URBAN MOBILITY & THE FUTURE CITY

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# TABLE OF CONTENTS

1 Abstract

2 Part I: REDEFINING “MOBILITY”
   3 Introduction
   4 The Evolution of Mobility: “Its Past and Future”

5 Part II: DIGITAL REVOLUTION
   6 The Digital Decade – Age of Information & Technological Advances
   7 “Liquid Modernity” – Fluidity & New Identities

8 Part III: FUTURE IMPLICATIONS
   9 Death of Cities? – Physical & Digital Worlds Intertwined
   10 Cities of Tomorrow: “Urbanizing Technology”

11 References
   12 Image Sources
   13 Bibliography
ABSTRACT

The contemporary urban condition is a conglomeration of intentions and accidents that evolve in response to our needs of transience. The world's interest in physical mobility can be traced all the way back to the start of civilization, as the first dwellings were meant to be temporary structures, and it has not decreased with the rise of global digital communication. People are more mobile than ever now, changing jobs, cities, or even countries with increased frequencies. A city's energy and life comes from its perpetual "incompleteness" and ability to continue evolving indefinitely. As a result, the demand for architecture and urbanism to meet these expectations in ephemerality and fluidity becomes a necessity in order to keep up with our human desires of mobility.

Stepping into the digital age of information, the notion of “mobility” is no longer restricted in the traditional sense of physical movement and relocation, but rather, the conception of social and virtual mobility begins to surface. Social mobility and human connectivity takes much greater precedence in our lives today than any other form of connection. With this shift from the physical to the conceptual, the lines between the digital world and the analogue begin to blur and these realms flow into each other, becoming ever more connected.

Life is constantly changing, as it is an imminent part of our evolution. When city life evolves, cities have to develop with it. As architects designing for the city of tomorrow, we must observe and understand the way life evolves and support this process. With the developments of urban mobility, the future city should address the overlaps between the material and immaterial, the physical and the virtual, so that “digital space can flow into the real space of daily life”. Moreover, these cities should become more responsive and accessible to have the ability to empower the urban population.

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1 Heingartner, Douglas, “Mobile Homer”, ArtByte, April 2001, 64.
Part I

REDEFINING “MOBILITY”

Introduction: What does it mean to be mobile?

“I move, therefore I am.” To be in motion and to move are an essential part of being human. This has been and will remain as the driving force for human development. This is not only specific to the human experience, but is also a phenomenon in the natural order of things – the world itself is constantly on the move and life around us is constantly changing and evolving. Galileo even stated that the natural state of objects is to be in motion and not at rest. Motion, therefore is important in the understanding of reality and the human condition in general.

Being mobile is fundamentally humans’ independency from geological constraints, given the ability to move or be moved freely or easily. Mobility, however, is not travelling alone, but includes the movement of people, objects, information and ideas, both on a physical and virtual level. As we move into the digital age of information and connectivity, the notion of mobility has been ever evolving, no longer restricted in the physical. The reach of mobility transcends our physical world into that of the virtual and conceptual, spreading even further into space. If our world is shaped by constant changes, the thirst for mobility and fluidity in our lifestyles will never die. How will mobility continue to shape the future cities and how will these cities accommodate for the transitioning between the analog and the digital constructs of mobility?

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[Figure 1] Mili Gjon, Nude Descending Staircase, Getty Images, 1942
THE EVOLUTION OF MOBILITY

*Its Past & Future: The changing forms of mobility*

Mobility has always been an important part of our development since the start of civilization, and it has been constantly evolving as circumstances around us change and as new ideas and inventions begin to emerge.

The origins of “mobility” can be traced back to the ancient nomadic lifestyle. Many cultures have been traditionally nomadic, they move from place to place, rather than settling in one location. Nomadism is a way of obtaining food, finding pastures for their livestock, trading and making a living. Consequently, most nomads live in temporary and portable dwellings. As J.B. Jackson, a writer in landscape studies, discusses in his essay *The Moveable Dwelling and How It Came to America*,

“The real significance of the temporary dwelling lies elsewhere, it has always offered, though for a brief time only, a kind of freedom we often undervalue: the freedom from burdensome emotional ties with the environment, freedom from communal responsibilities, freedom from the tyranny of the traditional home and its possessions; the freedom from belonging to a tight knit social order; and above all, the freedom to move on to somewhere else.”

Although the ancient nomadic lifestyle of mobility remains within the physical construct of relocation, the core essence of humans’ interest in the notion of mobility stems from the sense of freedom it provides – the freedom from staying put and the freedom to move about. Understanding these relationships provides a comprehensive understanding in the larger discourse of the evolution of urban mobility.

With the emergence of the automobile, it enabled individual mobility that would allow people to physically travel farther distances in shorter periods of time. The rapid expansion of the American frontier was a product of such mobility. American society became automobile oriented, which in turn led to a revolution in its physical organization as well as its social structure. The automobile opened up possibilities of new geographical frontiers. Communities can literally emerge wherever roads could be built, eventually leading to the suburban sprawl. Cities as well, began to be designed

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[Figure 2] “Nomad Dusk”, Flickr photo by chrisdebruyn
around the car with the insertion of roads, massive freeways and overpasses as a byproduct of the infrastructural restructuring. In City of Tomorrow and Its Planning, Le Corbusier proclaimed his unconditional faith in the speed of automobiles, “For an immense period of time, man could only move at the rate at which his own limbs would take him, and all his progress, apart from sails, consisted in using the speed of animals”\(^4\). He saw the automobile as a true “transport machine”, and believed that the need to accommodate it would radically change the identity of cities. In his futuristic utopian proposals, Le Corbusier designed large, highly organized cities in which the automobile, then seen as a symbol of progress and modernity, took precedence and became an obsessive feature. An example is his proposal for a modern city of three million inhabitants, where elevated highway intersections played an important role in the overall planning of the city. The proposal is organized around a geometric arrangement of fast moving, efficient highways separating specialized districts of residential, industrial, commercial and administrative towers.

Mobility continues to evolve as we step into the age of digitalization and information technology. Traditional notions of mobility used to be tied to ideas of physical movement and relocation, however with the age of digital information coming into place, being “mobile” is no longer restricted in the physicality. Rather, the conceptions of social and virtual mobility begin to surface. The emergence and rise in popularity of the Internet and social media meant the free exchange of information in a networked world. In a virtually connected world, decentralization of information becomes possible and physical distance becomes less of a concern, which radically changes the contemporary lifestyle. These changes are becoming increasingly visible in our working practices as well as our means of social interaction. In our working practices, the emergence of mobile workstations meant that there is no longer a need to be in specific locations for specific tasks; drastically changing the way we conduct businesses. Also, the rising prominence and popularity of different types of social media, such as Facebook and Twitter, expands the ways in which we interact with each other, where virtual interactions begin to replace physical interactions. In I-Phone City, Benjamin

\(^4\) Le Corbusier, City of Tomorrow and Its Planning  (New York: Dover Publications), 1987, 190.

[Figure 3] Le Corbusier’s proposal for a modern city of three million inhabitants, with no fixed location, 1922.

[Figure 4] “Web 2.0 Digitage 2012”, Flickr photo by ocean.flynn
Bratton said, “mobility has transformed from mechanical to informational”\(^5\). Mobility henceforth, is not simply moving from one place to another, but it also meant the transfer of information and virtual connectivity:

> “Humans have always migrated and travelled, without necessarily living nomadic lives. The nomadism now emerging is different from, and involves much more than, merely making journeys... ‘Permanent connectivity, not motion, is the critical thing’.”\(^6\)

With this shift from the physical to the conceptual, it will inevitably change the way in which we perceive and understand our cities, as cities are fundamentally a reflection of our human needs and forces. It will also change the way architects and designers design for this new digital age that is all based on the idea of permanent connectivity.

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We experience most of our lives today behind a radiant screen, whether it is the computer screen or the touch screen of our new Smartphone. Photos, books, music CDs are physical objects that used to color up our personal spaces, reflecting personality and taste, but can now all be crammed onto the tiny surface of a hard disk. They can be easily manipulated, transferred with one simple click, or even erased without a trace. The experiences of these as physical entities are becoming increasingly distant and alien in this world of minimal matter.

Such are the characteristics of the digital revolution that represents our modern life. The digital revolution marks the change from the analog and the mechanical, to the digital and the informational. In effect, the digital decade also reconfigures the ways in which we experience our realities. Take for example, a digital photograph, which is very different from an analytical one. Unlike the analytical photograph, the digital version is not a registration of light onto film. It is instead a synthesis of elements called “pixels”. Each pixel is a sample of an original image, which corresponds to numerical values associated with its color and place in the image. “A digital image does not represent an optical trace such as a photograph, but provides a logical model of visual experience. Its structure is one of language: logical procedures of algorithms through which data is orchestrated into visual form”⁷. In other words, the digital image is not giving us a registration of reality, but a reconstruction of what’s visible.

Similarly, the logic behind the simulated experience of virtual reality works in the same way. Mathematical equations and numerical codes reconstruct a natural space or even create an entirely imaginary digital realm, making reality malleable. The core idea of simulations, whether it is in the form of a computer game, a scientific experiment or the computer-aided design we use in architecture, is that it teaches us to think in an active way about complex circumstances as dynamic and evolving systems; similar to our natural world. Traditional social activities that require physical interaction are now increasingly replaced by the digital world of simulations. The leap

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⁷ Legrady, George, “Image, Language and belief in Synthesis”, Art Journal, 1990. [Figure 5] “Internet Concept”, Flickr photo by Administrator Galeria Uninter
into the immaterial sphere of virtual reality is one that happens in our everyday lives. The e-mails, discussion forums and instant messaging that we participate in and interact with other users, are all happening in the digital and virtual realm. Inside this world, our everyday life experiences are replaced by simulated experiences, such as the "poke" and "like" features on Facebook. With one simple click of a button, we can easily get another user’s attention and express our interest and acknowledgement in regards to our friend’s activities even though we might be continents apart. The fully wired and connected nature of the virtual realm allows us to be available at all times and in all places should we so desire, creating greater fluidity and indeterminacy in our lifestyle. Although these notions of malleability, fluidity, and flux are characteristic of the digital decade, they have actually been lodged in the notion of mobility along with the concept of freedom, which we as human beings so desire.

LIQUID MODERNITY

Fluidity and new identities

“Liquid Modernity” is a term coined by sociologist and philosopher Zygmunt Bauman, which he uses to refer to the present condition of the world. According to Bauman, we are moving away from the ‘heavy’ and ‘solid’ hardware-focused era with stable identities and regulations to tell us how to conduct our lives, to a ‘light’ and ‘liquid’ software-based modernity, where reality and social forms are constantly changing at a very fast pace, and thus radically transforming the human experience.²

As modern society becomes increasingly ‘liquid’, information, objects, people and places can flow more easily around time and space. Nomadism, once again becomes a general trait of the liquid modern man, flowing through life changing jobs, homes, lovers, and even values. The dissolution of boundaries becomes a possibility where a ‘world without borders’ can be created. More contemporary relationships happen without borders, thus transforming the whole world into a network of connectivity and permeability. The effects of technologies also continue to ‘liquefy’ modernity, making it less stable and more fluid - the flow of information and communication has the ability to collapse physical distances: “Today, bumper-to-bumper, we are now all also on our phones and PDA’s: taking meetings, texting, emailing, Googling, checking on this and that, editing essays on

[Figure 6] “At the Speed of Thought”, Digital image. RadioTimes. BBC
our iPhones. This is the home and office. We don’t always need to arrive, because we’re already there”\(^9\). Relations between physical spaces can be reconfigured; in this case, the home and the workspace can be one or the other, flowing into each other.

However, the dichotomy of today’s liquid modernity is that, although we are all connected in the greater virtual platform of networks, we’ve ironically become strangers to one another. The widespread nature of this new connectivity actually renders us incapable of associating and relating permanently with places or people because time and space are constantly changing and we have become a culture that is always on the move. In the case of ‘online personae’, identity is no longer something that is stable and defined, but rather is mutable to various different forms. We are faced with re-negotiating our identities, how we define ourselves and how we want to appear to others, as an actively constructed presentation of oneself. Our world today, is therefore focused increasingly on mobility, flexibility and desocialized individuality.

\(^9\) Bratton, “I-Phone City”, 92.
Part III

FUTURE IMPLICATIONS

The Future = Death of Cities? Physical and Digital Worlds Intertwined

The world is becoming increasingly urbanized and shaped by digital technologies. More than half of the world’s population now lives in cities. However, at the same time, digital communications and the Internet are collapsing distances and shrinking the globe, virtually connecting people by terabytes of information everyday. If this represents the present and the future trend, then what is the impact of the ongoing digital revolution on the viability of cities?

In 1995, George Gilder, an American writer and techno-utopian intellectual, once proclaimed “cities are leftover baggage from the industrial era”, due to the growing use of personal computing and telecommunications in rendering distance obsolete, and concluded that humanity was “headed for the death of cities”\(^\text{10}\). At the same time, Nicholas Negroponte of the MIT Media Lab argues in his book Being Digital that future transformations would occur away from a “atom-based” economy and to the creation, manipulation and communication of electronic binary data or “bits”. He says, “the post-information age will remove the limitations of geography. Digital living will include less and less dependence upon being in a specific place at a specific time, and the transmission of place itself will start to become possible”\(^\text{11}\). Although part of their argument remains true – our independence from specific locations at specific times, cities have not, and will not, in fact face its “death” despite being in this age of digitalization. The reason lies in the understanding of the relationship between technology and geography.

Although technology is becoming ever more mobile, geography still plays an important role, and in some respect, it matters even more than ever. As the Internet began to be widely used in the mid 1990s, people were very taken by the fact that, for the first time in history, location seemed to be less relevant. They even believed that the digital world seems to be reshaping the physical world, however, what they didn’t realize was that the physical realm is also reciprocally shaping the digital realm. The physical world and the digital world have in fact become tightly intertwined. The importance of


[Figure 7] “The future is mobile”, Digital Image. A Sense of Place. The Economist.
physical location in today’s digital realm is evident in the development of portable digital devices. Today, we are no longer tethered to the desk; instead we have powerful portable computers in our hands, whether it is in the form of a Smartphone or a tablet. These portable devices allow us to be online wherever we go so that more people are connected to the Internet in more places at even higher speeds. According to Ericsson, a world-leading provider of telecommunications equipment and services, by the year 2017, the volume of mobile data traffic will be 21 times greater than it was in 2011\textsuperscript{12} [Figure 7]. Information, more specifically local information, such as where the nearest gas station is, and when the next bus is coming, is more valuable to people when they’re on the move than when they’re sitting at home. Therefore, it is more important for the service providers to know where these portable digital devices are and as a result to know where we are. It becomes worthwhile and valuable to be told information about the world around us, seeing that we are now carrying with us the means to interpret this information.

Increasingly, we are essentially viewing the physical world through a digital medium: when we go to a new place, we look it up with the map application on our Smartphones. The creation of online representations of the real world became a large investment, where the world is being digitally mapped in many dimensions, indoors and outdoors, and in even finer details. As Bratton discusses in his essay, i\textsuperscript{Phone} City, he says,

“If the first function of the city is proximity (to people, markets, goods, transit, information) the smart digital handset condenses the city itself into an extensible software + hardware platform...It can do this not only because it enables physical, communicative and thereby social mobility, but because it drastically reinserts specific location into digital space and does so by making location gestural”\textsuperscript{13}.

Today, operations in the digital realm mimic those in the analogue, and complementarily the world of the analogue is enhanced by our experience of the digital realm. The complex interaction and relationship between the digital and the material domain becomes ever more visible. Where we used to believe that the digital realm was bound to overtake the physical one in the advent of the digital revolution, on the contrary, we have proven that the more immaterial our lives become, the greater

\textsuperscript{13} Bratton, “i-Phone City”, 93.
[Figure 8] “Iphone Apps”. Digital Image. I-Phone City. Bratton.info
our desires for physicality and materiality. No matter how good technology gets at enabling us to work with digital approximations of reality, humans continue to live in a physical world. Therefore we will always want to recourse back to materiality. For that reason, maybe the future is not about the digital versus the analogue, but rather the digital with the analogue; they become compliments to each other, not substitutes for one another.
CITIES OF TOMORROW

How Smart are Smart Cities? “Urbanizing” Technology

If the contemporary condition is one that marries the physical realm with the virtual realm, then everything in our evolving architecture of the cities of tomorrow is addressed and located deep within the universe of digital dimensions that exist alongside the physical spaces we all know. “That kind of merger between the physical and the digital environments presents an opportunity for us to think about the city almost like a computer in the open air,” says Assaf Biderman of the SENSEable City Laboratory at the Massachusetts Institute of Technology. Information becomes the new lifeline of cities and sensors and networks become more vital and integral to the physicality of our built environment.

Such are the underlying principles behind what we call “smart” cities today. The major push in recent years in the arena of “smart” and “intelligent” cities has been focusing on the software, programs, and gadgets that help improve the efficiency of cities. However, is that enough for being smart? How smart are “smart” cities? Arguably, cities cannot fulfill the requirements of being “smart” in its most comprehensive sense, unless these technological enhancements and digitally driven solutions also contribute to the empowerment and integrated participation of its urban population. And in its current form, these “smart” cities of today lack this cross-disciplinary dialogue.

For Saskia Sassen, a sociologist and economist, cities have become strategic spaces for all types of technological application, but she questions the impact these technologies have in changing the urban spaces of cities. She makes the case for the need to “urbanize” technology, wherein urbanism becomes the bedrock on which we use to build our cities. It is not so much about designing cities to accommodate for technology, but instead designing technology to adapt to the city as a whole, thereby empowering it and benefiting the users: its citizens. The city at its core is not simply a sum of its physical parts, but it is also a space where people and cultures exist and thrive. The city functions with the software of the people’s practices; it is not so much about the programs but the activities that take place within the space of the programs that gives cities the ability to adapt, react and live: “Our cities are strange. They are living organisms that mix with and continue to respond to what we do to them,” Sassen explains.

While many instant new cities like the Songdo Business quarter in Seoul, an intelligent city that’s equipped with advanced sensors and monitors from Cisco Systems, are considered to be models for smart cities around the globe, they are so

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focused on the technological aspects of the infrastructure that they miss the opportunity to “urbanize” the technologies they employ. The technologies used are not visible, yet to be interactive, they need to be visible and accessible to those who encounter and use them. These “smart” cities are currently operating under closed systems where they put the technology in command rather than in dialogue with the users. The heavy reliance on the technological aspects of these cities will cause them to become obsolete when the technology itself becomes obsolete, and as Sassen emphasizes: “There is no way that obsolescence can be avoided in a world where you have battalions of brilliant engineers and ICT experts continuously pushing the development of intelligent systems”¹⁶. Thus rendering these cities incapable of adapting to and reacting to its changing surroundings and various users.

Many urbanists and theorists recognize the need to create a dialogue between the immateriality of technology and the physicality of our built environment and cities. In Audi’s Urban Future Initiative, architects and urban designers look towards the future with the aim of establishing a dialogue between mobility, the built environment and technological innovations for visions of future cities. In the 2010 “Urban future Award”, winner, Jürgen Mayer H. Architects, explores individual mobility of the future where digitally augmented urban spaces are strongly linked to personalized data exchange between the human body and the physical environment through the notion of the automobile. The emphasis is on user interaction in the interwoven nature of the digital interface with the physical environment [Figure 9].

When this happens, the city becomes a heuristic space, in that it has the ability to communicate with the average resident or the passer-by. It can make the most advanced technologies used in the city visible and at the same time, due to the interwoven nature of the physical and the digital realm, the city is also able to make visible the diversity of spatial forms through which these technologies are applied. Thus, creating a sort of public shared domain. The challenge for the cities of the future is therefore to recognize the cohabitation of the digital and the analogue realm, so that through “urbanizing” technology, we will be able to advocate the cross disciplinary dialogue between the city and its users to ultimately prolong the vitality of our cities.


[Figure 9] “A.Way concept proposal” Jürgen Mayer H. Architects
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