Stimulate Social Interaction in Urban Public Space through the Design and Implementation of HCI

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ABSTRACT

This position paper aims to figure out the possibilities of combing digital space with physical public space, thus further reinforcing the social interaction. As the society of Chinese urban area now is tending to be digitalised, the existing physical public space, which was designed in the past cannot reflect changing and digitalizing society anymore. This makes the physical public spaces, as the stage and physical carrier of public life seems to be obsoleting. Therefore, what is necessary is to re-consider the new role of our physical living environment with the participation of new technologies in the new era. Based on those questions, in this project I will extensively focus on the situation of Hong Kong, exploring the possibilities for physical and digital space to cooperate and interact, that could enhance physical public space and stimulate social interaction, in order to provide suggestions for the future development of Hong Kong's urban space, as well as other similar cases in Chinese cities.

KEYWORDS

HCI research in China; Social Interaction; Public Space; HCI Research; Digitalised Urban Environment

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1. INTRODUCTION

Making linkages between people, activities and places may be regarded as a primary spatial and institutional tool for urban designers and planners. To confront the negative impacts of partitioning and fragmentation caused by urban growth, spatial specialization and social stratification, making spatial linkages has been a device used by urban design for centuries, in the hope of creating functional and aesthetic unity. This research work aims to contribute to the continuously growing body of work in the field of Human-Computer Interaction and in the discipline of Social interaction design, and examines how the integration of interactive technologies in public spaces will influence the interactions of people with their physical environment and how this, subsequently, overcome social and spatial fragmentation gradually, linking different people and places from across the urban space, creating a larger, well-connected whole. In this paper, I will investigate the challenges for physical public space in the consequence of fast-growing digitalised society and figure out a possibility that spatial design approach and digital technology can coexist and cooperate, which enhances both citizens' participation to public life and their appreciation of physical public spaces.

2. NEW TYPE OF PUBLIC SPACE IN THE DIGITAL AGE

The value of public space in the western countries was first originated from the concept of the public domain in the polis of ancient Greek, which refers to the political space which achieves the value of 'publicity', which including squares, temples, bazaars as well as the public opinion and power. From the 19th century to the early 20th century, the political public space declined gradually, and at the same time, the famous design of Central Park in New York marked the emergence of the new form of public space as the stage of leisure and social communication. Since then, public space has become a part of rational city planning, from which public domain and public spirit are regarded as important factors in building trust and civil society. The relationship of people and their public life to public space is dynamic, reciprocal and made up of many strands (Slessor, 2001). As it is said, "people are tend to site where there is a place to sit" (Whyte & Underhill, 2012), the design of public space could have greatly effect on the interaction of people who met in such spaces, and conversely, the feeling in the circumstances, could in turn leads to the use of space.

However, it seems that we are now facing the trend of privatization, globalisation, as well as digitisation, that is generally re-shaping citizen's daily life, as well as the future demand and supply of our urban space. More and more social and political systems tend to encourage the privatisation of public spaces, which is extremely obvious in Chinese cities. And people are also more like to live along, engage with smaller social circle and spend time or public life in private spaces (Hampton et al., 2011; Klinenberg, 2012; Lofland, 1988; Putnam, 2000); and even the intimacy of our society has changed from the traditional but efficient face-to-face interaction to a complicated networking system due to the fast advancement of digital technology.

Figure 1. Comparison of Hong Kong public space: https://www.flickr.com/photos/old-hk

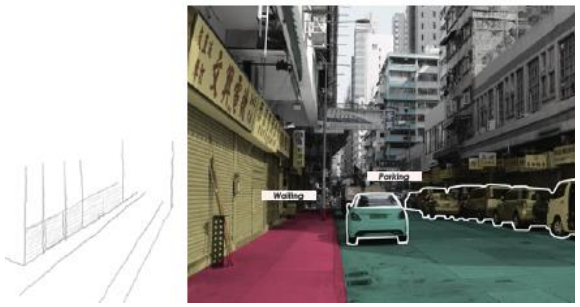
As we are now all citizens of cyberspace and cybercommunities ("cyborgs," according to Mitchell, 1995) in the digital age, people are getting more and more obsessed with digital technologies, without any doubt, the digital network - the electronic agora today, has totally subvertes and redefines our notions of gathering place, community, and urban life (Mitchell, 1995). With the appearance and development of the digital world, our living space has been expanded, and the existing organization and structure have also been changed. Now we have not only physical public space but also digital public space with more unrestricted access to an open resource. Due to the emergence of the digital spaces, our physical spaces and some of the urban functions are also gradually being transferring. It has brought us more freedom with provides a networked, immaterial public space, but inevitably causes the migrating from physical space to digital world, which declines eye-contact, and makes physical public space get less relevant.

3. DIGITAL SOCIETY WITH THE UBIQUITOUS TECHNOLOGY

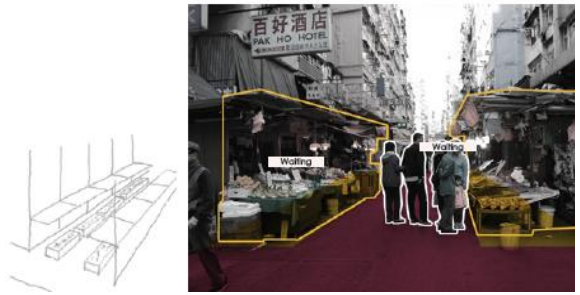
Hong Kong is one of the most densified cities in the world, it is notorious for its limited individual living spaces and public spaces. Even nowadays, people in districts like Sham Shui Po, Mong Kok and Kwun Tong still live in 'cage homes' or cubicle flats. Due to the history, location and the real estate development of Hong Kong, the land has become even rare, which causes high land and housing price. Some of the land in the center area thus was transformed and developed into the commercial or business district, and the citizens started to move to suburbs, many of which are far away or even separated from the city center. This generally leads to the broken of the original social and spatial network. Citizens are separated from their familiar communities, disconnected from their native homeland, and the newly developed shopping malls and office buildings make the urban public spaces of Hong Kong became less extraordinary (Fig.1), losing its identity and soul. Citizens thus feel less sense of community and belonging and get less relevant from the public.

At the same time, Hong Kong has already nearly 90% of Internet penetration, which makes it the most connected city worldwide, and it ranges from entertainment, commercial to communication. Digital technology has already expanded to almost everywhere in the city and every aspect of citizens' life, within such situation, digital technology has actually added an information layer that provides a possibility for citizens to overcome the geographical restriction and expand their daily lives. It allows citizens to connect with the digital world. Citizens could thus, get rid of the physical restriction and have more choice through exploring the digital world. For example, we can now easily chat with a stranger who lives in thousands of miles away or gets to know a place without being there. With the continuous advancement of digital technology, the connection built between the digital world and people is being improved. The dependency on this convenience has made using digital technology becomes ubiquitous and unavoidable, and it at the same time also acting as an attractive power that challenging the relationship between people and our physical environment.

As more ubiquitous and embedded technological developments have been presented in different forms in the public realm, numerous researches and projects on the urban setting as a domain for interaction design



Residential street – Soy Street



Market street – Canton Road (Mong Kok Market)

Main commercial street – Nathan Road

Figure 2: Diverse streets in the site location

have been realized to date with a particular emphasis on their social implications (Dalsgaard & Halskov, 2010; Haeusler, 2009; Huber et al., 2012; Peltonen et al., 2008). These research and projects include, but are not limited to, mobile projections and augmented gaming systems, various scales of semi-public interactive displays, and urban-scale media. In this research, the author has looked through all the representative types of urban engagement which implementing HCI, especially exploring different social and spatial uses as well as wide-ranging cultural practices, interaction modalities and technologies in the city of Hong Kong.

4. STREET INTERACTION DESIGN IN MONG KOK

After all the analysis regarding the cityscape of Hong Kong, Mong Kok was the chosen site for as the most representative and challenging area in the city. Mong Kok locates in the western part of Kowloon Peninsula, it is one of the oldest and crowded places in Hong Kong, with 130,000/km2 and 0.6m2/person. According to the record of Xi'nan Xianzhi (新安縣誌) published in 1819, Mong Kok, at the beginning was a cultivated land with around 200 residents. People grow vegetables, flowers, or raise hogs and chickens and sold it to Hong Kong island for living. Since 1909, it comes to the light industry age due to the road and port construction, and in the 1950s, this area was gradually transit to the commercial residential area like it is today. Nowadays, Mong Kok has become one of the major shopping areas in Hong Kong. The area is characterized by a mixture of old and new facilities and buildings with shops and restaurants at street level and commercial or residential units.

Comparing with the area Central and Tsim Sha Tsui which are occupied with high-level offices and shopping malls, Mong Kok is full of middle or lower level shops and offices. Major industries in Mong Kok are retail, restaurants (including fast food) and entertainment. It has been described and portrayed in films as an area in which triads run bars, nightclubs, and massage parlors. Mong Kok was described as the busiest district in the world by the Guinness World Records. It is also the area that has the most diverse functions and types of public space. In order to make analysis and design, the public spaces are categorized into three levels: Pockets (Lots), Lines (Streets), and Networks (Zones). And among those three layers, I found the level of Lines (Streets) relates the most to the specific physical public space and its implementations. And in the site area, there are altogether three types of 'Lines' regarding on the scale and function: residential streets, market streets and main commercial streets (Fig. 2).

The project started with the handheld mobile device embedded with projection technologies that provided a very limited light beam projection but can be carried virtually everywhere, with the interactive design consultants in Hong Kong, we explored ways in which this technology can be leveraged for tangible interaction with the physical, real-world objects and environment. As we explored further, transform the projecting surfaces into tangible interaction devices, we also found that the use of the projectors may also result in restrained and unfulfilled experiences science these devices are not only meant to be moved about the space but that also provide several other primary functions (e.g. information and communication).

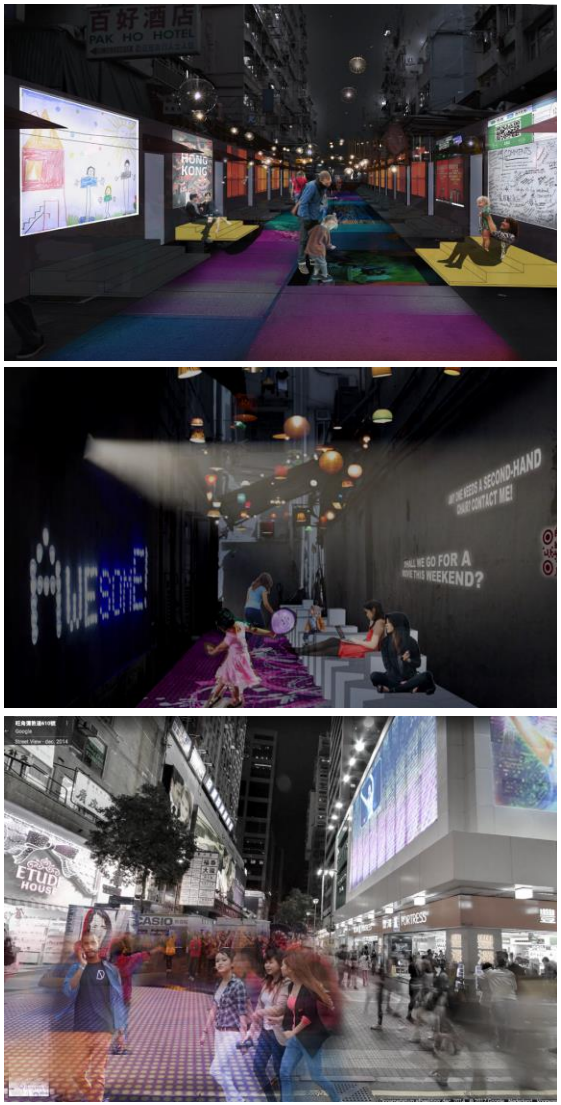


Figure 3: Interactive streets visions for three types of 'Lines' regarding to residential streets, market streets and main commercial streets at night

Building Gaps are the leftover spaces in between building, it is ubiquitous in Hong Kong, but most of them are not well used. At the moment, building gaps in the residential areas are heaped with garbage, and those in commercial are full of unused goods. Similarly, for market streets, those narrow gaps are absolutely necessary for the residents who live in Mong Kok. As this is one of the most lively areas inside the neighbourhood and people always likely to meet and talk to each other here. But those semi-public and public space have the potential to offer the field of Human-computer Interaction countless opportunities for the development of meaningful physical and social interactions.

We propose several large multi-users wall displays differ from ambient displays which allow a high social interaction within a larger physical scale and with wider possibilities of multiple-entry input for users. These displays tend to facilitate the process of learning from other users during the interaction process, and also present several challenges in terms of turn-taking practices and technological response. Those 'immersive city wall', as portrayed in Figure 3, are widescreen multi-touch display deployed in a central urban location of Mong Kok, for passers-by to engage in city-centred discussions. Through several hand gestures, multiple users collaborate and interact exploring the diverse multimedia content distributed along the display in a never-ending visual strip.

So for envisioning the future market streets, during the market hours, space will be used in its normal function - windows will be opened, the table will be put full of foods, and on the ground, the screen allows people to get to know where is selling what easily. The small screen on top of the window displays the QR code that people could pay through scanning them without cash, and there are also some spaces for the comment on the selling product. After the market is closed, the street will become a normal street that citizens and residents could still use it. The table will descend into a small stage for people to sit, and the closed window will become a display window. Now with the implementation of digital technology, the information could be transferred through HCI technology. This thus creates a virtual network which helps us to open up our eyes, and overcome the limitation, that people could easily get to know what's happening or what will happen in a specific place without being there.

5. CONCLUSION

With the deployment of new technology and lowering cost, the urban space has welcomed a wide array of interactive media facades for citizen to attain entertainment and information at a larger, social scale (Haeusler, 2009; Wiethoff & Gehring, 2012). Placed in strategic and meaningful public places, these displays allow a new mode of communication between the city's structure (e.g. streets and architecture) and its users. Interaction with this type of displays is possible through the use of remote and mobile devices as well as various sending technologies. The physical properties of these massive displays differ from other types not only in terms of size and resolution but particularly in terms of socio-cultural practices.

This project embraces the appearing HCI technology without sacrifice the physical urban environment. It is, on one hand, respects the trend of the development of our society (bottom-up), but on the other hand, gives guidelines and restrictions that could avoid the adverse effects (top-down). The project gives a new approach, which allows the physical urban public spaces to become more interesting, attractive and diverse. And the advantage of digital technology could not only help with enlarging our range of visibility but also provides a platform which increases the possibility of interaction and communication with other citizens, neighbors and friends.

The project also starts a discussion on the role of digital technology and physical public space within the new urban context, and use it as the supportive to explore how public space could be transformed spatially, functionally and technically in responding to the changing demanding and expectation. Although it uses Hong Kong as an example, the conclusion - pattern library and its user guide could also be used as a reference to the research and implementation of other cases. For instance, for the place where has a lower popularization and demand on digital technology, the patterns with a lower level of digitalization might be suitable. Moreover, the categorization could also be re-considering in regard to the specific situation.

The author attempts to start on discussing the role of physical public space within different urban context, and use it as the supportive to speculate the possible new role within the new urban context, as well as to explore how public space could be transformed spatially, functionally and technically in responding to the changing demanding and expectation. Since it starts with a generous consideration, although the thesis takes Hong Kong's extreme situation as an example, it could be imagined and expected that the project could further lead to the reconsideration of the relationship of our physical and digital world. And the conclusion and evaluation could be somehow seems as a starter for future researches regarding different urban context and spatial conditions.

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