GSM4Q

game set and match IV 2019 qatar
connecting people spaces machines

'Pay-as-you-go City': New Forms of Domesticity in a Technological Society

Jeroen van Ameijde[1], Zineb Sentissi[2]

[1]School of Architecture, Chinese University of Hong Kong, Hong Kong, China

[2]Architectural Association School of Architecture, London, United Kingdom

Abstract

Ongoing urbanization, combined with market fundamentalism as the prevailing mode of political management, is leading to the spatial and social segregation of economic classes in cities. The housing market, being driven by economic interests rather than public policy, favors inflexible forms of ownership or tenancy that are increasingly incompatible with the more diverse forms of live-work patterns and family structures occurring in the society.

This paper presents a research-by-design project that explores a speculative future scenario of housing, based on current developments in digital technologies and their impact on the mobility and accessibility to services enjoyed by urban residents. It references technology platforms that underpin the 'sharing economy' or 'gig economy', such as 'pay-as-you-go' car and bike sharing programs or internet and smartphone-based services for taxis or temporary accommodation.

The study explores how new forms of participation in the housing market could circumvent the current segregation of different communities across the city. It describes a speculative system of distributed residential spaces, accessible to all on a 'pay-for-time-used' basis. By offering freedom of choice across domestic functions of greater range and accessibility than found within existing housing or hotel accommodation, the system would enable opportunistic or nomadic forms of living linked to the dynamic spatio-temporal occurrences of social, cultural or economic opportunities. The research references how new forms of social networking create new challenges and opportunities to participate in communities and explores how new technologies, applied to housing, can help to find a 'sense of belonging' within the technological society.

Keywords: Housing; Domestic space; Smart home technologies; Urban planning

1.   Context: Market Driven Housing and Urbanism

Many contemporary cities are planned, managed and experienced as 'developmental cities'; they are governed by policies aimed at the initiation, promotion and delivery of economic growth (Lee, 2016). As the continuous renewal and expansion of cities relies on market speculation, planning regulations and other governmental policies are designed to impose minimal restrictions for private developers and investors. The production of housing, when left to the private sector, is no longer considered part of the fundamental infrastructure of society to deliver social justice but treated as an investment vehicle to store and grow capital. According to Tang (2017), ''economic inequality and social exclusion have intensified enormously with the spread of market fundamentalism and neoliberalism in Western cities over the past decades''.

Market driven urban development amplifies differences in the distribution of wealth across the city, as areas that are more profitable will attract more and higher-value developments. Development and urban renewal lead to the exclusion of lower income groups from many buildings and city spaces, causing spatial and social segregation across cities. As public spaces in the city are increasingly being privatized, to reinforce the interests of commercial centers, gated communities or business districts

GSM4Q
game set and match IV 2019 qatar
connecting people spaces machines

Proceedings of the International Conference on the 4th Game Set and Match (GSM4Q-2019)

February 6-7, 2019   Doha, Qatar

(Low, 2003), the idea of the city of a collective and co-created space is being eroded and Henri Lefebvre's concept of 'the right to the city' no longer applies to the average citizen. Schlosberg (2007) argues that a lack of "broad and authentic public participation" will lead to a lack of both "distributional equity and political recognition", arguing that a lack of equitable spatial distribution of urban infrastructure can contribute to the erosion of political stability and societal progress. Fainstein (2009) argues that many contemporary urban planning practices are ''class biased, undemocratic, inefficient and socially destructive, overemphasizing growth at the expense of other values''.

1.1 Housing as a Structural Element of Society

The planning and organization of housing, either in the private sector or provided by local governments, can be an important mechanism to give structure to society and address inequalities. Since the explosive growth of Western cities caused by the first industrial revolution, Modernist architects have taken on the design of cities as a project. Responding to the slum-like and highly unhygienic conditions in places such as Victorian London, they proposed 'rational' town planning with sunlight access and good ventilation to improve the health and well-being of the general population. The Athens Charter (1933), formulated by Le Corbusier and the Congrès International d'Architecture Moderne (CIAM) promoted the concept of 'The Functional City', in which land planning would be based upon function-based zones for living, working, recreation and circulation. Modern techniques should be used to construct high-rise apartment buildings, with wide in-between spaces reserved for large green parks (Gold, 1998).

According to critics, CIAM's emphasis on universal models for architecture and planning has led to repetitive, monumental and mono-functional urban areas that constrain the development of urban communities. Vanstiphout (2010) has argued that the design of the French suburbs played a key role in the marginalization of its communities and helped cause the 2005 riots in France. He traces the 'social degeneration' of the *banlieues* back to the fundamental misconceptions around the potential of top-down planned architecture to shape human behavior and communities. Other critics proposed alternative models, exploring a more organic approach to the organization of the city. Team 10 was a group of architects who referenced the philosophy of Structuralism and advocated for incorporating concepts such as 'neighborhood', 'cluster' and 'association' rather than separating buildings from each other and from their surroundings. Within architecture, this led to buildings such as the 1960 orphanage in Amsterdam by Aldo van Eyck which features an informal arrangement of living spaces. Van Eyck believed that the breaking down of the orphanage into smaller clusters separated by irregular internal hallways, would allow the young residents to form a bond between each other in a more natural way and allow for the appropriation of the spaces as a domestic environment rather than experiencing the building as an institution (Risselada & Heuvel, 2005).

While Structuralism has been applauded for being a countermovement to the CIAM doctrine of Modernism, there has been criticism about its intentions to support organic urban communities. Söderqvist (2011) points out that many Structuralist projects were designed as permanent and invariant structures, not open to change over time. While many projects incorporate flexible areas open to appropriation by its occupants, it can be argued that decisions about the configuration of residential buildings and environments should be made with input from residents, in order to achieve a more 'democratic' outcome. In his books 'The Architecture Machine' (1970) and 'Soft Architecture Machines' (1975), Nicholas Negroponte pursued the theoretical concepts of computer-aided design processes that allow citizens to be involved in the complex negotiations around urban problems through mediation by 'intelligent machines' or 'design amplifiers'. Similar to the Structuralists, he places a strong emphasis on residents assuming a certain level of agency, offering them the ability to contribute to collective policy through individual actions. The many independent inhabitant activities, forming

Proceedings of the International Conference on the 4ᵗʰ Game Set and Match (GSM4Q-2019)

February 6-7, 2019   Doha, Qatar

GSM4Q
game set and match IV 2019 qatar
connecting people spaces machines

a meshwork of interactions and relationships at a larger scale, should inform the materialization and evolution of the built environment over time (Negroponte, 1975). Negroponte's focus on a process-oriented approach to urban planning aimed at facilitating naturally complex processes, following a vision famously advocated by Jane Jacobs. In 'The Death and Life of Great American Cities' published in 1961, it is argued that successful urban areas rely on an ''intricate and close-grained diversity of uses that give each other constant mutual support, both economically and socially'' (Jacobs, 1961, p. 14). Jacobs's perspective challenged the notion that participation and self-organization have no place in the well-functioning contemporary city and that the creation of vibrant, mixed communities should be one of the central aims of city planners.

The short selection of fragments of the historic debate around the organization of housing in urban areas presented here show how there has been a back and forth between philosophies favoring market-driven implementation of housing, and government-led housing development to implement social policies. The conclusion might be that public housing has always resulted in standardized, repetitive urban patterns and that the private sector is best suited to translate the diverse demands of varying people and communities into lively neighborhoods of mixed character and high architectural quality. Yet we know that neither is true, as there are plenty of examples of planned housing estates that facilitate organic and vibrant community life, and there are many instances where private sector led housing development has led to monotonous and low-quality housing.

Our conclusion is that the distinction between top-down or bottom-up organization of housing neither is a black-and-white issue, nor are these approaches mutually exclusive. Future housing projects may benefit from striking a balance between regulation and individual freedoms, so that the interests of the community or urban cluster are safeguarded while at the same time allowing for variation or adaptation. The monopolization of housing markets should be prevented, to promote freedom of choice between housing options and to uphold quality standards. Regulations for minimum space provision, access to daylight and natural ventilation should be enforced to ensure a minimum quality of living for the most vulnerable groups in society (Figures 1 and 2).

Figure 01: Lodging houses in Victorian London, offering the use of a single 'coffin bed' for one night. The same beds would be rented out to others during the day shift. (Photo-circa / The Salvation Army Heritage Centre, 1900).

Figure 02: Subdivided apartments and 'cage homes' are common in Hong Kong, where some of the highest real estate prices in the world force the poorest to live in substandard conditions. Photo-Bryant Cheng / Hong Kong Free Press, 2016).

We argue that within the balance between regulation and self-organization lie further opportunities for architectural and urban designers, understanding housing solutions at a systems level where spatial and organizational aspects are linked to socio-economic characteristics. Public housing, as well as private

sector projects can be stimulated to incorporate more variation and mixing of the types of spaces and activities, contributing to a more varied social mix between lower and higher income people, or people with different occupations, lifestyles or from different family structures or age groups. This mixture could be achieved either through top-down planning and design, or through the incorporation of a certain flexibility for the users to choose how building spaces are used, allowing this to change over time depending on shifting requirements or preferences within the society.

In this article, we explore how we can observe new trends in housing that are conceived at a 'systems level' and extrapolate these into the medium-term in future by connecting these trends to ongoing developments in digital technologies. There are many technological developments in various fields that all affect the way we live, work, and navigate in the city and some are already having a direct impact on our quality of living and on the way we engage in social and leisure activities within our daily lives. The following paragraphs explore some of these societal changes.

1.2 New Technologies for Urban Mobility

The steady increase in functionality and ubiquity of mobile devices, smartphone applications and online services are revolutionizing the way we orient ourselves and navigate around cities. Geolocation sensing in combination with dynamic maps on mobile devices allow urban residents to undertake complex travel routes via public or personal transport, informed in real time by traffic analysis or public transport service updates. The use of public transport has become more convenient in many cities through the integration of electronic payment systems in the form of transport card systems or contactless payment functionality linked to bank or credit cards. Recent developments in mobile phone technologies allow the use of smartphones for electronic payments (such as Apple Pay, Android Pay) or for app-based payment services such as Ali Pay or WeChat Pay in China. The general trend is a move towards a 'cashless society', which may bring many new conveniences and opportunities but may also involve new types of security risks (Yeung, 2017).

In recent years, there have been many developments in the field of urban mobility, such as the new ride-hailing services by companies such as Uber and Lyft. After initially being described as 'ridesharing' companies as part of the sharing economy, there has been widespread criticism around the reduction of workers' rights, disruption of existing taxi markets and increasing of urban congestion. Yet in many locations around the world, the usage of new ride-hailing services is still increasing rapidly, and these forms of mobility platforms seem set to dominate the taxi market in the future. Other technological developments such as self-driving vehicles and Personal Rapid Transport (PRT) demonstrate that car companies are shifting their focus from being a manufacturer to a mobility service provider, as customers are moving away from car ownership to purchasing short-term lease or individual ride services instead.

Ranges of other transportation options have also emerged in cities across the world thanks to online and mobile phone application technologies. Bicycle renting schemes such as Ofo, Mobike, are offering city dwellers the opportunity to travel around the city in a way that promotes sustainability and improves health. While several bicycle companies have experienced strong competition and profitability problems, some have still achieved significant valuation and continue to be funded by powerful backers (Wang, 2018). The systems for renting bicycles use a mobile app and GPS tracking for locating free vehicles nearby a user, app assisted unlocking and charging of usage by the minute. It is a true 'pay-as-you-go' service that is advertised as 'no subscription, no commitment, payment per minute' (Cityscoot, 2019). Similarly, new services have been introduced for renting electric scooters (Figure 3) and cars. Companies such as ZipCar and DriveNow (owned by the BMW group) operate in urban districts through arrangements with local authorities to establish dedicated parking spaces or allow for their vehicles to be parked anywhere including in resident permit zones (Figure 4).
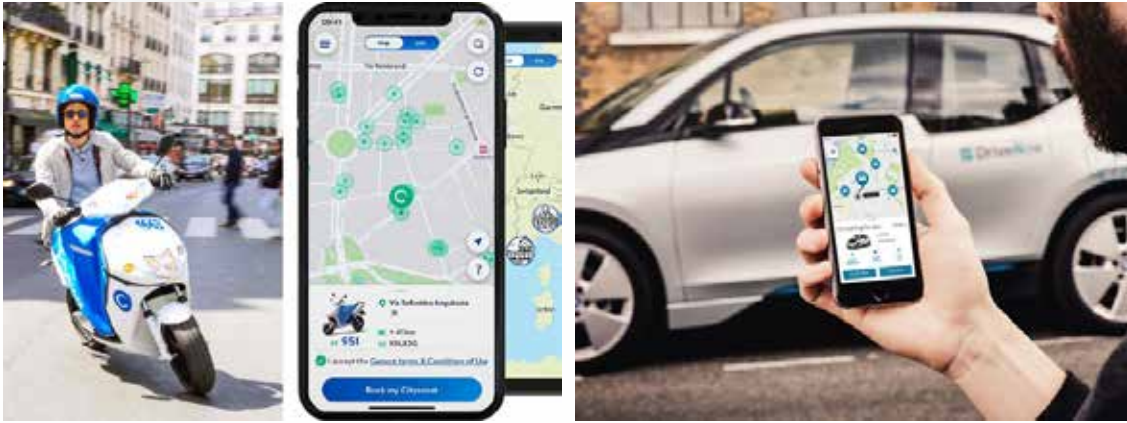
Figure 03: Cityscoot scooter rental platform operating in Paris, Nice, Milan and Rome, using a mobile phone application to locate, unlock and pay for scooter rental fees (Cityscoot.com).

Figure 04: DriveNow was founded as a joint venture between BMW Group and car rental company Sixt but is since 2018 wholly owned by BMW (Drive-now.com).

2.   New Technologies for Urban Living

It has been quite some time since travel agencies have been largely replaced by online services that allow to search for hotel accommodation, enriched by an entire eco-system of reviews, scoring and search filtering options that allow for a more democratic and individualistic decision making. Similar to the hotel industry, real-estate agencies are increasingly working with online platforms for housing searches, helping tenants or property buyers to make informed decisions based on detailed neighborhood information that might include school and public transport locations, information on demographics, crime rates, etc. The expansion of many of these web-based platforms into smartphone applications allows users to find information based on their geolocation, enabling them to explore or engage with accommodation stakeholders in real time.

A major impact on the way we use urban housing in recent years is the emergence of online platforms for short-term rental (STR) accommodation, the biggest and most well-known platform being Airbnb. This service offers homeowners the opportunity to market and rent out spare rooms or entire apartments, "revolutionizing the age-old practice of peer-to-peer lodging with a new technology-driven distribution platform" (Guttentag, 2015). Since its founding in 2008, Airbnb has expanded rapidly to such a scale that it has started to impact both the tourism industries as well as the character of entire neighborhoods in certain cities. The platform offers individual homeowners to become 'micro-entrepreneurs' and claims to create benefits for the larger community, such as the generation of tourism-related jobs and other forms of economic stimulus of neighborhoods that were previously not visited by travelers (Fang, Ye & Law, 2016). However, the success of the service has led to undesired gentrification of urban areas, nuisance by tourists and reduced access to housing by ordinary residents (Nieuwland & Melik, 2018). It has been a disruptor of the hotel industry, bringing down pricing for travelers but often due to a reduction of standards. Airbnb is now the focus of major policy reviews in many cities across the world, exploring how to implement constraints to the platform in order to protect the character and socio-economic stability of urban areas and communities.

Airbnb and other temporary accommodation platforms are often regarded as part of the 'sharing economy', as the platforms offer one group of consumers to market their surplus accommodation or services to another group of consumers. Instead of a corporate structure centered on a 'firm' and on 'clients', consumers are part of a networked structure in which they can manage their own value creation. However due to the centralized control of information and fees charged by Airbnb, the term

GSM4Q
game set and match IV 2019 qatar
connecting people spaces machines

Proceedings of the International Conference on the 4ᵗʰ Game Set and Match (GSM4Q-2019)

February 6-7, 2019   Doha, Qatar

'sharing economy' is not entirely applicable and governments may force the company to amend some of its practices. In parallel, the existing hospitality industry is already adapting to the changing demands by travelers, for instance to offer more authentic and localized experiences rather than only sleeping accommodation (Oskam & Boswijk, 2016).

Figure 05 and 06: Total number of Airbnb properties and hotel rooms on offer in Amsterdam from 2010 – 2017. Number of active Airbnb listings in selected major cities worldwide, as of August 2018. (Statista Charts based on AirDNA and Amsterdam Municipality.)

3.   New Forms of Living and Working in the Post-Industrial Society

Due to societal changes related to the nature of work, an increasing proportion of working adults no longer work along regular hours or in standard locations. As part of the shift from manufacturing to services industry, flexible and nomadic types of work become a normal thing as the sizes and distributions of company locations get diversified. As early as in the 1970's, Daniel Bell described how in a post-industrial society, knowledge, education and creativity will be the key factors for individuals and institutions to create value (Bell, 1973). As travel and digital communication have become easier and cheaper, the nature of work is shifting from being organized around fixed and hierarchical social structures to more informal or self-organized patterns of activities. In Google offices, employees are free to choose their working hours, seating options and collaborations while self-organized achievements are rewarded. Cities that aim to attract start-up companies and promote entrepreneurialism often create 'innovation districts' that feature flexible buildings for desk-based work complemented by a range of facilities for socializing, networking and life-style support such as restaurants, gyms, etc. The architecture of progress is characterized by 'human-centric' design that stimulates social interaction, spontaneous activities and collaborations, and the flexibility for its users to choose from a diverse range of spaces.

While innovative urban spaces are created to attract people to socialize in the public domain, social media platforms are expanding the ways in which people interact with each other in the digital world. Social media may have initially been set up for informal socializing, leisure and entertainment, but have expanded to incorporate most other types of information and communication-based activities essential to everyday life. The mixing of entertainment, news, shopping, staying in touch with friends, relatives, colleagues have resulted in the mixing and blurring of the previously separate domains of the domestic, work and public space. Through the intertwining of the physical and the digital worlds, the notion of public and private, production and consumption, are no longer separated, as we engage in all types of activities at any time and in any place.

Other important societal changes that characterize the post-industrial society include the diminishing role of traditional institutions such as the church, employer and family in giving structure to people's social and cultural life. Along with secularization of many Western societies, cultural changes have resulted in more 'non-nuclear' families such as single parents, divorcees, unmarried adults, etc. The

housing markets respond to these changes by offering smaller apartments, particularly in urban centers where people might prioritize access to work, services and leisure opportunities over having a generous private domestic space (Figure 7). Non-nuclear family residents have a greater need to engage with social and cultural activities, communities and services in the public domain through which they will be attracted to urban areas that cater to their demands. To be close to good jobs and services, people will move to different districts or even cities, adding to the need to form new social connections in compensation for the lack of family and the familiar.

Figure 07: Micro apartments in Manhattan, New York designed by nArchitects. The building is constructed out of modular, pre-fabricated units ranging in size from 273 to 360 square feet, rented out around $950 a month in 2015, less than half of what is charged for market-rate apartments (Kaysen, 2015). Plan by nArchitects.

Specific new types of housing are emerging in several cities in Europe and the US, responding to the specific demands of single professionals that live nomadic working lives, traveling regularly for work or working for short periods or projects in different cities across the world. While many cities host various types of serviced apartments catering to well-paid 'expats' since many years, new types of hotel and short-term rental accommodations are being built in cities characterized by a dynamic working population. Providing slightly more privacy and space than Japan's capsule hotels, Yotel and Sleepbox are located at airports or urban centers and offer a place to rest for a period of 30 minutes to several hours. Using automated check-in and payment systems, these solutions offer innovative solutions that break with common conventions in the hospitality industry (Figure 8 and 9).

Citizen M is an expanding hotel chain that targets 'mobile' citizens, mostly professionals or tourists who are interested to spend more time in a social environment rather than in private rooms. The hotels feature large lobby areas that combine bar/lounge functions as well as furniture similar to a co-working office, offering hotel guests an environment for flexible activities, people watching or social engagement. The rooms are small but of high quality, allowing the company to charge similar rates as high-end hotels (Figure 10).

GSM4Q
game set and match IV 2019 qatar
connecting people spaces machines

Proceedings of the International Conference on the 4ᵗʰ Game Set and Match (GSM4Q-2019)

February 6-7, 2019   Doha, Qatar

Figure 08: Sleepbox prototype installed at the Sheremetyevo International Airport, Moscow, in 2011. The design is developed for people who need to spend several hours during a transit, but do not want to check into a hotel (Arch group).
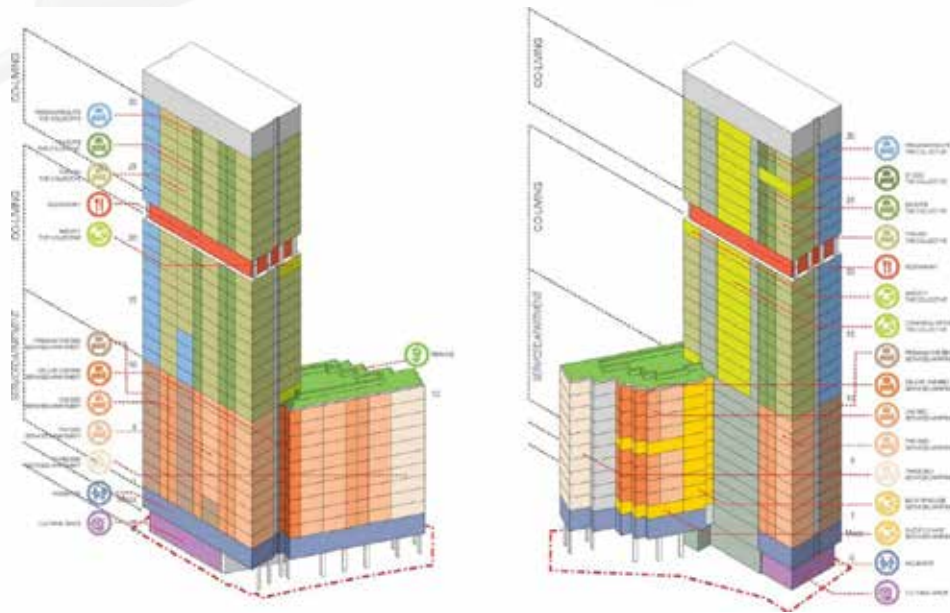
Figure 09: Yotel's high-tech cabins feature an electronic bed that can transition into a sofa. Yotel had 14 locations in 2019 in city centers and airports and is expanding to other locations (Yotel.com).
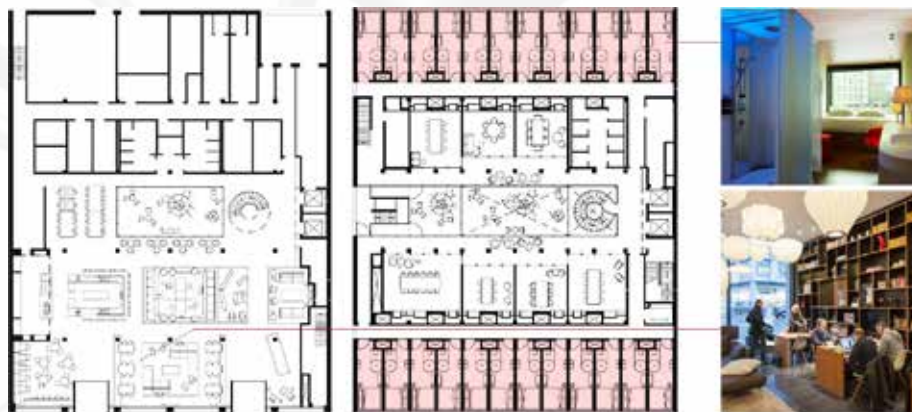
Figure 10: Citizen M hotel in Bankside London opened in 2011. The company offers rooms that are as wide as the bed, but large communal areas that offer breakfast, bar, lounge and co-working facilities (Citizenm.com).

Another recent development in the housing market triggered by changes in live-work patterns and lifestyle preferences is the 'co-living' formula introduced in several cities. Two large properties developed by the company The Collective, in London offer a mixture of serviced apartments and co-living floors that are similar to student dormitories. The co-living floors feature bathrooms shared between two rooms, and a living room and kitchen shared by eight individuals. The company claims to offer 'new typologies of apartments for young people who can no longer afford to rent or buy in the current housing market' (PLP Architecture, 2015). The property in Stratford, London incorporates 250 rooms of which the majority measures 12 square meters, supported by a range of communal facilities including gym, sauna, library, cinema room and roof terraces. The community spaces are located around the building to offer residents different ways to socialize and collaborate, expanding the size and types of domestic space in ways that go beyond the standard conception of urban apartments or public spaces (Figure 11). The properties are being marketed as opportunities to expand professional networks and social circles for young professionals who have recently moved into a new city, playing into the contemporary notion of nomadic young professionals seeking a sense of belonging and a new type of family structure after they have left their home environment (Hurst, 2019).

Proceedings of the International Conference on the 4ᵗʰ Game Set and Match (GSM4Q-2019)

February 6-7, 2019   Doha, Qatar

GSM4Q
game set and match IV 2019 qatar
connecting people spaces machines

Figure 11: 'The Collective' co-living property in Stratford, London. The lower segment features serviced apartments and the top section co-living floors. A restaurant, roof terraces and other community spaces are distributed around the building (PLP Architecture).

4.   The Extrapolation of Current Trends Towards the Future

This article has outlined a selection of insights around the history and current state of the production of housing, as well as some specific technological developments, that when combined form the basis to speculate on the possible future of domestic spaces in urban centers. After a period of building large scale standardized public housing projects which were largely unsuccessful in creating vibrant neighborhoods, many cities switched to rely on the private sector to respond to diverse and complex housing needs. Market driven housing has produced some innovative solutions but has also led to inequality and social segregation, which may in the long term erode political stability and societal progress. Regulation should be implemented to protect vulnerable groups and stimulate diversity, competition and innovation in the market. Negroponte argued for rule-based systems that allow for agency of inhabitants, giving residents a voice in determining the materialization of the urban fabric.

Many new technologies around online services and mobile phone applications allow new ways to navigate and inhabit the city, searching for transport and short-term accommodation on the go. As we are moving to a cashless and keyless society, several innovative platforms are allowing consumers to participate in the production of value, which leads to more distributed and diverse ways to live and experience the city. This focus on experiences rather than materialism fits a new generation looking for participation, a sense of belonging and personal development.

5.   'Pay-as-you-go' Living

The research and design project presented here explores the extrapolation of trends around market-oriented housing, projecting further diversification, reduction of space allocation for basic needs, and a response to more flexible and efficient use of living spaces throughout time and across cities. Trends towards a culture of experiences, digital archives and fast fashion may lead to less need for storage of personal belongings. As people work irregular hours and on temporary projects in different locations, it may only be a matter of time until more cities start to see capsule hotels similar to Tokyo, in different

GSM4Q
game set and match IV 2019 qatar
connecting people spaces machines

Proceedings of the International Conference on the 4th Game Set and Match (GSM4Q-2019)

February 6-7, 2019   Doha, Qatar

forms as can be seen in Yotel or CitizenM. Compact rooms may be rented on an hourly basis so that every customer pays exactly for their specific use. Thanks to automated reservation processes, there is no standardized check-in or check out time. Additional services such as breakfast or lounge space are paid for through the price of food and beverages, similar to coffee shops that double up as co-working spaces. City policies and planning regulations can be adjusted to let several competing companies operate living pods on a wide range of sites in cities, similar to competing car-sharing services or bicycle schemes. Initially, series of small clusters may start to appear within the city, distributed at regular intervals to ensure there is always one within walking distance (Figure 12).

At first, they are located at small infill sites such as parking lots, unused sidewalk spaces or small urban redevelopment sites. The buildings would be constructed out of prefabricated modular units, which thanks to embedded structural steel frames can be assembled with minimum disruption to the surroundings. Modules are combined with special bolts that would allow them to be easily disconnected, allowing units to be relocated or replaced with other types, depending on shifts in demand. The clusters of modules form buildings which shape is never permanent, their configurations can continuously change over time, informed by the dynamism of the urban context

There would be different levels of luxury offered to customers, evident in the density and arrangement of modules and the levels of privacy that are created. Low cost accommodation is reached without lift access but through stairs and galleries, the units are arranged in low-rise clusters at infill sites within urban centers. Accommodation that is more exclusive is situated at rooftop locations, accessible through a lift and offering panoramic views across the city (Figures 13 and 14).
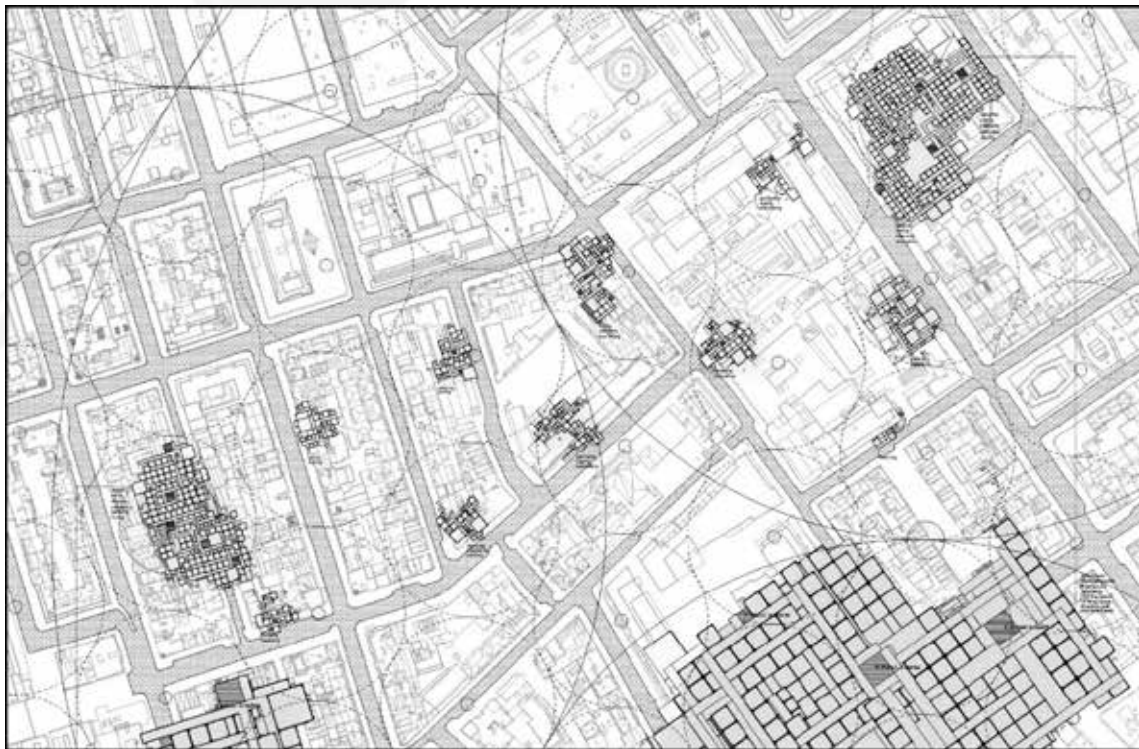
Figure 12: Small, medium and large clusters develop organically at regular intervals across the existing urban fabric of London.

Proceedings of the International Conference on the 4ᵗʰ Game Set and Match (GSM4Q-2019)

February 6-7, 2019   Doha, Qatar

GSM4Q
game set and match IV 2019 qatar
connecting people spaces machines

Figure 13-14: Small groups of prefabricated living pods cluster together at infill sites in the city or on accessible rooftop locations, accessible via cost-effective gallery access or via compact lift and stair cores.

Figure 15-16: The different types of cluster organizations offer various types of temporary accommodation at different price levels featuring contrasting levels of views and privacy.

The usage of these domestic facilities would be charged by the minute, adjusted dynamically depending on supply and demand similar to Uber. Customers would use a mobile phone application to search for a specific available unit nearby, pay via a secure digital payment system and receive GPS map-based navigation instructions to their destination. The charges per minute are higher for the first phase of use and are reduced automatically during longer periods of use, to account for cleaning costs and compete with hotels. Users would be able to choose different levels of privacy depending on how much they are willing to spend; the different platforms would incorporate a range of options varying from simple capsules with shared bathroom facilities to luxury compact penthouse rooms (Figures 15 and 16). Following the recent emergence of self-navigating luggage, it can be predicted that clothing and other personal possessions can follow along with the residents; the buildings would be designed to be accessible to these solutions.

6.   Separation of Functions

Much of the space in traditional apartments is only used for special occasions and even essential space is only used for a portion of the hours during working days. It would be more cost effective if the activities within domestic space could be separated, and space could be acquired for those activities only when needed. The space around a dinner table for instance could only be rented when guests come over, if most other meals of the week are enjoyed on the sofa. The same dinner table

GSM4Q
game set and match IV 2019 qatar
connecting people spaces machines

Proceedings of the International Conference on the 4ᵗʰ Game Set and Match (GSM4Q-2019)

February 6-7, 2019   Doha, Qatar

space could be used by other people on different times of the week, if there is enough accessibility and transparency in the market. Online and mobile technologies allow for fluidity in the connecting of demand to supply, and to monitor and analyze user patterns, which can inform the adaptation and growth of the catalogue of space options and locations over time. In this speculative project, clusters of spaces spread and grow across the city, combining different modules with specialized facilities for various activities (Figure 17). The amounts and ratios of different types of modules in each cluster would depend on the location and demand.

Figure 17: The breaking up of different domestic activities into separate spaces allows users to pick and choose which spaces they need and when, and only pay for the spaces and time used.

7. New Types of Domesticity

The project presented here aims to provoke questions about the nature of domestic spaces in the city, illustrated through speculative imaginations. Besides the separation of functions in highly privatized spaces, the systems explored here offer an opportunity for the creation of shared spaces in between the pods. Careful arrangement of medium and large-scale clusters would allow for courtyards or

Proceedings of the International Conference on the 4ᵗʰ Game Set and Match (GSM4Q-2019)

February 6-7, 2019   Doha, Qatar

GSM4Q
game set and match IV 2019 qatar
connecting people spaces machines

atrium spaces that function as a large 'living room', a new type of collective domestic space that accommodates informal gatherings with friends or spontaneous interactions with fellow nomadic citizens (Figure 18). Similar to the co-living schemes that are currently being introduced in London, this future scenario places an important value on spaces for social engagement, to offer residents a sense of community. Through the arrangement of the modules, in-between spaces can be created in spatial patterns that result in a range of different places with different sizes and levels of privacy, open to appropriation by users in spontaneous and temporary ways similar to the architecture of Aldo van Eyck. Participation in social events is not centralized and forced, but allowed to be self-organized, giving residents the freedom to choose when and how they want to socialize or collaborate. The architecture would promote the emergence of new types of family or community structures that are not fixed or hierarchical but offer affective care to young people that are new to the city or passing through due to the nomadic nature of their work.

Figure 18: Large clusters of domestic activity pods can be arranged around an internal atrium that creates new types of collective domestic space.

8. Conclusion

By extrapolating and combining current trends in the development of housing and digital technologies, we can speculate how future housing providers might offer more flexible and distributed accommodation services that offer a greater choice to city dwellers, supporting their more dynamic and nomadic lifestyles. By reintegrating compact living accommodation at a range of price levels within the heart of cities, local governments can reverse spatial social segregation, promote cultural exchange and nurture societal progress. Similar to Airbnb, these initiatives could enable local property owners to rent out their parking lots, courtyards or rooftops and instead of displacing original residents accommodation could be added that densifies the city. These systems could encompass more than tourism, as many young people aspire to live close to vibrant urban areas and wish to become residents

in relation to their study or work project necessities. As these projects are temporary or periodic in nature, people may shift their residential location more flexibly without the burden of fixed property ownership or tenancy agreements.

This project aims to raise provocative questions around the nature of the home, and whether people may feel more liberated and productive in strategic locations, removing the necessity for long commutes but involving sacrificing other values. The speculative systems could allow people greater freedoms to choose how and where they want to live in a dynamic fashion, but may involve the loss of a sense of privacy or stability. There are other significant vulnerabilities to these types of systems, as they are susceptible to the reduction of quality standards similar to the lodging practices in London or Hong Kong. Minimum regulation would have to be in place to safeguard standards, accessibility and competition.

The residential spaces presented here may not be attractive to all types of people and will probably be aimed mostly at people in a certain stage of life without children or many physical possessions. The project aims to raise questions about the extent to which city residents value a fixed address to call home, or whether for some people, a new form of 'homelessness' could free up a significant part of their income and allow for other personal freedoms that will stimulate their pursuit of self-actualization.

Acknowledgments

Bibliography

Bell, D. (1973). *The Coming of Post-industrial Society: A Venture in Social Forecasting*. New York: Basic Books.

Butler, C. (2012). *Henri Lefebvre: Spatial politics, everyday life and the right to the city (Nomikoi)*. Milton Park, Abingdon, Oxon: New York: Routledge.

Fainstein, S. S. (2009). Planning and the just city. In P. Marcuse, J. Connolly, J. Novy, I. Olivo, C. Potter, & J. Steil (Eds.), *Searching for the just city: debates in urban theory and practice* (pp. 19–39). London and New York: Routledge.

Fang, B., Ye, Q., & Law, R (2016). Effect of sharing economy on tourism industry employment. *Annals of Tourism Research*, 57, 264-267.

Gold, J. (1998). Creating the Charter of Athens: CIAM and the Functional City, 1933-43. *The Town Planning Review*, *69*(3), 225-247.

Guttentag, D. (2019). Progress on Airbnb: A literature review. *Journal of Hospitality and Tourism Technology*, 10(4), 814-844.

Jacobs, J. (1961). *The Death and Life of Great American Cities*. New York: Random House.

Harvey, D. (1973). *Social justice and the city*. London: E. Arnold.

Hurst, G. (2019). Living with strangers holds key to housing crisis and loneliness. *The Times*, 26 February 2019.

Lee, C., & Harvard University. Graduate School of Design. (2016). *Common frameworks: Rethinking the developmental*

city in China (Harvard design studies). Cambridge, MA: Harvard University Graduate School of Design.

Low, S. (2003). *Behind the gates: Life, security and the pursuit of happiness in Fortress America*. New York: Routledge.

Negroponte, N. (1970). *The Architecture Machine*. Cambridge, Mass, MIT Press.

Negroponte, N. (1975). *Soft Architecture Machines*. Cambridge, Mass, MIT Press.

Nieuwland, S., & Van Melik, R. (2018). Regulating Airbnb: how cities deal with perceived negative externalities of short-term rentals. *Current Issues in Tourism*.

Oskam, J., & Boswijk, A. (2016). Airbnb: the future of networked hospitality businesses. *Journal of Tourism Futures*, Vol. 2 Issue: 1, pp. 22-42.

Ratti, C., & Claudel, M. (2015). *Open Source Architecture*. Thames & Hudson.

Risselada, M., & Van den Heuvel, D., (2005). *Team 10: 1953-81, in search of a utopia of the present.* Rotterdam: NAi.

Schlosberg, D. (2007). *Defining environmental justice: Theories, movements, and nature*. Oxford: Oxford University Press.

Smithson, A., & Smithson, P. (1967). *Urban structuring: Studies of Alison & Peter Smithson* (A Studio Vista/Reinhold art paperback). London, New York: Studio Vista; Reinhold.

Söderqvist, L. (2011). Structuralism in architecture: A definition. *Journal of Aesthetics & Culture*, *3*(1), 1-6.

Stabrowski, F. (2017). People as businesses: Airbnb and urban micro-entrepreneurialism in New York City. *Cambridge Journal of Regions, Economy and Society*, Vol. 10, Issue 2, July 2017, Pages 327-347.

Tang, B. (2017). Is the distribution of public open space in Hong Kong equitable, why not? *Landscape and Urban Planning*, 161, 80-89.

Vanstiphout, W. (2010). De architect heeft het gedaan! *Justitiele Verkenningen*, *36*(5), 13-26.

Wang, Y. (2018). How China's bike-sharing startup Ofo went from tech darling to near bankruptcy. *Forbes*, Dec 20, 2018.

Yeung, R. (2017). Mobile payment security gaps exposed at Hong Kong University. *South China Morning Post*, 28 September 2017.