IMPACTS OF ITC TECHNOLOGIES ON NEIGHBORHOODS: *TYPOLOGICAL STUDY*

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Abstract. As the former infrastructures such as roads and electricity deeply transformed qualities of neighbourhoods, the new ITC technologies exert some fundamental changes over them. This paper, which is based on a master by research thesis, explores the newly emerging ITC-based lifestyles to understand the social and spatial impacts that they are seeking or may cause in their living environments. The study is typological and emphasizes on similarities and differences between different neighbourhood types (as physical contexts) and lifestyles (as human contexts).

1. Introduction

The time in which we live is often referred as telecommunication era. While urban environments reshape themselves with the digital infrastructure, developers future-proof their properties by building high-speed wiring into new or renovated neighborhoods, and people take advantage of the opportunities for more fluid and mobile work and lifestyles.

The new infrastructure of digital communication and ubiquitous computation enables people to work, communicate and entertain via electronic networks from their living places. Therefore, understanding the nature and design of digitally supported neighborhoods is likely to be one of the most important research questions. Investigating the changes required in neighborhoods in order to make them more convenient to locate new functions and activities as well as the traditional ones, is the necessary task to develop new generation of infrastructure design.

This paper, as a brief report of a master by research thesis, investigates the interactions between ITC technologies and neighborhoods in Melbourne. They are the starting and finishing points of the impact, with residents as the decisive factor that influence which impacts or changes are going to be accepted, embraced and therefore becoming permanent over time.

The study takes the view that different contexts and environments reflect different ways of living conditions and therefore respond differently to new
phenomena they encounter. Neighborhoods reflect such interactions with technologies in terms of physical configurations and social interactions of residents. The aim in this research is to investigate social and spatial impacts of ITCs on characteristics of different neighborhood types in Melbourne. It anticipates that neighborhoods will undergo changes, some similar and others different, with the introduction of ITC technologies.
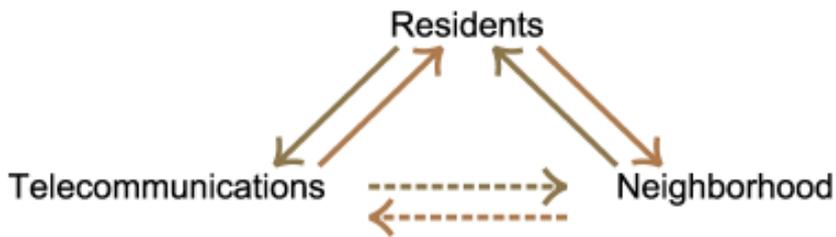
Figure 1. Correlations between Telecommunications, Residents and Neighborhood

2. Background

The adoption of ITC technologies in neighborhoods and any transformation that they may cause are closely related to the residents' choices and lifestyles. Residents are the most important elements in this study since they are both agents and recipients of changes in neighborhoods (whether traditional or those in which new technologies are embedded).

The best method of investigating present impacts of ITC technologies on neighborhoods or anticipating the future impacts is to study the emerging lifestyles and influences that the technologies are imposing on everyday lives. By documenting in detail everyday lives, habits, needs, and preferences of those using new technologies, it is easier to identify the broad patterns of changes in lifestyles and neighborhoods.

Further, it is hypothesized that such changes are not going to be the same for different lifestyles (the human context) and in different types of neighborhoods (the physical context). The design of research aims to identify the kinds of impacts that arise in both lifestyles and neighborhoods as a result of ITC adoption, and their variation in different contexts regarding lifestyles and neighborhoods. Therefore, to facilitate the comparison and investigation, two typologies were adopted in this study: a typology for the newly emerging ITC-based lifestyles and a conventional neighborhood typology.

The adopted lifestyle typology is based on the work of Janine Shinoki Clifford (2002) as part of her doctoral thesis. She classified the individuals into four categories. This study explores two of these lifestyles which could be identified in the context of study more clearly. They are *Live-work* and *Global Nomad* lifestyles.

'Live-work' lifestyle includes individuals who use the technologies to conduct their work from home. They are more commonly known as tele-workers or tele-commuters. The difference is that tele-workers and tele-commuters, by definition, can work from everywhere except their company or organizations' offices however Live-work lifestylers work just from home.

The name 'Global Nomad' has been basically used for people who spend a great portion of their working days on the move and have been, therefore, considered extraordinary in ways directly connected to their life experiences. Global Nomads use ITC technologies to live a convergent lifestyle based on working and living wherever their trips take them.

Concerning the importance of residents and their preferences in this study, Sydney Brower's (2002) typology was adopted as neighborhood typology because he classifies neighborhoods according to residents' engagement and satisfaction. Although other neighborhood typologies are used to describe the way things are, he uses it to show the way things ought to be. Brower classifies neighborhoods into four types which three of them were identified in Melbourne to be included in this study. They are *Center*, *Residential Partnership* and *Retreat*.

A 'Center' is a busy, lively, diverse, instantly changing, encouraging and interesting neighborhood, with lots of opportunities for people to view and meet each other. It is a best example of in-town life. A 'Residential Partnership' makes a cocoon of peace, surrounding

the housing unit. It is an example of a bedroom community in which residents go out of the community to work and shop. It is a distinct single-purpose residential area and a place for family and home life. A 'Retreat' emphasizes people's identity as distinctive individuals rather than members of a community. People who live in a Retreat tend to be independent and go their separate ways.

After identifying the areas of investigation and developing the methodology, 17 people (shown in Table.1) were identified in Melbourne with a fair distribution among the different neighborhood types and lifestyles.

TABLE 1. Areas of investigation and spread of the lifestyles in neighborhood types

	IN CENTER	IN RESIDENTIAL PARTNERSHIP	IN RETREAT
LIVE-WORKS	Anett; Global Barbara; Global Manuel; Global Gerard; Global	Jacqueline; Local Kacey; Local Patricia; Local Ana; Local	Christina; Local Githa; Local
E-NOMADS	Chris; Global Cynara; Global David; Global Andraya; Local	Daren; Local Alistair; Local Don; Global	Not found any

The fieldwork included qualitative interviews, facilitated with pre-designed open-ended questions about the residential preferences and everyday lives of interviewees, and recording followed by a detailed transcription of entire conversations. Also, a quantitative questionnaire was associated with the interviews to measure the desirability of 26 neighborhood qualities, which were anticipated by the previous literature for neighborhoods in ITC era.

Comparing, analyzing and identifying the results in terms of similarities and differences between lifestyles and neighborhood types, and also dominant specifications for each lifestyle or neighborhood type, interesting results are found.

3. Findings

3.1. NEW AND MODIFIED DEFINITIONS

Interviewing Global Nomads as people who undertake excessive travels, it was found that they can be clearly divided into two groups of people who travel globally and those whose travels are local (inside Australia). Therefore, they could not all be called Global Nomads. Thus, a new term was coined "*e-Nomad*" to include both Global and Local ones.

Global and *Local* are the new definitions applied to Live-work lifestyles as well. Global Live-works are the Live-works who are working for a company or an organization overseas and most of their virtual work related contacts are global. In contrast, Local Live-works are the Live-works who are working locally, mostly for an Australian company.

3.2. CHANGING NEIGHBORHOODS

Among the two lifestyles studied in this research, Live-works have more potential to affect their neighborhoods and change them to their own preferences. This is due to the fact that Live-works spend more time inside the neighborhood, make higher levels of demands, and show more interest in outdoor activities within close proximity of their dwellings. Similarly, among the residents of different neighborhood types studied in this research, both Center and Residential Partnership residents may be expected to equally affect and shape their environments.

This study has not divided between uniquely ITC-caused changes and non-ITC-caused changes. There are two reasons for the choice. Firstly, it is realized that to the interviewed people being an e-Nomad or a Live-work is not matter of being engaged with high exceptional technologies but technologies that are stable and on-call (much like electricity or water supply) that allow them to perform their jobs flexibly using conventional technologies. Therefore, they are conventional common people in many senses just with different ways of performing their jobs. Secondly, having non-ITC-caused qualities among the others produces the knowledge that the technology couldn't have an impact on the specific matter and the specific conventional trend.

The impacts of these lifestyles, if they were to become mainstream Melbournian lifestyles, on different types of neighborhoods are summarized below.

3.3. IMPACTS RELEVANT TO ALL OF THE NEIGHBORHOOD TYPES

One of the most expected features of ITC era's neighborhoods by the previous researchers was the prevalence of e-offices and tele-centers. However, the data collected in this study show that these working environments do not seem to be very attractive in Melbourne. Participants in this study characterize their desirable e-offices as an informal place, completely different from what is described in the earlier literature and practice. Instead of formal digitally-supported office spaces, they prefer casual environment of cafés or restaurants with all the other ancillary services such as wireless internet, printer, fax, desktop, etc. It may be a very Australian phenomenon or part of a global trend.

Another highly anticipated feature of new neighborhoods as in the literature is "multi-purpose common facilities for meetings" which too is not much supported by the interviewees. Similar to the case of e-offices and tele-centers, the interviewees prefer casual environment of cafés to perform their meetings even if the participants were too many. For example, Don (one of the interviewees) holds bi-monthly meetings of his 7-8 remotely-supervised employees in café.

Childcare is one of the big concerns for parents who work from home (Live-works in this study). They want the childcare facilities to be conveniently located, in close proximity to their homes and flexible so that their children can be looked after for longer hours if they plan to work longer hours in the evening.

Before explaining the impacts anticipated for every neighborhood type, Table.2 is displaying a brief comparison between the demands and desires of interviewees in different types of neighborhoods.

TABLE 2. Brief comparison of demands and expectations

Quality	Center	Residential Partnership	Retreat
Convenient access to Airport	Highly Desirable: International flights	Highly Desirable: Local flights	No demand
Expected lifestyles	Global: Live-work and e-Nomad	Local: Live-work and e-Nomad	Local: Live-work
Stability in living places	Av. 3.8 years	Av. 3.8 years	Av. 15.5 years
Working in local café or restaurant	At least every other day	Once a week or less	Never
Great municipal parking lots	Just for their own car	2-3 times of their personal needs	Just for their own car
Technical Assistance for computer and internet	Very dependent on technical support	Quite independent from any support	It doesn't bother them, but they are not that dependent
Delivery system for tele-orderings	Crucial for everyday shopping	Reasonably desirable	Highly Desirable: No such a service in area
Scattered services and shops	It is preferred to central malls	It doesn't really matter	Central malls are preferred
Wireless Internet all of the neighborhood	Highly Desirable	Highly Desirable	Highly Desirable
Gated community	Rarely Desirable	Rarely Desirable	Rarely Desirable
Good housing quality	It is not very important criterion	It is very important to meet the specific needs and activities	Sufficient for living, working and entertainment
Quality of ITC infrastructures	Conventional	Conventional	The latest and the fastest
Organic design within neighborhood	Highly Desirable: Hidden technological features	Reasonably Desirable	Highly Desirable: Hidden technological features

3.4. IMPACTS RELEVANT TO '*CENTER*' NEIGHBORHOODS

The lifestyles of the interviewed participants who currently reside in the Center revolve around a cosmopolitan, 24 hour live and active environment with great outdoor activities, the latest ITC infrastructures and carefully designed housing to accommodate both living and working functions together. These residents also enjoy cafés and restaurants that are designed and owned locally, some of which offer casual work environments with wireless internet, meeting corners, fitted out with desktops, printers and fax amenities.

Although Center residents in this study are the earliest adopters of new technologies among all the interviewees, they are highly dependent on face-to-face contacts. Cafés, restaurants, and meetings with friends and relatives are important parts of their daily activities. During the interviews with Global Live-works, whose job related interactions are limited to distant virtual contacts through digital technologies, it became apparent that excessive changes of living places and the lack of routine face-to-face contacts in their work encourage them to live in central parts of every new city that they move in.

Other qualities that are desirable for Center residents in this study include:

- Local website which has an email list of the residents in the neighborhood and can directly connect the residents to the local government
- Technical assistance for computer and internet; on the phone, on-line and face-to-face
- Convenient access to airport for international flights
- Scenic attractions that are a mixture of built and natural environments

- Access to a variety of health clubs and sport facilities which are owned and managed locally
- Wireless access all around the neighborhood and access to the Internet in every public place

3.5. IMPACTS RELEVANT TO '*RESIDENTIAL PARTNERSHIP*' NEIGHBORHOODS

The lifestyles in Residential Partnership neighborhoods are characterized by safe, quiet, community-oriented and family-supportive environment with convenient access to public transport. The residents in these neighborhoods like low-rise dwellings dotted around in big plots, with the best housing accommodations that flexibly support living, working and partly entertainment functioning together. Although they are not as sophisticated as the Center residents in using technology in their everyday lives, they actively adopt and employ ITCs to support local activities. One of their recurrent desires is a local website that enables them to know about local events, developments and rules. This need may be served by access to 3D models of new developments in the community website and enabling the residents to comment on the projects and new policies.

All the Residential Partnership residents in this study live between 6 km to 30 km outside the CBD. Majority of them are Locals, while there is one Global lifestyler who prefers to live in this type of neighborhood. Among all of the participants, residents of Residential Partnerships appear to be the most supportive neighbors. They love having close contacts with neighbors and try to make as much of the local contacts as possible. Exhibitions, festivals, concerts and sport competitions help them to gather and socialize.

Live-works are not usually dependent on daily trips, and being in a specific location at a specific time is not part of their job. Then, Residential Partnership Live-works rely mostly on public transport and its comfort. Therefore, a convenient access to public transport is a desirable quality of neighborhood for them. However, e-Nomads in this type of neighborhood mostly use their fast private transportation vehicles like bicycle or motorbike which are easy to travel and park in the CBD.

The other qualities that would be desirable for Residential Partnership residents in this study include:

- Convenient access to airport for domestic flights
- Local scenic attractions are more important for Live-works whereas e-Nomads care a lot about their location in the city and rate their access to the CBD higher than the local attractions
- Reasonable mainstream telecommunication infrastructures
- Playgrounds for children and a mixture of activities for parents while they are watching their kids
- Interesting and refreshing green environments in public spaces that have been designed to enhance socializing

3.6. IMPACTS RELEVANT TO '*RETREAT*' NEIGHBORHOODS

The lifestyles of residents in Retreat neighborhoods in this study reflect environments that are isolated, deep inside nature with lots of natural scenic attractions. For these residents, the neighborhood environment should provide the feeling of tranquility and safety. They do not expect much public services and spaces, and do all of their activities within or around their property.

None of Retreat residents in this study are interested in maintaining close contacts with neighbors and treat the contacts more as a safety parameter rather than social need or friendly relation. Electronic contact is the preferred means to maintain such local contacts if the infrastructure is provided. Therefore, a local website with email list of the residents is a useful tool for them to keep in touch with the community.

ITC technologies enable isolated nature-based lifestyle seekers, like Githa and Christina in this study, to get away even farther than before. These distances can be substantial, for example Christina has to drive 20km to get to the closest supermarket and takes her kids to the school which is 30km away from her place. These trade-offs indicate that emerging lifestyles will require a diversity of housing options that are responsive and accommodate living, working and entertainment needs, and preferences of individuals. There are many services that can be delivered digitally or with assistance of digital technologies to enhance needs of isolated Retreat environments such as reliable convenient delivery system for tele-orderings, wireless internet all around the area and network entertainments through high speed infrastructures.

Although Retreat residents do not show much interest in public facilities and services, there are some other qualities that would be desirable for them. They include:

- Great natural places which are safe for children to play and spend time in
- Strictly pedestrian local zones with limited movements for cars
- Light public transport like bus in convenient distance from properties

4. Reviewing an assumptions

This study is based on experiences and preferences of early adopters of ICT technologies in the hope to anticipate the future impacts on neighborhoods. The neighborhood typologies adopted in this study are based on the qualities within the neighborhoods, not their location. This choice was based on the earlier literature that suggests the new lifestyles will be free from physical constraints and that people will move freely to fulfill their ideal residential preferences. However, this study does not confirm such absolute freedom because Global lifestyles tend to live close to or within CBD while Locals are mostly located far from CBD.

Acknowledgement

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