

Is Today's Architecture About Real Space, Virtual Space, or What?

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ABSTRACT

Nowadays digital technologies and information and telecommunication technologies are widely used in every aspect of our lives. This article focuses on the digital technologies and their effect on the place-making activities. First an overview of the digital technologies for the creation, occupancy and management of a building is given. Secondly, the concepts of space and virtual space are discussed. Through these discussions, the concept of places and its virtual alternatives and recombination the use of space are described. Finally some concluding remarks are made on whether today's place making activities about real space or it extends beyond that.

Keywords: Virtual Space, Real Space, Architecture in digital age, digital buildings

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1.0 INTRODUCTION

"...homes will be places with network addresses as well as street addresses. The function of the various interior spaces will be established, in large part, through installation of specialised information spigots and collectors... efficient delivery of bits to domestic spaces will, in addition, collapse many of the spatial and temporal separations of activities that we have long taken to granted. Many of our everyday tasks and pastimes will cease to attach themselves to particular spots and slots set aside for their performance and will henceforth be multiplexed and overlaid; we will find ourselves able to switch rapidly from one activity to the other while remaining in same place, so we will end up using that same place in many different ways" (Mitchell, 1995, p100).

Nowadays from the conception of an idea of a building through design, construction, management and duration of the occupation of that building; digital technologies are widely used. Involvement of the digital technologies in built environment has different levels. It can be said that it first started with using computers as drawing aids to now being able to create an "adaptive house"² that responds to its owner.

Traditionally a building can be described as *"a usually roofed and walled structure built for permanent use"*³. However, with the influences of the digital technologies the understanding of the term 'building' as a shelter is altering dramatically. Buildings instead of having just a roof and walls to protect us from environmental effects and give us security and comfort, now need to accommodate HVAC systems, water supply and waste removal, electrical power and other energy systems, mechanical circulation systems, a wide range of safety and security systems etc. Information and communication technologies are affecting the way we design, build and use and re-use the buildings. The following table will try to classify the digital technologies that can be used during the life-cycle of a building. It should be recognised that the boundaries for the categories are fuzzy and the following table is just a framework.

Combinations of these technologies are making living spaces adaptable and interchangeable for their inhabitants. But how does this affect the overall space making activity? None of the great architects of history, neither Sinan, chief architect Sulemaniye Mosque in Istanbul, nor Michelangelo, architect of St Peter's Basilica in Rome, nor even Le Corbusier had such technologies available. We can only marvel at what they might have achieved today, when digital technologies are able to help architects to design complex structures more efficiently and effectively. Using technology as a "tool" gives a high quality final product that captures the architect's wildest dreams. However, with the ambiguous boundaries between real and virtual space in everyday life, what is today's architecture really about?

If architecture can be defined as "the art and science of designing structures and their surroundings in keeping with aesthetic, functional or other criteria, [and] architecture is now understood as encompassing the totality of the designed environment, including buildings, urban spaces and landscape" (Fleming, Honour, Pevsner, 1998) one might assume that architecture is about real space. However, information and telecommunication technologies are pushing the boundaries of real-space with digitally enhanced virtual space that is "accessible anywhere and located nowhere" (Riewoldt O., 1997).

But what really matters in the digital age? Is real space just a threshold for virtual space or does real space contain virtual space? Consequently, the movement in between the two spaces and the boundaries, which might be very vague, should also be considered in order to understand what today's place making is really about.

For the purpose of this paper since the built environment is the combination of buildings, landscapes and urban spaces, when architecture is mentioned one should consider all professional acts that create built environment.

2 *The Adaptive House*, Please see <http://www.cs.colorado.edu/%7Eemozer/house/>

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Digital Technologies	Examples
Design	From basic CAD systems to BIM to VR etc., also electronic publishing.
Collaboration	Video conferencing, email, FTP technology, project collaboration websites/extranets, project collaboration solutions etc.
Structure	Responsive construction/facade, active control of traditionally passive elements such as glazing or wall thermal transmission, intelligent components, moveable walls, canals for power/data/voice cabling, flexibility and adaptability of components etc.
Services, energy efficiency	Automatic on/off sensor in the lighting system, electricity, water supply, High-tech, energy-efficient HVAC system, heating, cooling, Smart Metering Technologies etc.
Systems	Building Automation System (BAS), Energy Management System (EMS), Central Control and Monitoring System (CCMS), video, voice, data, irrigation, etc
Management	Maintenance, cleaning, leasing, computerized/interactive building directory etc.
Security, safety, access control	Reduced manpower dependence, CCTV, card access control, smoke detection, intrusion alarms, emergency control of elevators, doors, earthquake sensors, flood detection etc.
Telecommunications (working from home etc)	Fiber-optics capability, built-in wiring for Internet access, Wiring for high-speed networks, LAN and WAN connectivity, Satellite accessibility, ISDN, etc.
Entertainment	TV, theatre systems, video projectors/screens, video wall etc.

Table 1.0 Digital Technologies for buildings-From the design to occupancy⁴

2.0 UNDERSTANDING SPACE IN ORDER TO UNDERSTAND VIRTUAL SPACE

Madanipour (1996) explains that “The search for a meaning of a space is a necessary step to take, as it is crucial before moving into the normative realm of design...” If one can try to find out in which ways the virtual space is different from real space then shaping it and giving it a meaning with design activities might become easier. When it comes to define “space” in order to define “real space”, it seems these two concepts are knitted together. “Space” is defined eighteen different ways in *Cassell's Dictionary and Thesaurus* (1999), all different entries are dependent upon where the word “space” used for, such as in mathematics, astronomy, music, printing etc. Defining “real space” depends upon what we, as place-makers, really understand from space. Furthermore, in many other definitions, “space” is simply explained as three-dimensional volume or an empty place which is synonymous with a room.

The nature of physical or real space is something which philosophers and physicists have debated for centuries. These are two main ideas about space. One is the idea of “absolute space” i.e. space as sort of a container, the other is the idea of “relational space” i.e. space is just a matter of relationship between

⁴ This table is generated from several sources mentioned at the Reference section of this paper.

objects and there is no container. Things get even more complicated when we consider ideas like Einstein's space-time or that space is somehow socially produced (Madanipour, 1996). However Riewoldt (1997) argues, "digital technologies can add a new dimension to architecture, but they cannot redefine its fundamental character. For architecture, utopia will continue to lie in the real world, not the virtual realm".

2.1 Differences between real space and virtual space

Movement versus non-psychical movement

For the purpose of this article, the author is using an idea of physical space that is close to the common-sense idea of space, i.e. space which our bodies move through. Virtual space in this sense is different because our bodies do not move through it. Mitchell (1995) points out that "the net is fundamentally and profoundly *antispatial*... You cannot say where it is or describe its memorable shape and proportions or tell a stranger how to get there...It is ambient — nowhere in particular but everywhere at once. You do not go to it; you log in from wherever you physically happen to be." Mitchell claims that we can not really get hold of virtual space in the same sense we can real space.

The "movement" in virtual/cyber space has a completely different meaning. "You get from place to place in cyberspace by following logical links rather than physical paths" (Mitchell, 1995). However, you are not physically moving, therefore you might be jumping from continent to continent while you are surfing on the Net but actually, you are at your comfortable, warm, sheltered room somewhere in the world. Accordingly, one can argue that without the comfort, warmth and shelter of a designed and physically constructed place – a real place – your chance to be able to move in the virtual space is almost impossible.

Experience versus digital experience

Digital experience occurs in cyberspace. Cyberspace can be described as a non-physical environment shaped by computer technology or an "infinite artificial world where humans navigate in information-based space" (Benedikt, 1991). Cyberspace as Gu and Maher (2007) explain "distinguishes itself from other networked technologies by having place characteristics". Concisely, it can be said that virtual space is a place where some human activities can take place on digital level rather than at the level of pure bodily experience.

With the use of digital technologies, sense of place – *Genius loci*⁵ – of a building is rapidly changing, "we have our favourite spots and they mean great deal to us" (Horan T, 2000). Without these favourite physical spaces, one's sense of identity and belonging to a "place" becomes ambiguous. So therefore how a virtual place, which would be accessible from anywhere in the world therefore should have some cultural clues to the people who are visiting, can be created successfully?

"Places in the cyberspace of the Net are software constructions. Each piece of software running anywhere – on any machine or collection of machines in the Net- creates environments for interaction, virtual realms that you can potentially enter. The text window provided by a word processor is one such place... Like architectural and urban places, these have characteristic appearances, and the interactions that unfold within them are controlled (often very rigidly) by local rules" (Mitchell, 1995). The experiences we have in cyberspace are electronically enhanced and programmed by somebody, therefore controlled –not like the real life experiences which you might encounter.

Although at some levels, the digital experiences you have might feel real, but actually they are not real in the physical sense. Therefore, one might claim that without the experiences that take place in the "real places" the "sense of place" feeling might not be cultivated effectively during digital experiences.

⁵ *Genius Loci*...the genius of a place could be divined by paying attention to its individual features (*Thompson I H, 2003*).

3.0 REAL SPACE AND VIRTUAL SPACE IN ARCHITECTURE

From the beginning of history, place-making activities served to accommodate the needs of human beings. While over the centuries achievements and developments in technology have continuously given “the new” to the societies, place-makers needed to deal with the challenges that these achievements brought. The effects of these developments are shaping the buildings and the environment. “Not so long ago, when the world seemed simpler, buildings corresponded one-to-one with institutions and rendered those institutions visible. Architecture played an indispensable representational role by providing occupations, organisations, and social grouping with their public faces... Buildings were distinguished from one another by their differing uses, and the inventory of those uses represented social division and structure” (Mitchell W, 1995).

As the human activities start taking place in both real and virtual spaces buildings or their representational characteristics according to their usage are not that distinguishable anymore. “Once, we had to go to places to do things; we went to work, we went to home, we went to theatre, we went to conferences, we went to the local bar — and sometimes we just went out” (Mitchell W, 1999). Digital technologies are allowing us to access various services and settings with a touch of a button. A dwelling can physically look like a house however can continuously change its secondary function to a workplace, to an entertainment place to a shop without going through any structural change. This paradigm encapsulates the real and virtual space.

“Telecommunications support new electronic spaces but only in the physical space where the right infrastructure is built and can be accessed” (Graham S, Marvin S 1996). Mitchell (1995) also explains the similarities and differences between real buildings and their ever-developing virtual twins.

Table 2.0 shows the duality of the space concept by presenting real and corresponding virtual spaces.

Real Space	The virtual twin
Façade	Interface
Bookstores	Bitstores
Stacks	Servers
Galleries	Virtual Museums
Theatres	Entertainment Infrastructures
School houses	Virtual Campus
Hospitals	Telemedicine
Prisons	Electronic supervision programmes
Banking Chambers	ATMs
Trading floors	Electronic Trading Systems
Department stores	Electronic Shopping Malls

Table 2.0 Real space and its virtual twin (Created from Mitchell 1995)

Buildings defined specific usages in the olden ages; having a virtual twin for a building or a function gives wider opportunities for that use. This allows us to do most of the things in an electronically fully equipped space with a click of a mouse.

3.1 Recombination

Architecture, or in general place-making activity, is about space. Space, in the design-making sense, holds real space and virtual space together. Without having a protected, defined and designed “real space”, it is almost impossible to be in the virtual space.

The combination of real and virtual space should be able to accommodate the ever-changing human needs and activities, providing that the place makers will be adjusting, discovering and re-discovering their creative ways. “Bruno Latour’s point about space and time being constructed within networks through which the world becomes recombined” (Graham S, Marvin S, 1996) indicates that architecture is now about combining real and virtual space. Amalgamation of different elements including tradition, culture, technology, and design ability are still the fundamental elements for place-makers; however, these fundamental elements can be enhanced by using current technology effectively.

Mitchell (2003) points out that the very nature of twentieth-century modernism was to distinguish and separate the functions and announce those functions visually. “But the architecture of the twenty-first century can be far less about responding to such rigid programmes and much more about creating flexible, diverse, humane habitats for electronically supported nomadic occupation” (Mitchell, 2003). Rather than having to settle with one function for one building; with this new, nomadic style, buildings with their automated functions, fast and adaptable telecommunication systems, and timesaving services create flexible living spaces to their inhabitants. “As architects are rapidly discovering, this breaks down rigid functional distinctions among specialized spaces, and makes provision for varied and sometimes unpredictable functions increasingly critical; a home must serve as an occasional workplace, a hotel room must also be an office, a café must accommodate laptops and a work place must adapt to more complex and dynamic patterns of use” (Mitchell, 2003). Therefore the main tasks for the place-makers are first to comprehend the nature of this paradigm shift and then to accommodate this in their designs.

Since “the classical unities of architectural space and experience have shattered architects now need to design for this new condition” (Mitchell W, 1995). This new condition gives the prospect to embed the opportunities and services which would provide virtual space in real space. Doing this might be easier with brand new designs. Since a different level of requirements has been added to the list, incorporation of these new necessities in older buildings is getting increasingly harder. The concept of recombinant design focuses attention on how digital technology can be incorporated into this complicated yet important place-making process” (Horan T, 2000).

“Recombinant Architecture” as Mitchell (1995) and Horan (2000) broadly explain, can be an answer for this challenging digital age where a balance between digitally fully equipped study and an “unplugged” quiet room in a house should be established; and similarly diverse informal work places should provide both wireless networks for flexible digital use and spaces that allow traditional face-to-face interactions.

Because the movement between physical space and virtual space is now an everyday act one can say that the significant element in the recombination is to give options to the users freely to move between real and virtual space. Mitchell (1999) points out, “we [as place-makers] must extend the definitions of architecture and urban design to encompass virtual places as well as physical ones, software as well as hardware, and interconnection by means of telecommunications links as well as by physical adjacencies and transportation systems. As we must recognize that the fundamental web relationships among houses, workplaces, and sources of everyday supplies and services — the essential bonds that hold cities together — may now be formed in new and unorthodox ways”.

4.0 FINAL THOUGHTS

One should consider that cyberspace/virtual space is a new addition to real space. It gives new opportunities for improving and understanding the physical space we live in. It challenges the designs in order to combine new aspects to physical space that one can have diverse encounters in virtual space while just being in that physical space.

To be able to achieve this new understanding of the real space the relationship between the parties (architect, the client, project manager and others) involved in place-making activities and the skills those parties require needs to be redefined, the traditional design-build-operate framework needs to be challenged and, since designing and building is becoming a data-based activity, the information needs to be shared and collaborated effectively.

It can be said that virtual space is not a threat to physical space; it can only be a big enhancement to real space. As long as both spaces perform together and complement one another in order to accommodate human activities, this multi levelled space can only be an improved environment. Architecture in 21st century is actually about real space that provides users with the ability to exist in virtual space. The sizes of either of them are irrelevant. In some different scenarios, either of them can be bigger than the other, yet nevertheless real space would have the virtual space within it—at least for the timebeing!

5.0 ACKNOWLEDGMENT

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