

Designing networks for sustainable neighbourhoods: A case study of a student apartment complex

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Abstract

Sustainability has been identified as a key, yet controversial issue in community informatics and community networking research. This paper draws on an action research study in an urban apartment complex in Brisbane, Australia, which provokes a re-conceptualisation of the idea of sustainability. The methodology employed comprises participatory design and sociocultural animation. The site is characterised by a high turnover of residents and thus offers various opportunities to study the conditions and design implications that foster the growth of a sustainable neighbourhood community. The paper critiques current approaches to residential community development that are informed by community capacity building strategies. A theory of neighbourhood identity implicit in these strategies is set in contrast with the theory of networked individualism. Following an analysis of designing for collective community activity vs. networked community activity, the paper suggests implications for the design of a sustainable online community network. The discussion suggests that (a) certain means aimed at increasing social capital may support collectivity but may also lead to high barriers of entry and can thus be counterproductive to ensuring sustainability in a diverse residential community; and (b) there is a need to broaden the scope of residential community systems design to include peer-to-peer networking tools which allow for the fluid, diverse and swarming social behaviour of residents.

Introduction

The roots of the term ‘sustainability’ can be traced back to the universal notion that any resources needed to initiate and continue a process should eventually be replaced or replenished by that same process. The notion of sustainable development has been introduced to describe socially based initiatives such as, projects to reduce poverty in developing countries or to revitalise low-income urban neighbourhoods. It is obvious that in these examples the term ‘sustainable’ is far more complex than the ideal of a mathematical equation or an economic principle (eg., supply vs. demand). Any discussion of sustainability requires a distinction between activities which aim at achieving a level of sustainability (the means) and the state of being sustainable (the end). The means imply at least four contextual factors, namely

- the range of financial, material and in-kind resources;
- the range of stakeholders and interest groups (public/ private, commercial/ non-profit, individual/ communal, local/ regional/ national/ global, etc.);
- the kind of activities; and
- the time required by the means to reach the end.

The end, the state of being sustainable, is ideally a type of equilibrium that necessitates the contextual factors of the means to enter a stable and balanced interrelationship with one another. Various studies point out that the complexity of sustainability remains a key, yet controversial issue to be investigated both in the realm of community informatics research (Gurstein, 2001) as well as community networking research (Arnold, Gibbs, & Wright, 2003; Day, 2003).

This paper contributes to this enquiry into community sustainability. Far too often, such enquiries are limited to accountability and financial aspects of sustainability. This paper seeks to expand this narrow view by exploring three additional, interdependent factors that play a crucial role in ICT for community sustainability, that is, the dimensions of

- people;
- place (and thus proximity); and
- technology.

The paper draws on the case study of an urban residential site and the process of designing an online community network. The site is characterised by a high turnover of residents and thus offers various opportunities to study the conditions and design implications that foster the growth of a sustainable neighbourhood community. Based on literature review and findings from the case study, the paper critiques current approaches to residential community development that are informed by community capacity building strategies (the *people* dimension). A theory of neighbourhood identity (the *place* dimension) implicit in these strategies is set in contrast with the theory of networked individualism. Following an analysis of designing for collective community activity vs. networked community activity, the paper suggests implications for the design of a sustainable online community network (the *technology* dimension).

Research Design

The research is driven by a case study of a residential building complex called *Southbank Campus Apartments* (www.campusapartments.com/southbank) which has been running since late 2002. It forms part of a larger doctoral research project. The doctoral study's main objectives¹ are to investigate

- the continued purpose and relevance of neighbourhoods;
- how a residential site – which is only characterised by a common suburb, street or, in this case, building – can become a neighbourhood and evoke a sense of belonging, and how technology can support this process;
- how instances of personalised networking (Wellman, 2001, 2002; Wellman et al., 2003) conducted within a defined geographical area can contribute to the creation of neighbourhood identity; and
- whether this will in fact assist attempts to revive forms of civic engagement and social capital in society (Foth, 2003).

The specific objectives of the case study are to analyse and understand

- how ICT, especially internet based tools and applications, can be used to facilitate the creation of social ties between residents;

¹ It is beyond the scope of this paper to discuss these objectives extensively. They are only listed here to provide an indication of the theoretical framework of the larger study.

- how the process of installing and customising existing, mostly open source tools, can facilitate community building and contribute to the establishment of a community network; and in a later stage
- how to design and develop purpose-built solutions and processes, both online and offline, that take the specific requirements of a place-based community, as opposed to a virtual community, into account.

The study employs a participatory action research approach (Hearn & Foth, 2005, forthcoming; Reason, 1998) to encourage residents to engage and participate in the research and to allow findings to be fed back into the ongoing lifecycle of the project¹. The methodology of the study is further informed by PAD (Participation, Animation, Design), an experimental methodology which the author has synthesised from current best practice research methodologies for residential community development. The foundation of PAD is based on the mapping community assets approach by Kretzmann & McKnight (1993) and Pinkett (2002; 2003).

PAD starts out with an initial phase of ethnographic immersion with the residential community. The model then integrates systems design with community development: Participatory design principles (Botero Cabrera, Oilinki, Kommonen, & Salgado, 2002; Harrison & Zappen, 2003; Harrison, Zappen, & Prell, 2002) are utilised to *create* the network, to provide *access* to information and to ensure *usability* within the context of human-computer interaction. Simultaneously, sociocultural animation (Foth, 2005, forthcoming; Grosjean & Ingberg, 1974; Kurki, 2000) is employed to help *populate* the network, make *effective use* of information (Gurstein, 2003) and to improve *sociability* within the context of social ties and human networks (Preece, 2000).

It is envisaged that a lighter version of PAD can be used by community members without research assistance. Here, PAD is applied to explore the specific objectives of the case study, but by itself, it may represent a necessary but not a sufficient means to achieve neighbourhood sustainability. A more detailed description of PAD – beyond the scope of this paper – can be found in Foth (2004).

¹ Rather than being described in detail, the case study is used here to exemplify emerging theoretical issues. A description of the action research process itself will be published elsewhere.

Southbank Campus Apartments

Southbank Campus Apartments comprises of 94 one, two and three bedroom units with a total of approximately 160 residents in South Brisbane, Queensland, Australia. Every apartment is fully furnished and includes one or more bathrooms and a kitchenette. The only shared public spaces at *Southbank Campus Apartments* are the reception area, the common room, the gym, the outdoor swimming pool and two barbecue sites. However, typical usage of these spaces is mainly limited to individuals or small groups of residents and their friends.

Residents have access to a broadband internet connection through a local area network with Ethernet sockets in every bedroom. They use the internet to conduct study and research for assignments and exams, for entertainment and leisure, as well as to communicate with friends at home and at school via email, chat and instant messenger.

The residents in the building are mostly international students between 17 to 24 years of age who study at nearby tertiary institutions. They come from a variety of national and cultural backgrounds including Asia (mostly Singapore, Japan, China, Taiwan, Korea, India, Saudi Arabia, Oman), North America, and Europe (mostly Scandinavia, Germany, UK). *Southbank Campus Apartments* was opened in November 2000 and since then has seen a continuously high demand in furnished high-quality student accommodation. This means that the building is usually fully occupied throughout the year and booked out well in advance. The majority of residents only stays for one or two semesters of study which is usually supplemented by a period of traveling Australia either during the study breaks or after they finish their study program before they return to their home country. Only about a fifth of residents come to Australia to study a full degree program which usually lasts three to four years. The high turnover rate of residents impacts upon various sustainability aspects of the residential community network which are now explored in turn.

Community Capacity Building

In most cases, projects, activities and artifacts that foster sustainable community development in both urban and rural settings are aimed at community capacity building

(cf. Simpson, Wood, & Daws, 2003). Community capacity refers to the awareness and ability of a community to effectively use resources, knowledge and skills (community assets) available to members of a community. These so-called community assets can be both tangible and intangible 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 community members.

The methodology that Pinkett (2002; 2003) employs in a case study of a low income community – derived from Kretzmann & McKnight (1993) – involves phases of asset mapping and mobilisation. This process raises awareness for the range of assets and services currently available to community members and initiates the generation of new assets and services which can be developed by the community itself. The outcomes of these processes are published on the online community system, thus adding additional value to the system.

These and other methodologies (e.g., Francisco et al., 2001; Wilcox, Greenop, & Mackie, 2002) to build community capacity represent a solid process to grow sustainable residential communities. However, these case studies often benefit from typical community disadvantages such as low income or unemployment in that shared agony may help to establish a collective need for change.

In other residential communities and especially in times of networked individualism (Wellman, 2001, 2002; Wellman et al., 2003), there are few factors that can prompt collectivity. Residents who do not initially have an interest in the place they live in, a need or desire to use existing or generate new community assets, or a motivation to socialise with their neighbours easily become antagonists on the way to build community capacity using the methods mentioned above.

Putnam (2000) draws upon statistical evidence to point out that today's generation of society does not care as much about traditional community assets and forms of civic engagement, such as bowling leagues and other volunteer and political organisations, as previous generations did, and he argues that this leads to a steady decline in social capital. His interpretation of this trend is controversial and met with just criticism (e.g.,

Fischer, 2001; Florida, 2003; Watters, 2003), because it ignores other, more contemporary forms of social capital that are based on the strength of weak ties (Granovetter, 1973) and the impact of conducting social networking.

The residents of *Southbank Campus Apartments* illustrate this argument. During their stay in Australia, most of them care less about formal organisations such as student unions and international student associations and prefer to engage in personalised networking through email, instant messaging, mobile phone, SMS and face-to-face meetings to maintain social ties with various clusters of their choice, that is, study groups, flatmates, travel companions, sport teams, friends and family. Watters rightly observes 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: 116).

These findings impact upon community development strategies and design decisions for online community networks in that projects for community capacity building and sustainable development need to widen the focus of asset mapping and mobilisation. The key point is that community assets are not only the formal skills of individuals and the tangible associations and institutions, but more and more the informal social clusters and intangible networks of weak tie relationships that people build and maintain. Existing methodologies to build community capacity are challenged by networked individualism. This challenge can be met by broadening the scope of community asset mapping and by exploring how these 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 community.

The fact that residents are in most cases members of multiple groups and clusters gives rise to an intricate network of what Watters (2003) calls ‘urban tribes’ – ‘urban’, because proximity matters. The place of activity of these tribes (or swarms) ranges from an individual’s bedroom, shared apartment, an individual floor of the building to the entire apartment complex and adjacent public spaces, surrounding suburb and beyond.

The community capacity building efforts are essentially place-based and thus also contribute to establishing a different sense of neighbourhood identity.

Neighbourhood Identity

Since the advent of modern means of transportation and global communication, neighbourhood ties, who (apart from family and kinship ties) used to provide the closest and most convenient way to socialise, have been reduced in importance. Our ‘portfolios of sociability’ (Castells, 2001), the product 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: 221) describe as “physically-instantiated and geographically-centred individuals and citizens”.

The role that 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. This introduces challenges to conventional understandings of ‘place’ and ‘public place’ in the information age and opens up research opportunities for the built environment and urban studies (cf. Castells, 2004; Mitchell, 2003; Oldenburg, 2001; Walmsley, 2000).

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’ 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 – yet, tomorrow, it could be the café across the street, as long as it is conveniently located within the

proximity of group members. 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.

Neighbourhood identity and a sense of belonging to a residential community, that is, for residents to consider themselves 'to be from this place or suburb', cannot be built. Gilchrist explains that "community development involves human horticulture rather than social engineering" (Gilchrist, 2000: 269). Like gardeners, designers of community networks can work to ensure the right prerequisites are being provided online, yet neighbourhood identity needs time and grows slowly. It is common sense that new residents ought to feel 'at home', but what that exactly entails is contentious. New light has recently been shed at 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 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.

This particular process that involves the formation of interest and support-based groups and clusters within a neighbourhood requires further exploration. Due to the characteristics of the surrounding area which includes mostly industrial, cultural and touristic facilities and not other student-style accommodation, *Southbank Campus Apartments* is a neighbourhood within a neighbourhood (the suburb 'South Brisbane') without many external connections to compatible places close-by. The tertiary institutions attended by residents are a twenty minute walk away from *Southbank Campus Apartments*. This leads to an island state which would theoretically increase the convenience of socialising with residents within the building.

However, both the architecture of *Southbank Campus Apartments* and the residents' length of stay are problematic. Every apartment is fully furnished and includes one or more bathrooms and a kitchenette, so there is no immediate need for students to leave their unit and use shared facilities which is a common factor contributing to the

emergence of neighbourhood identity in shared accommodation and college-style dormitories. Apart from the swimming pool, gym and BBQ areas, the building's local area network is the only public space that all residents have access to at all times and which would provide a convenient means to socialise with other residents and with groups and cliques of friends in the building.

Residents only stay for a limited period of time, usually one or two semesters, before they return to their home country, hence the turnover is high and the exchange of incoming and outgoing residents happens abruptly about twice a year. This as well as the fact that residents come from an international range of cultural and social backgrounds has a significant impact on factors contributing to neighbourhood identity and thus on the sustainability of the online community network.

Observations made at *Southbank Campus Apartments* indicate that upon arrival, residents socialise with others from the same country and cultural background first and most easily. The online community network is a tool that allows groups that initially formed on the basis of common nationality or cultural background to link with or even transform into cross-cultural clusters that are based on shared interest and support needs such as study, sports, travel, grocery shopping, transport and any kind of socialising. This process requires residents to accept the diversity of residents at *Southbank Campus Apartments* and groups to be open, welcoming and fashioned with low barriers to entry.

Both Florida (2003), referring to a city or region, and Watters (2003), referring to social networks of friends, claim that certain means aimed at increasing social capital as defined by Putnam (2000) may support collectivity but may also lead to high barriers of entry and can thus be counterproductive to ensuring sustainability in a diverse residential community: "The high social capital communities showed a strong preference for 'social isolation' and 'security and stability' and grew the least – their defining attribute being a 'close the gates' mentality. The low social capital communities had the highest rates of diversity and population growth." (Florida, 2003: 15).

Traditional student colleges have seen the formation of exclusive cliques and societies which require new residents to undergo initiation rituals and trials of courage. A resident may then identify strongly with their club or 'house' due to the great mental and physical anguish they had to invest in order to be accepted. It is questionable whether shared agony is an ethical means to grow neighbourhood identity and whether it is productive to ensure sustainability in a highly volatile and highly diverse residential community such as *Southbank Campus Apartments*.

In such a fluid community, neighbourhood identity and a sense of belonging can more easily emerge in an open environment of tolerance and acceptance that supports the swarming behaviour of residents (cf. Satchell, 2003). Residents may derive the meaning of living at *Southbank Campus Apartments* less from the building and more from personal interactions that they experience in their daily lives with flatmates and friends. Consequently, the technology, that is, the online community network should reflect these premises.

Collective vs Networked Community System Design

Butler points out that communities will only be sustainable if they provide benefits that outweigh the cost of membership (Butler, 2001). In this regard, it is essential to keep in mind that the properties of online community networks are designed to support sociability (Preece, 2000) and are not intended to be an additional burden on residents which they would regard as 'additional work'. In fact, ongoing use and thus sustainability can only be achieved if it is possible to elicit an intrinsic motivation from residents so they 'find, connect and harness' (Kretzmann & McKnight, 1993) the assets and networks of relationships that an online community network is able to give them access to.

This objective frequently turns out to be easier said than done, and a proven concept to reach and maintain a critical mass of users remains a key issue in community informatics and community networking research (Fulk, Flanagan, Kalman, Monge, & Ryan, 1996; Markus, 1990; Patterson & Kavanaugh, 2001). Findings from studies into mailing lists and other dispersed online communities make the matter even more complex since there is evidence not only for a minimum number of users but also for an

upper limit. If numbers of users exceed the sustainable level, lurking and social loafing occurs (Preece, Nonnecke, & Andrews, 2004; Schoberth, Preece, & Heinzl, 2003), and although numbers might increase, levels of activity relative to numbers of users decrease. This impacts upon the quality of interaction and the success with which residents gain benefits from their participation in an online community network.

Many studies (e.g., Andrews, 2002; Andrews, Preece, & Turoff, 2001; Aschmoneit & Heitmann, 2003) that report on the issue of critical mass maintain a what Arnold and his colleagues (2003) call 'community as collective' image of community building using tools that are commonplace in dispersed online communities, such as discussion boards, mailing lists and newsletters. It is questionable whether this approach is the only suitable option for residential communities since these tools focus on many-to-many broadcasts and public announcements which are designed for dispersed online communities but which turn out to be difficult to appropriate for the purpose of animating sociability between individual residents.

Many residents at *Southbank Campus Apartments*, especially female students from an Asian background, would not use tools designed for collective activity. A posting to a discussion board is often seen as a public outing to an unknown mass of people and inconsistent with prevailing cultural belief and value systems. Even if residents post to a discussion board, the nature of the interaction is quite different from the fluid neighbourly interaction described in the previous two sections.

Table 1 is an attempt at creating a dichotomy of communication design for communities as collectives versus communities as networks, aimed at introducing a heuristic aid. This comparison paints a black and white image. Nevertheless, there are shades of grey inbetween and both approaches are relevant in different contexts of residential communities.

Southbank Campus Apartments' physical spaces can be divided into bedroom (one resident), shared flat (two or three residents), public spaces such as common room and swimming pool (usually about five to eight residents at a time), an individual floor (about 25 residents) and the entire building (about 160 residents). The collective

approach lacks a natural correspondence with this kind of granularity of interaction which happens in physical spaces, for example between flatmates within a shared apartment or between friends across floors. This would require the online community network to become a true ‘network’ and afford what Wellman (2001; 2002) terms personalised networking. In other words, “a well-connected community is achieved when people feel part of a web of diverse and inter-locking relationships. These networks sustain and shape an integrated and dynamic social and organizational environment representing life at the edge of chaos.” (Gilchrist, 2000: 264). Tools need to be implemented that afford this kind of ‘chaos’.

Table 1: Community as collective vs. community as network

Community as collective	Community as network
interest in the community	interest in the individual
community activism	personal, social networking
public	private
many-to-many broadcast	peer-to-peer switchboard
formal discussion	informal chat
asynchronous	synchronous
permanent	transitory
hierarchically structured	networked to the ‘edge of chaos’
discussion board, mailing list	instant messenger, email, SMS
Residential Community Association	Urban Tribe

The unique advantage that an online community network in a residential environment possesses compared to its dispersed virtual counterpart is proximity. An online resident directory is one way to identify birds of a feather, that is, to find like-minded people of choice with common interests or support needs who live close-by. Peer-to-peer communication facilities such as instant messengers allow residents to voluntarily initiate private and personalised contacts and build social ties with those residents. Both of these tools combined would be a step towards a network approach of online

community building, supplementing existing approaches that follow community media and online community paradigms.

Conclusions

The discussion of the people dimension of neighbourhood sustainability focused on community capacity building. Community capacity refers to the ability of a community to effectively use and benefit from their community assets. Strategies to build community capacity map and harness community assets. The analysis in this paper suggests that the scope of identifying community assets needs to be broadened to focus more on informal and intangible networks of interpersonal relationships of residents. In times of networked individualism, the strength of these weak ties to proximate community members will form an essential category in the mapping process among more traditional asset types such as community associations and institutions.

The changing dimension of place in a networked society impacts on how residents establish a sense of belonging to the place they live in. The paper suggests that neighbourhood identity originates less from the physical built environment and more from the transitory meaning that residents derive from the place-based interactions with their friends and peers. The preference for a particular neighbourhood is increasingly influenced by the ability of residents to re-appropriate the place for the kind of social behaviour they want to engage in. High barriers of entry are counterproductive in the formation of permeable neighbourhoods.

The discussion of the technical dimension of ensuring sustainability in a diverse residential community is structured around online community systems designed for communities as collectives and communities as networks. Both kinds of approaches afford different communication patterns which lend themselves to different contextual community settings. The analysis suggests that there is a need to broaden the scope of residential community systems design to include peer-to-peer networking tools which allow for the fluid, diverse and swarming social behaviour of residents.

Due to the dynamic characteristics of residents and the residential setup itself, *Southbank Campus Apartments* may appear to be a special and challenging case.

However, findings of this case study do bear significance to be generalised and applied in other, more conventional residential sites. Those sites may be termed 'static' due to the length of time residents stay in them, yet people's dynamic and networked social behaviour, amplified by ICT, becomes more and more part of everyday life.

The observations and interpretations of this case study can be generalised in the direction of informing the design of new online community networks. These systems may provide an essential step towards networking residents, re-connecting them with their community and the place they live in, and thus growing sustainable neighbourhoods.

Acknowledgements

I would like to thank Prof. Greg Hearn, Lucienne Camenzuli, Joshua Green and the anonymous reviewers for valuable feedback and comments. An earlier draft of this paper has been presented at the Association of Internet Researchers conference (AoIR 5.0), Sussex, UK, 2004.

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