed and implemented in all capitals to deal with population pressures and urban expansion. The strategies proposed in these policy documents open up new research questions around issues of governance and sustainability (Gleeson *et al.*, 2004). They require a re-interpretation of what archetypical concepts, such as ‘neighbourhood community’, ‘urban village’, ‘smart growth’ and ‘new urbanism’ (De Villiers, 1997; Walmsley, 2000), mean in practice. Randolph rightly 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. (Randolph, 2004, p. 483)

Mixed-use residential apartment complexes are ‘a small part of it’, yet arguably one of the most prominent components of urban densification and thus play a crucial

role in urban renewal. Apartment buildings provide the immediate surroundings in which location-based interactions with other residents could occur and ‘communicative ecologies’ (Foth & Hearn, 2007, forthcoming) and social networks could emerge. However, their architectural design and layout (beyond issues of market demand, scope and scale) is rarely informed by societal developments and sociological insights and has hitherto been guided more by the functional requirements of the individual resident and by rental and investment returns than by the resident community at large and their need for public space and interaction. These conditions are being aggravated by prevailing attitudes of developers who confuse ‘planning for community’ with ‘master-planning community’ (Gleeson, 2004; Ziller, 2004).

There are few exceptions. In Brisbane, the architectural practice of Donovan Hill acknowledges the essential commodity of public space in the pursuit of sustainable environments in residential design. Private residences are construed as fragments of cities, the design for the components of the houses are set around a plaza or courtyard, a focal public place within a private realm. Not surprisingly, Donovan Hill’s designs for multi-unit developments embrace this theme of public place. Their design for an eight townhouse development in Terrace Street, New Farm, establishes a large lawn space as common garden, from which all units relate.

The context of urban renewal in SEQ as outlined suggests that innovative models of housing will need to be considered in addressing the impending pressures on the availability of residential accommodation. Solutions that yield higher densities will be sought, and opportunities to inform residential architecture through advanced understandings of social networks and communicative ecologies will be essential in

order to create public space that accommodates the needs of urban residents and their new social formations.

### **New Social Formations in the Urban Mediascape**

Since the advent of modern means of transportation and global communication, the importance of door-to-door and place-to-place neighbourhood ties, which (apart from family and kinship ties) used to provide the closest and most convenient way to socialise, has been diminished by friends and peers other than neighbours who fulfill social needs in various person-to-person and role-to-role relationships (Wellman, 2001). The portfolio of sociability (Castells, 2001) of urban residents, that is, the result of maintaining a range of individual social ties with selected friends through the internet, mobile phones and other media, tend to be place-independent. Nevertheless, the frequency of contact with the nodes in our portfolio is mostly dependent on the nodes' proximity to our locality. We remain what Baker & Ward (2002, p. 221) describe as "physically-instantiated and geographically-centred individuals and citizens".

The hybrid nature of maintaining a portfolio of sociability that is at the same time both 'individualistic' in the sense of social control and private ownership, and 'networked' in the sense of being connected to a personalised set of friends and peers, has led to the term 'networked individualism' (Wellman, 2002). Watters' (2003) detailed description of 'urban tribes' illustrates how the theoretical concept of networked individualism applies in practice in an urban context.

Networked individualism introduces challenges to conventional understandings of 'place' and 'public places'. It opens up opportunities for architecture, city planning and urban studies to re-conceptualise their understanding of community and neighbourhood

planning in the light of opportunities presented by new media and network ICTs (cf. Castells, 2004; Florida, 2003; Graham, 2004; Mitchell, 2003; Oldenburg, 2001; Walmsley, 2000). The contemporary interpretation of community is shifting from 'village' and 'neighbourhood' to 'social network' and 'urban tribe'. However, such a re-conceptualisation has not been achieved yet in all relevant areas due to a lack of theoretical and practical understandings of the freedom and constraints and the social and cultural meanings that urban dwellers derive from their use of location-based ICTs.

Neighbourhood identity and a sense of belonging is derived less and less from the bricks and mortar of the built environment itself and more and more from a combination of the usage of the built environment – especially the 'third place' (Oldenburg, 2001; cf. Soukup, 2006), such as cafés, bars, parks, etc. – and the transitory meaning residents associate with these places. It could be any decent café that a group of friends decide to meet at. The decision to use this particular café as today's meeting place bestows meaning on this place, and frequent use will raise its identity as a favourite meeting place – yet, tomorrow, it could be another favourite café across the street, as long as it is conveniently located within the proximity of group members and fulfills their needs and expectations. A public place cannot invoke meaning or a sense of belonging per se. The culture of place making involves humans adding layers of shared experiences. The agora of the group's interaction can be quite motile but remains essentially face-to-face and place-based, either within the neighbourhood, suburb or city. ICT plays a role in preparing the meeting, and possibly during or after the meeting to prepare the next gathering.

New light has recently been shed on the location preferences and decisions of citizens in the context of diversity and creativity (Florida, 2003). Early results indicate

that people prefer to settle in open, accepting and permeable cities. That said, an online community network (Day, 2002) might contribute to a city's permeability by affording personalised networking and by offering a choice of residents to socialise with on the basis of self-selected criteria such as age, interest, family status, profession, nationality, etc. However, the new emerging social formations and communicative ecologies which are at the same time networked and individualistic have implications not only for systems architecture of online urban space but also for the residential architecture of physical urban space.

### **Public Space in Residential Apartment Buildings**

One of the significant common denominators in well functioning residential architecture is the provision of social spaces, interstitial places that offer opportunities for interaction and exchange. The cloistered monastical courtyards provided inhabitants with a public place of relief from the humble quarters of the private cells. In another context the Public Houses ('pubs') marking the street corners of nineteenth century British mass terraced housing, provided the scale of a lounge environment for social gatherings spaces, as private living rooms were modest and inadequately sized for group interaction. In the mass housing solutions of the twentieth century, the street was replaced by the access corridor in high-rise developments, mostly void of places to dwell, providing mere circulation. As these corridors became devices of internalised access, the mounting disfunctionality increased in the face of developers' slim profit margins.

The modernist residential tower blocks and vertical real estate mostly fail to recognise the model established in Le Corbusier's *Unité d'Habitation* in Marseilles,

France, completed in 1952, that of an elevated podium (allowing the landscaping to flow beneath the structure), the allocation of public amenities on mid block floors (shops, laundry, etc.), and recreation facilities (pool, playground, crèches) on the roof<sup>1</sup>. The need to optimise the return on real estate investment focuses the attention of today's developers of apartment buildings on the apartments themselves; for they are sold according to size and location. Public space may add value, but also increases body corporate fees and maintenance requirements. It is thus not surprising that public space in residential apartment complexes appears all too often to be an afterthought and a way to fill gaps.

In the following section, we introduce a case study that examines the public spaces of three inner-city apartment buildings. The design and usage of these spaces is analysed with a view to better understand the articulation of physical urban spaces. The combination of the theoretical understanding of social interaction and the empirically illustrated understanding of physical urban spaces is necessary to help inform the design of ICT to augment urban spaces.

### *Case Study of Three Inner-City Apartment Buildings*

Our case study research comprises three different inner-city residential apartment complexes in metropolitan Australia. To protect the privacy of residents, the sites will be referred to as 'Alpha', 'Melba' and 'Sigma'. Research methods that have been

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<sup>1</sup> For an extraordinary example of a postmodern version of Le Corbusier's residential apartment complex, see Andrew Maynard's Corb 2.0 at <http://www.andrewmaynard.com.au/corb.htm>

employed are situated within an action research framework (Foth, 2006c; Hearn & Foth, 2005) and include mostly qualitative and ethnographic methods such as surveys, focus groups, participant and site observation and interviews.

Research on Alpha started in late 2002. Melba and Sigma have been added to the case study at the end of 2004 to control for certain demographic factors and to enable a more comparative analysis. Opened in 2000, Alpha is an apartment complex for international students who are about 17 to 24 years of age and study at nearby tertiary institutions. They come from a variety of national and cultural backgrounds. The majority of tenants only stays short-term, that is, for one or two semesters of study. About a fifth of tenants come to Australia to study a full degree program which usually lasts three to four years. Alpha contains 94 one, two and three bedroom units with a total of approximately 160 tenants.

Melba was built in the mid 1990s and is the home of mostly working singles and couples in their Twenties and Thirties. It contains 39 two and three bedroom units with a total of approximately 90 residents, mostly tenants and some owner-occupiers. Length of residence at Melba is medium to long-term. Sigma is the largest site which was completed in the early 1980s. It consist of three high-rise buildings, a low-rise two story building and 48 townhouses. There are 156 apartments and approximately 300 residents in total with the majority being owner-occupiers and some tenants. Residents are mostly couples and families in their Forties and Fifties working in diverse occupations with some retirees. Length of residence at Sigma is usually long-term. Unlike Alpha where every tenant is an international student, there is no pre-existing underlying common link at Melba or Sigma other than living in the one complex.

### *Interaction Between Residents and Public Spaces*

The public spaces at Alpha, Melba and Sigma are examples of contemporary residential architecture. In this study we are interested in analysing how the use of digital information and communication technology and resulting social behaviour impacts on the purpose of public space and how it is used and seen by the residents of our case study sites. Each apartment or unit at all three sites includes one or more bathrooms and a kitchen, so there is no need for residents to leave their unit and use shared facilities which is common in shared accommodation and college-style dormitories and which could stimulate the initiation of interaction with neighbours.

Alpha consists of two six-storey buildings which are linked through a gateway on each level. There is a reception and lobby area on the ground floor, a laundry room and a common room with a pool table and ping-pong table on Level 1, an outdoor swimming pool on Level 3, as well as two barbecue sites. Melba consists of three three-storey apartment buildings which are built along the corner of two streets. Seven separate entrances give access to a cluster of about six apartments each. The only underlying link is the common underground car park through which all residents have to traverse in order to get to the courtyard pool and barbecue area on the inside of the building (Figure 1). Sigma is a gated multi-building complex with its own private road infrastructure. There is a swimming pool and a lap pool at Sigma, a tennis court, as well as a barbecue site. In relation to its size, public spaces at Sigma are sparse.



Figure 1: Entrance to the pool area via the car park at Melba

The number and size of public spaces also depend on the size and layout of the apartments themselves. The smaller an apartment is, the less social space it offers for entertainment and other purposes, especially in shared accommodation. Public spaces can make up for this lack by offering break-out areas. Collective ownership of public spaces also enables residents to access and use facilities which would be too large, too expensive or too inconvenient to maintain on their own such as pools, gyms or tennis courts.

A gym would be fantastic – none of the units are large enough to cater for basic gym equipment and the gyms nearby are quite expensive. (Resident at Melba)

I rarely use the shared facilities. (Resident at Melba)

Advantages: Don't have to maintain the public areas (more time on our hands). If feeling sociable there are generally people around. Security, there is always someone around. (Resident at Melba)

However, collective ownership does not mean collective use. Most public spaces are meant to be 'public' in relation to access, but 'private' in relation to use. Yet most of them do not offer the adequate level of privacy that residents desire. The barbecue area at Sigma (Figure 2) as well as the combined outdoor pool and barbecue area at Melba are surrounded by apartments and open to the gaze of spectators. The lack of privacy of these panoptic spaces make many residents feel uncomfortable and awkward.

More interesting space around [the] barbeque – more landscaping etc. Currently very open and not a terribly interesting place to bbq. Would love it to be a place you want to go, and enjoy eating a meal rather than feeling like everyone is watching you.

(Resident at Sigma)

More privacy, most people can see what is going on. (Resident at Melba)



Figure 2: Public barbecue space at Sigma

Public spaces also give residents the opportunity to invite a number of friends and visitors over who cannot be accommodated in the private space of an apartment. Thus, public spaces offer three distinct types of use: single use, collective/ shared use by residents, and individual use by residents with friends. Policies and rules may need to be in place to govern access and to allow residents to book a space for private use. However, it is difficult to negotiate priorities between exclusive use by individuals or groups since it depends on the social attitude of residents and group sizes.

I usually wait until the other residents have finished because that provides me with the privacy that I need. (Resident at Alpha)

Depends on the number of them, and again my mood. It is overwhelming at times meeting tons of new people. Though sometimes it is nice. Smaller groups are more approachable. (Resident at Alpha)

Depends on the groups, kids can deter me as they tend to be a little annoying, large groups deter me as I feel they would be better to have the space for themselves, I haven't been disappointed with any people, generally when I want to use the areas it is reasonably quiet. (Resident at Melba)

Depends on how many are there. More likely to wait until they have gone if it's busy. (Resident at Sigma)

### *Interaction Between Residents and Their Friends*

One of Watter's (2003) findings about the social behaviour of urban tribes describes their apparent invisibility to external observers. Urban tribes, or similar social formations, do not appear as one coherent entity to the public. They are private networks that integrate seamlessly into the social fabric of urban life. Members of an urban tribe may not even be aware of their membership or of the extent of the network. The interactions between the nodes of these social networks take place in both physical and virtual spaces. They traverse cyberspace (email, instant messengers, mobile phones) and the 'third' space (cafés, parks, bars) with ease. However, in any case, interaction usually remains private and peer-to-peer, whether it is mediated online or direct face-to-face interaction. Hence, the preferred social spaces of urban tribes are private spaces (someone's home) or private places in public spaces (cafés, bars, internet). Even if groups of friends meet up in a large public space such as a night club or discothèque, they exchange SMS to form private clusters that gravitate towards each other through an invisible bond.

The design of public space needs to acknowledge and accommodate this behaviour. Yet, most public spaces are designed to cater more for a collective many-to-many than a private peer-to-peer form of interaction. Although the choice between private spaces and private places in public spaces depends on situational circumstances and personal choice, the public spaces of their apartment buildings are considered not to be desirable meeting places in any case for residents to meet and socialise with their friends and peers.

I meet my friends a lot and it is usually away from [Alpha] probably [in a nearby park] or in the city. I don't like socialising at anyone's house even if it is my own house. (Resident at Alpha)

I generally have more fun at home or at another person's home than at a café, pool etc. (Resident at Melba)

I am far away from my established group of friends who are back home [...]. I used to see them daily at University, in the halls etc. I am slowly making new friends here.

My flatmates and I hang out with a few others we've met. Usually the meeting place has been a restaurant or other such location. (Resident at Alpha)

I meet people all over the place, home might be the stop before heading out, sometimes we stay at our place or head to our friends. In general there is no preference, but if we are home it is mostly in our unit not in the public areas. (Resident at Melba)

### *Interaction Amongst Residents*

Although it is easier than ever before to communicate and interact with others, forms of urban alienation remain, and ironically, residents who are socially well-connected otherwise can live in an apartment for years without any interaction with their neighbours or even knowing who lives next to them. We believe that this situation is acceptable as long as it is due to personal choice and not due to a lack of opportunity for local engagement and participation.

Approaches towards neighbourhood development that try to provide such opportunities are mostly based on a utopian objective to try and establish a collective community spirit. They are afflicted with difficulties, because it is impossible to 'make everyone love everyone else'. Physical proximity does not ensure neighbourliness (Arnold *et al.*, 2003; Foth, 2006a). Hence, approaches to encourage and support interaction amongst residents has to be based on voluntary action and choice to cater for different lifestyles and social needs.

It would be nice to know my neighbors. (Resident at Alpha)

I'm not really interested in meeting others to any great extent. (Resident at Melba)

Nevertheless, no resident who participated in our study rejects the assumption that there are residents who share their interests or are at least socially compatible with whom they do not normally interact on a daily basis. If these residents could be easily identified, they may transgress the status of ‘neighbour’ and become new acquaintances and maybe even friends. How can the residential architecture and design of public space stimulate, encourage and support social interaction and networking between residents? We suggest three pathways based on our study’s empirical findings (Foth, 2006a, 2006b; Foth & Hearn, 2007, forthcoming) which we will discuss in turn.

*Serendipity* ‘Bumping into someone’ has been reported as the most common form of interaction between residents. These kinds of serendipitous encounters take place in the elevator, at the pool, in the car park, whilst taking out the garbage or walking the dogs. Yet, depending on individual personalities and social preferences, such concurrences may remain without consequence unless people already know each other.

I feel people are generally sociable to all residents, they will generally say hi, but a more lengthy chat usually occurs between those groups that know each other.

(Resident at Melba)

Most people are reasonably friendly. It is hard to determine who is a resident and who is just visiting most of the time. Generally most people are reasonably friendly. I would say I would most likely chat to a familiar face rather than a new one unless it was obvious they were just moving in. (Resident at Sigma)

On the other hand, residents of a proactive nature may take the opportunity of repeat serendipitous encounters to get to know other residents and to explore possible new frontiers of their existing social networks on the basis of shared demographics or interests.

Depends on my mood and their body language, if they look friendly such as smile at me and make eye contact... or if they avoid eye contact, you know they don't want to talk, but I am always up to meeting new people. (Resident at Alpha)

Mostly everyone tries hard not to talk to each other unless they are constantly bumping into the same person and it becomes awkward not to talk. I have managed to become good friends with a once [Sigma] resident, just because we were similar ages, have similar interests and often ended up in the lift together and started chatting.  
(Resident at Sigma)

The design of public space in residential apartment buildings substantially influences the likelihood, frequency, and intensity of serendipitous encounters. The only public space at Melba where serendipitous encounters happen on a regular basis is the underground car park, however, informal chats are awkward because the environment is dark and uninviting, and residents usually rush between their car and the entrance to their staircase. The absence of paths and pedestrian walk ways in Sigma's site layout favours access by car and makes it difficult for residents to casually visit each other by foot. Alpha's common room on Level 3 has been equipped with board games, a ping-pong and a pool table, but the overall impression of this large and clinically white room is not very welcoming and conducive to socialise with other residents (Figure 3).



Figure 3: Common room at Alpha

*Socio-cultural Animation* The public barbecue sites at Alpha and Melba have been successfully used in the past to invite all residents to get together for a community barbecue. Although not every resident shows up, most residents that attend such organised events welcome the opportunity to gain a better awareness of who lives in the complex and meet old friends and new acquaintances.

It is easier to break the ice when someone else does it for you or it is less confrontational. (Resident at Sigma)

Group meetings are a bit daunting especially when the people who usually attend these things all know each other. (Resident at Sigma)

If people want to interact they can and it doesn't force those people who wish to go about their existence in the unit as they wish. Also add a bit of alcohol and people tend to loosen up a bit. (Resident at Melba)

These and other acts of socio-cultural animation (Foth, 2006d) allow residents to take the initiative to organise collective action. They may take various forms from community barbecues, donation appeals or landscape rejuvenation programs to the establishment of residential community associations (Foth & Brereton, 2004). The location and facilitation of such activities requires appropriate public spaces – both physical and virtual – that cater for mixed-use and that offer a heterogeneous fit-out to suit a variety of technical and social needs. Audience sizes change and it is essential that these spaces can be re-appropriated and re-purposed for different contexts and circumstances.

*Digital Augmentation* Residents at Alpha have broadband access to the internet through a local area network with Ethernet sockets in every bedroom. Most residents at Melba and Sigma have dial-up or broadband internet access at home. These favourable conditions allow residents to explore the potential to develop and install a community network system as a virtual outlet for social interaction to compliment existing physical public spaces (Foth, 2006a, 2006b; Gaved & Foth, 2006; Foth & Hearn, 2007, forthcoming).

Theories of networked individualism and social networks do not only have an impact on the residential architecture of physical urban spaces, but also on the systems architecture of virtual urban spaces. These notions introduce the conceptual context for design scenarios and open up a new set of challenges to create ways to enable, enhance, augment or facilitate existing or emerging social networks between urban residents. Networked interaction for sociability in place describes the more private space occupied by a ‘society of friendships’, that is, social networks of friends who live within relative

proximity to each other. The documentation and dissemination of current activities (e.g., through the use of text or multimedia messages), coupled with simultaneous coordination of the next event, culminates in a shift in the nature of communication itself. Unlike internet chat or even e-mail, the driving force behind the interaction is not about back-and-forth interaction with someone else. Mobile phone applications facilitate a more subtle form of interaction, where communication is mediated through the creation, circulation and consumption of virtual presence (Satchell, 2006). However, proximity enables them to gather face-to-face and interact offline. They see each other primarily as ‘friends who live closeby’ and not as ‘neighbours’ (Foth, 2006a). One of our key goals is thus to find appropriate means to afford residents a seamless, selective and voluntary pathway to transition from ‘neighbour’ to ‘friend’ and to link these new nodes with their existing social networks. This echoes Hornecker *et al.* who examine opportunity spaces where “*there is no urgent problem to be solved, but much potential to augment and enhance practice in new ways*” (2006, p. 47). Neighbourhoods can be such opportunity spaces insofar as they provide residents with opportunities to communicate, interact and socialise with each other. Our analysis of the physical articulation of lived city spaces seeks to inform how new media and ICT can be designed to realise such opportunities and enhance established ways of communicating, interacting and socialising in urban places.

We are currently working on a range of initiatives which operate at the intersection of residential community engagement and digital augmentation of urban spaces. The following two examples demonstrate the cross-disciplinarity and broad appeal of digital augmentation initiatives in an urban context:

Targeting the specific domain of public inner-city places, we are developing a mobile system we call *CityFlocks* (Bilandzic & Foth, 2007), that enables urban residents to leave digital annotations with ratings, recommendations or comments on any place or physical object in the city. Thus, *CityFlocks* turns residents into in-situ amateur journalists for visitors or other residents who have questions or need navigational aid related to any place in the city. Based on the outcome of previous studies, *CityFlocks* uses two different design alternatives, one following a direct, the other an indirect social navigation approach. We evaluate how these different design approaches influence the success of participants using a mobile system to socially navigate and find particular places at our case study site. Based on the results of the field study, we analyse how existing design principles for social navigation can be applied, combined and improved in the context of mobile systems to augment urban spaces and to harness the collective intelligence of urban residents towards an effective and efficient navigation tool. We hope the outcomes will provide valuable input to the design of future community driven, mobile information systems.

The *Social Patchwork* project (Klaebe & Foth, 2006) explores the use of narrative and new media in community engagement and urban planning processes. The 'History Lines' component is part of a suite of engagement tools under the Social Patchwork umbrella that seeks to illustrate residential history and migrational churn. It brings a cross section of new residents together to trace and map where they have lived in the course of their lives. When the longitude and latitude coordinates are collated and augmented with short personal narratives, overlapping and common lines become visible. The stories at these intersections in time and space stimulate interest and offer opportunities for further personalised networking. We see the Social Patchwork project

as an experiment to test how urban computing can be used to augment a social network of storytelling, themed around community history and place making.

## **Conclusions**

Good design in housing remains scarce, however innovations in the infrastructure of social space have emerged. The Dutch architect Herman Hertzberger has established principles in social residential projects that targets circulation spaces (staircase, landings and balcony corridors) as opportunities for incidental exchange. On enlarged stairway landings, seating is provided, a simple gesture that allows for resting on the ascent to an apartment, a place to meet. Similarly, external corridors are articulated with protrusion outside apartment front doors that also encourage engagement through the opportunity to appropriate a balcony space, although part of the public domain is cared for as if private. For examples, see Hertzberger (2000) and Lüchinger (1987). These simple gestures inform how, with a dimension in design thinking beyond the mere functional minimum, the in-between spaces within a residential development can become more than just circulation.

To Mitchell (2004) designing flexible, permeable, informal public spaces is key in establishing a positive social space as demonstrated at Steven Holl's polemical Simmons Hall Undergraduate Residence, MIT campus, Cambridge, USA (Amelar, 2003; Ryan, 2004). Holl's philosophy of an architectural porosity enables the building to incorporate a cavernous series of volumes cutting through various stories. These vertical shafts are aligned with group lounges and study spaces. The network of spaces allows for a multiplicity of social events. The buildings plan is based on the traditional

central corridor spine, however the departure from the conventional monotonous circulation system through the augmentation of public meeting spaces demonstrates a viable model for residential developments.

The diagram of Simmons Hall, and its physical exploration, is as if Le Corbusier's economic section of stacked maisonettes for his Unités d'Habitation has mutated with surprisingly spatial, almost surreal incidental volumes. The student rooms, typically paired about small threshold spaces and shared bathrooms, are aligned between floor slabs to either side of the central corridor – a new sort of internal street – whereas the multi-height communal rooms punch through this straightjacket, morphing vertically – in the case of upper rooms – towards fantastical roof lights clear to the sky. (Ryan, 2004, p. 37)

These 'internal streets', inter-dispersed with places for social gathering, recall the earlier models of terraced housing and street corner public houses.

The fact that urban environments in the network society are characterised by fast-paced technological change and a swarming social behaviour of its inhabitants requires a cross-disciplinary exchange between urban sociology, computer science, architecture and urban design disciplines to inform urban planning and public policy making. Design considerations around privacy, exclusivity, permeability and flexibility have to be re-thought in a new light alongside traditional values of access, scale, scope, form and function. If the modern city is to become a dynamic conglomeration of livable 'urban villages', a variety of network effects need to be investigated further. In the process of urban renewal, apartment buildings are becoming an essential component of the physical fabric of urban spaces. They provide an integral part of the environment inhabited by social networks. Their significance in the design and development of public spaces that become the new agora of urban dwellers opens up exciting opportunities for future research and innovation.

## **Acknowledgements**

Dr Marcus Foth is the recipient of an Australian Postdoctoral Fellowship supported under the Australian Research Council's Discovery funding scheme (DP0663854). The authors would like to thank Dianne Smith, Robbie Spence, Fiorella de Cindio, Alessandro Aurigi, the organisers and participants of the Digital Cities 4 workshop at the 2nd International Conference on Communities and Technologies 2005, Milan, Italy, and the anonymous reviewers for valuable comments on earlier versions of this chapter.

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