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More Than Wires, Pipes and Ducts: Some Lessons from Grassroots Networked Communities and Master-Planned Neighbourhoods

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Abstract. Community informatics research has found that the provision of technical connectivity in local neighbourhoods alone does not ensure community interaction. Externally initiated projects applied to communities by government or commercial bodies have encountered difficulties where the project's goals do not correspond to the host community's. Differing expectations can lead to disillusionment or rejection. Self-organised initiatives developed from within communities appear to be more aligned with residents' goals and purposes and may not face these issues. However, such initiatives have also encountered difficulties in maintaining volunteer input and achieving technological sustainability. Valuable insights can be drawn from both cases. In this paper we review examples of each type of initiative and consider lessons that can be taken forward into new networked neighbourhood initiatives currently being developed. We consider one specific example, an inner-city master-planned residential development in Australia seeking to establish a community association to support socio-economic sustainability and governance of the local ICT infrastructure. We offer recommendations drawn from existing projects that may be applied to this site and to a wider context, and consider some implications for the future selection, deployment and maintenance of community information systems.

Keywords: community informatics; community information systems; community networks; grassroots communities; networked communities; master-planned communities; urban neighbourhoods; ICT

1 Introduction

Technological solutions to facilitate social communication and interaction between residents in urban populations are increasingly important for many countries. In this paper we consider Australia and the UK which are particularly prone to issues that stem from regional migration, socio-cultural diversity, urban renewal and increasing densification. Such trends are also evident in other urbanised areas around the world.

Both the private and public sectors are looking at information and communication technology (ICT) to take on a mediating role to remedy some of these issues.

Australia and the UK are two of the most urbanised countries in the world in terms of the high proportion of urban dwellers among its total population. The increased population density generates rising demand for ICT infrastructure and services to enable social communication and interaction between urban residents. Internet cafés are a familiar sight in urban centres, mobile phone reception and wireless Internet services are approaching near full coverage of inner-city areas. Surprisingly, despite the fact that urban centres are possibly better connected than they have ever been before, notions of urban alienation are still being discussed in urban planning and policy making. 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.*"

Randolph's more contemporary image of community is consistent with Wellman's (2001) notion of networked individualism which reflects the inherent duality of the collective group networked by means of ICT and the individual who wants to stay in control of their social circle – their 'small part of the city'. Social isolation and 'non-connectedness' have high social and economic costs (DCITA, 2005). ICTs that enable the formation of community networks can help bring collocated people together socially and increase awareness of individual and community skills and assets. Community networks can also support access to local information and services as well as encourage public consultation and open debate

Scholars such as Gurstein (2003) argue that the provision of access itself is necessary but not sufficient to ensure meaningful usage. Furthermore, providing connectivity and electronic access by setting up online portals and discussion boards does not automatically ensure user participation and the development of a sense of community. However, many externally driven ICT initiatives (e.g. funded by government or commercial organisations) have built tools and infrastructures with the assumption that 'if you build it, they will come'. This approach assumes a local willingness to participate. Although these websites may provide useful community information and services, the ability of such systems to connect residents with each other can be limited. They may be seen as 'yet another burden' instead of a helpful communication tool which can be used to support the social networks which residents form with friends and peers.

An alternative approach has been the development of grassroots, self-organised initiatives driven by existing communities. Local activists have constructed their own network infrastructure with minimal external support to enhance local communication and a sense of community. These may be more successful in encouraging take up and usage, as increased local control and management fosters community ownership. Yet technical expertise is harder to maintain within a small community, and thus the social sustainability of a network run on little or no funds and dependent on volunteers may prove to be problematic.

In this paper we review externally initiated ('top-down' or 'master-planned') and self-organised ('bottom-up' or 'grassroots') projects and gather some lessons to inform the development of new community networks. Findings are set against the

emerging requirements of an inner-city master-planned residential development in Australia seeking to establish a community association to support the medium and long-term economic and social sustainability and governance of the local ICT infrastructure.

2 Externally Initiated Community Networks

University researchers have been involved in developing and supporting community networks since the 1970s and the Berkeley Community Memory (Farrington & Pine, 1996). Governmental enthusiasm to connect society and industry to the new 'communication superhighways' (Hearn *et al.*, 1998) caused concerns to be raised about a possible divide in access to ICTs. This led to research in the form of widespread surveys and pilot projects to explore the effects of supporting connectivity. Key projects have included Netville in Canada (Hampton & Wellman, 2003), Blacksburg Electronic Village (Cohill & Kavanaugh, 2000) and Camfield Estates (Pinkett, 2003) in the USA, Ennis in Ireland (McQuillan, 2000), Williams Bay (Arnold *et al.*, 2003) and Atherton Gardens (Hopkins, 2005) in Australia and the Wired Up Communities in the UK (Devins *et al.*, 2003). These projects have operated across a broad range of cultures and with a wide variety of circumstances, but common issues have arisen.

Many externally initiated community networks have been run with a fixed timeline: actions are undertaken, data is collected and the project written up. In some cases the participants are aware of this limitation from the outset; for example by being offered free internet connectivity for a set period of time (Devins *et al.*, 2003). In other cases this came as a complete surprise – in Netville, residents assumed their internet access was permanent as part of their house purchase and were upset when the technology consortium announced it had gathered its data and would be closing down the service (Hampton, 2003). Other projects may struggle to survive after external funding has finished and are forced to change their priorities and targets as a result leading to a failure to support the original clients (Hopkins, 2005).

Such a 'project based' approach to community networks may make them less socially sustainable – users may be encouraged to participate but are then left unsupported and disenfranchised as a result. Day & Cupidi (2004) recommend that community technologies should be approached as open ended initiatives rather than closed term projects, as the latter is detrimental to social sustainability. If a community network is to be of long term benefit it must be seen as part of the long term infrastructure and strategies. Exit strategies must be formulated to ensure the network can continue after funding has finished; these should consider not only infrastructure funding but also community support, training, and staffing.

Externally initiated projects may suffer if they do not consider local social structures; while this is more significant in existing communities, new communities also rapidly develop social structures and these must be taken into account. In the Ennis 'Information Age Town' project (McQuillan, 2000) a wide range of technological applications were put into place alongside the ICT infrastructure. However in some cases these destabilised rather than developed social cohesion. For

example, unemployed people were asked to sign up for their unemployment benefits online rather than by visiting the town's unemployment centre. While this may have sped up a clerical process, it removed an important social ritual for already isolated individuals within the community (Warschauer, 2002). Similarly, low usage of a telecentre in the Wired Up Communities project (Devins *et al.*, 2003) was later found to be due to its physical location in a community venue that had been the central meeting point during a recent coal miners' strike. Such a politically charged venue would not be used by a significant number of the local residents for this historical reason. Both examples illustrate the need to consider the wider communicative ecology of the community and locale (Foth & Hearn, 2006).

Community networks are technologically complex; they offer services to a local neighbourhood that are comparable to a business IT department. In this aspect, externally initiated community networks often perform well. Budget is allocated for set up and support of the explicit aspects of the network – the devices and the ICT infrastructure itself. Association with university technology researchers can assure free or low cost technical support (e.g. Cohill & Kavanaugh, 2000). However such resources need to be available on a long-term open-ended basis, with strategies for continued support if the project has limited time period funding.

Projects may encounter 'social resistance' with not all members of a locality interested in signing up to join the community network (Selwyn, 2003). This will have an effect on any network that seeks to be inclusive and providing a medium for all residents of a locality. Externally initiated networks particularly have encountered difficulties of being perceived as being driven by external goals not relevant to the local community. This may lead to members of the locality not being connected, or disconnecting, thus reducing the social effectiveness of such a network.

3 Self-Organised Community Networks

Since the earliest days of the internet, there have been grassroots driven local community based applications of network tools and services. Many of the early bulletin board systems and Free-nets were started by innovators within local communities to support neighbourhood activities (Schuler, 1996) and this spirit has continued until the present. Similar to other earlier technologies such as the radio and the telephone, innovators and early adopters within communities have appropriated new ICTs for their own uses, either as a response to lack of provision, adapting inflexible exogenous framings of technology, or innovating for their own purposes (Jankowski, 2006). These initiatives are often funded from within the community, are volunteer run and respond to the demands of the local population (Gaved & Anderson, 2006). While they may be set up and run for a variety of motivations, their initiators often claim that the self-organisation makes them more sustainable in the long term than externally initiated projects: "*the very fact that the project is not dependent on external money means that there is nothing to run out of*" (Davies, 2004, p. 46). In many cases the funding model is more complex, with partnerships and reciprocal relationships supporting local activity, however there is usually an emphasis on local control and management.

Self-organised network communities driven from within local neighbourhoods have been less well researched than externally initiated networks (Gaved & Mulholland, 2005), but it is clear that they are not homogenous, and offer lessons that can be carried forward. Such initiatives are usually seen as being more in touch with local community aspirations and goals. As the organisers are from within the community, ownership is more likely to be seen as being held by and more accountable to the residents. Furthermore, ongoing local support and training are considered of great importance to sustain the network.

While such initiatives often seek complete coverage within the neighbourhood, there will be non-participants (Selwyn, 2003). In addition, multiple subcultures are found within self-organised network communities, and it is likely that different groupings exist within a neighbourhood. Thus, features and tools that require an ongoing critical mass of users may prove to be more difficult to sustain than systems that connect with existing social networks and engage residents in a less homogeneous and more diversified manner (Foth, 2006a, 2006b).

All tools and services are likely to be appropriated and may not be used as designed, and there may be varying rates of success. It is likely that some tools provided within the network may not be used at all and an iterative implementation process is required. The Redbricks community network in Manchester started with a large variety of tools including music and video sharing (Skyva, 2002) but have reduced these services to two email lists: 'Shout' for calls to the whole community and 'Act' for political issues. Davies (2004) suggests that the most effective tools within a community network are those that offer non-critical services that help to build social capital, such as baby sitting services. Basic recommendation tools such as local noticeboards may be more effective than more complex services.

Self-organising network communities appear to be more socially sustainable due to their locally initiated nature, however they may struggle with financial and technical sustainability. Just as it is important to emphasise the value of the community network as a shared resource so it is important to recruit volunteers with the necessary skills and expertise to support and develop the network. Small networks may struggle to maintain the level of expertise required and benefit from participation in social networks of similar groups, for example the Community Broadband Network (www.broadband-uk.coop) in the UK (mainly focused on rural network groups), or NYCWireless (www.nycwireless.net) in the USA (aimed at wireless network groups in New York City and the surrounding areas).

It is clear that self-organised community networks have both strengths and weaknesses, as have externally initiated networks, and we now turn to consider how these findings may inform a new partnership based community network that is being developed in Australia.

4 Master-Planned Communities

Many new urban developments are systematically planned and rapidly built and marketed, trying to create instant 'communities' in dense concentrations. Developers and governments around the world struggling to achieve socially sustainable

neighbourhood communities in these urban contexts, are increasingly considering the role of ICT to help animate master-planned communities (Foth, 2006d).

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. "*Community development involves human horticulture, rather than social engineering*" (Gilchrist, 2000, p. 269). The Kelvin Grove Urban Village (www.kgurbanvillage.com.au) is a master-planned residential development in inner-city Brisbane that seeks to learn from these and other lessons.

Queensland University of Technology and the Queensland Government's Department of Housing have established a partnership to develop the Kelvin Grove Urban Village (KGUV), an integrated master-planned urban renewal project. They have identified the KGUV as a distinct planning and design case study that departs from homogeneous planning principles. It reflects a desire to achieve a higher level of integration of population diversity than has been aimed for in past urban renewal initiatives (Healy & Birrell, 2004). One of the innovative aspects of the KGUV is the provision of housing types for a range of income groups, such as 'mainstream' apartments, senior and student accommodation, and affordable housing. The collocation of a diverse socio-demographic population within a new inner-city area offering a mix of residential, commercial, educational, cultural and employment facilities and activities will inform the objectives of the ICT strategy to support social cohesion and may influence uptake and usage.

The objective to create a vibrant place of mixed uses and diverse population is reflected in the KGUV vision statement: "*A diverse city fringe community linking learning with enterprise, creativity with community and unique living solutions with public amenity.*" Realising this bold vision requires a theoretically and empirically grounded understanding of how urban neighbourhoods can be assisted to emerge and grow in healthy ways through community development activities and the role of ICT to assist in this effort.

Research is underway to examine issues of socio-cultural sustainability in the experience of residents settling into a new environment. The Department of Housing breaks down the concept of urban sustainability into the 'triple bottom line' (Gleeson *et al.*, 2004) of environmental, economic and social sustainability. This research project focuses on the social component (Buys *et al.*, 2005) by engaging a tripartite approach comprising community capacity building strategies (*people*), a theory of neighbourhood identity based on 'networked individualism' (Wellman, 2001) (*place*), and design of online community networks (*technology*). These three components are inter-related. The study thus employs an inclusive approach that seeks to overcome any tendencies to ignore key factors in the design and development of meaningful ICT applications for residential communities.

The provision and implementation of the ICT infrastructure at the KGUV seeks to prepare the site to play an important part of Queensland's emerging knowledge economy. The Queensland Government (2005) recognises the potential of ICT to enable people to work where they choose to live, connecting them with the world, and encouraging intellectual growth. It wants the local network to help create opportunities to integrate work and home life through high-speed, global communication systems for both businesses and residents. Common service ICT

ducts have been installed beneath the footpaths in the KGUV, giving the potential to offer residents, home workers and business operators' broadband access to the Internet, high-speed transmission between local stakeholders of the KGUV, and high quality telephone and audiovisual services. A commercial provider has been contracted to ensure the long-term continuity of technical development of the ICT infrastructure across both terrestrial and wireless networks.

However, the KGUV project team has started to translate the lessons learnt from the studies referred to above into action. They have realized that it requires more than the provision and installation of wires, pipes and ducts to achieve a socially sustainable urban village community. We briefly outline three key strategies which seek to distinguish this initiative from the pitfalls of previous projects.

First, the provision of ICT systems and related services is designed with an exit strategy in mind right from the start to ensure the main financial assistance from the primary stakeholders is made continuously redundant over time. The vision of the KGUV as a smart neighbourhood and inclusive community is driven by a range of community development activities, and the KGUV Community Association is one of the key initiatives. It will be established by the Department of Housing and Queensland University of Technology. KGUV residents represent the main group of prospective members of the Community Association. Whilst the mission and business plan of the Community Association is distinct from the KGUV Principal Body Corporate, both entities are established to ensure the medium and long-term economic and social sustainability and governance of the KGUV. The Association will be a commercial entity which develops, markets and sells creative industries' services. The main asset of the Association will be the KGUV Community Portal which is currently being developed by a commercial web development company and which will eventually be maintained and managed by the Association.

Secondly, the theoretical and methodological frameworks underpinning the project's research and development are based on principles of inclusiveness. In order to avoid considering a newly provided community network system in isolation, KGUV invokes the concept of 'communicative ecology' which we define as a milieu of agents who are connected in various ways by various media making. This notion integrates the three dimensions of 'online and offline', 'global and local' and 'collective and networked' (Foth & Hearn, 2006). 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 KGUV residents. It informs the creation of gateways and interfaces between existing social networks and communication systems on the one hand and the new KGUV Community Portal as a local communication hub on the other. Furthermore, network action research (Foth, 2006c) is used as a project methodology to reciprocally inform research and practice and to encourage community members to become reflective practitioners who take up community ownership of the initiative.

Thirdly, the project group has recognised the need to not only ensure network access but also effective use of the network by residents and other stakeholders. The portal aims at facilitating community uptake of ICT by hosting entertainment and information content that encourages exploration of the ICT infrastructure available at the KGUV. Furthermore, the portal offers an outlet for self-published local content which is intended to provide an online mechanism to link the people and businesses at

the KGUV and beyond. It is supposed to encourage participation in the KGUV by being not only a key information resource for the diverse mix of activities, programs and facilities available, but also a communication hub. The portal will focus less on collective communication features such as discussion boards and more on peer-to-peer modes of interaction to reduce reliance on maintaining a critical mass of users. Such features can act as a springboard to animate interaction which may be continued through external applications and devices like email, instant messaging software and mobile phones. This approach places less pressure on an online space to try drawing all residents together collectively and satisfying all their social needs and purposes, which in itself it may not be able to achieve (Foth, 2006a, 2006b).

The research, design and development of the ICT component and social sustainability aspects of the KGUV started in early 2006 (Foth, 2006d; Foth & Adkins, 2006). Evaluation strategies as part of the action research cycles will show whether the three broad strategies and principles discussed above make a significant difference in achieving a sustainable community network for KGUV residents.

5 Conclusions

In this paper we have described a variety of types of community network, and it can be seen that both externally funded and self-organised networks have shown both advantages and weaknesses. We have attempted to combine lessons learnt from both bottom-up and top-down approaches towards community networks, and introduced a new top-down / bottom-up hybrid initiative. The Kelvin Grove Urban Village seeks to build on the insights gathered from both 'community' and 'informatics' disciplines, that is, community development and information systems design. We identify the following three key recommendations for KGUV, and future community networks:

- **Cultivate a sense of ownership:** Community networks that are felt to be part of the community's own assets are those that are best supported and most socially sustainable in the long term. We recommend connecting internal and external interests and resources through a theoretical framework and methodological approach which combines research and practice, considers existing and emerging local social structures, and encourages community members to act as co-investigators.
- **Simple, open ended tools are the most successful:** Highly complex tools may be little used and too alien to be domesticated by the community. Simple tools that allow informal social dialogue have proved to be more successful. Additionally, it is not unreasonable not to try to connect everyone with everyone else. Peer-to-peer modes of communication are more conducive to supporting interaction in place-based social networks than collective, broadcast-style tools alone which require a constant critical mass of users to maintain momentum.
- **Develop externally initiated networks with an exit strategy in mind:** All users require technical support at some stage. Encouraging peripheral participation through buddying new users with expert users, providing online community help boards, informal and formal training will enable ongoing usage of the service and develop technical and managerial staff.

Clearly further research is required. Hence, data gathered from KGUV will be valuable and reported in future papers. It is highly likely that more partnerships of this kind will be developed (for example, the Oakgrove Millenium Community of 1850 wired houses in the UK, to be occupied from early 2007) and the experiences of such new urban networked communities are likely to inform both digital divide policy and community informatics research in the future.

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