

FUNCTION DEFIES FORM: A THOUGHT FOR ARCHITECTURE IN THE NEW INFORMATION AGE

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Abstract

This paper discusses the issues and thoughts on the impact of Information and Communication Technology (ICT) towards some of today's buildings – form and function. 'Form follows function' is perhaps one of the world famous dictums in architecture that many would agree on its feasibility in the theory of basic building designs. However, the emergence of the new 'Information Age' had suggested otherwise. Spaces had become more intelligent and interactive while circulation is becoming more fluid and flexible. Building forms tend to be more invisible as users turn to the World Wide Web for routine activities that was once achievable only through physical interaction. Nowadays activities such as shopping, meeting, schooling, chatting and even a visit to the library is virtually possible. As computers and human are adapting more towards each other, buildings are just becoming a matter of platform to store the software and hardware. In the digital world, architects face a daunting task of reclaiming the original image and identity of what we see as a 'building'. Regardless of any invasion of new technology, buildings should serve its purpose as a reflection of the place's image and identity. This paper would hope to provoke new thoughts in architectural approach as we reach the dawn of an information society.

Keywords

Architecture, ICT, building, virtual, digital

Introduction

"Whether it be the sweeping eagle in his flight or the open apple-blossom, the toiling work-horse, the blithe swan, the branching oak, the winding stream at its base, the drifting clouds, over all the coursing sun, form ever follows function, and this is the law." – Louis Henry Sullivan (Frei, 1992:32)

This remarkable quote made famous by architect, Louis Henry Sullivan in his essay, 'The Tall Office Building Artistically Considered' in 1896 was one of the major formulas in architecture that concerns the integrity between form, function and aesthetical values in architectural design. This was a theory that influenced the early styles of the modern movement in the early 1900s which very much sets a new law in architectural dictum worldwide. The message was quite simple to interpret – every building should show distinctiveness in their built form and façade according to their respected functions, i.e. a

hospital should look like a building that serves those who seek medical attention and people should be able to differentiate a hospital from a school or a library, etc.

This theory was actually evident long before Sullivan actually introduced the famous statement. As written by Harrell (2003) in his essay, "Before Sullivan and the Modern movement in Architecture, function, form, and aesthetics were discussed in treatises from Vitruvius, Alberti, Ruskin, and Laugier. These prominent scholars wrote about issues in terms of propriety. They generally agreed on the fact that a building should be ornamented and designed to fit the hierarchical status of its function. Therefore, a religious building would be designed and ornamented in a manner that was different from a civic building and this different from a home". This was an example of an architectural paradigm in an era where architecture was in search of an identity and true meanings. In those days, buildings were symbols of art and aesthetics.

However, what the forefathers of architecture did not experience in their generation was the ever evolving breakthrough in information and communication technology and the birth of an information society. Although there are many definitions to underline the meaning of an information society, technology was one of the most important criteria that provides a definitive meaning to this new breed of culture amongst other criteria such as economic, occupational, spatial and cultural (Webster, 1997). Technology has no doubt changed the way we interact, behave and socialize with one another, hence creating new ideas and perception towards the everyday lives.

The Emergence of the New Information Age

The emergence of this new information age has distinctively conquered the new formation of a society that was once naive upon the limitless possibilities of technology in its daily life. Information is rapidly becoming accessible due to numerous breakthroughs in computing hardware and telecommunication, where computers and high speed internet are becoming cheaper and more affordable day by day. The decreasing cost of telephony has further enabled our availability to work remotely (Horan, 2000:15). Wireless access to the World Wide Web has improved greatly and accessible via our mobile phones. Virtual communication via video-conferencing is just a few dials away. Face-to-face communications still remains an important daily agenda for most urbanites though our society might face another wave coming, in the form of ubiquitous computing technologies. In the world of ubiquitous computing, sensors and computer chips would be embedded not merely "in every place" but "in every thing" (Greenfield, 2006).

Spaces had become more intelligent and interactive. Information could be obtained without leaving your chair. Circulation is becoming more fluid and flexible. Virtual places and digital architecture are the some of the new agenda in planning issues. These are some of the current events that take place globally and the issues are expanding. This would lead us back to the validity of the 'form follows function' statement in the context of the information society.

Event and Architecture

Today, in this event of technology and the existence of an information society, we are actually reshaping the fundamental concepts of architectural form and functions. History might suggest the importance of the environment and events in the shaping of form in architecture and buildings. Dankmar Adler, Sullivan's associate partner of the architectural firm, Adler & Sullivan, had even suggested that form does not solely follow the function but it is also the environment that shapes the resulting form. As quoted by Wombly (1987) in his book *Louis Sullivan – His Life & Work*,

“The best design opportunities past and present were generally the result of changes in the environment brought about by human invention...on the façade, he allowed that form could sometimes follow function. But for the reality of buildings – the materials and structural arrangement holding them together – Adler concluded that ‘function and environment’ [the human-made environment] determined form.” (Twombly, 1987:331).

This clearly explained the relationship of Sullivan's ‘form follows function’ theory. Nevertheless, what Adler had suggested for more than a century ago had an unintended significant influence towards the thoughts of architecture today. Our environment would determine the built form of our buildings.

Today, this theory of event and form is more emphasized and underlined. Architecture and form was more about the combination and fluidity of spaces, events and movements. Bernard Tschumi, a renowned architect and a transgression thinker in architectural issues,

suggested that architecture is “as much about the event that takes place in a space as about the space itself. In today's world where railway stations become museums and churches become nightclubs, we must come to terms with the extraordinary interchange ability of form and function, the loss of traditional or canonical cause-and-effect relationships as sanctified by modernism... There was no architecture without event, without action, without activities, without functions; architecture was to be seen as the combination of spaces, events and movements, without any hierarchy or precedence among these concepts” (Tschumi, 1997, cited in Noever, 1997:125). Tschumi even suggested that function does not follow form, form does not follow function. However form and function certainly interact, if only to produce a shock-effect.

The current event of technological impact on the information society should be the prime concern of architectural design of form and functions. This could redefine the context of the environment and events that would shape the architecture of the information age.

The Event and Impact of Information Technology – The Case of the ‘Digital Library’

“...the digital, electronic, virtual side is increasingly taking over from the physical. In many contexts, storage of bits is displacing storage of physical artifacts such as books, so the need for built space is reduced. Electronic linkage is substituting for physical accessibility and for convenient connection by the internal circulation systems of building, so that access imperatives no longer play such powerful roles in clustering and organizing architectural

spaces." (Mitchell, 1996:49)

This was a statement made by William J. Mitchell on the impact and role of information technology on the spatial elements inside the current institutional buildings such as the library. It demonstrates the ability and strong impact of technological components such as telecommunications and electronic devices on the organization of architectural spaces in particular.

Institutional buildings such as the library are very much relying on digital technologies to operate, and some have completely turned digital and virtual. At Columbia University, 'Project Janus' was developed by Columbia Law Library that replaces the physical addition to its library. This project was a five-year prototype digital library which utilized the power of supercomputers to provide users with access to various texts, sounds, images and video all from remote and local workstations. Advanced user-friendly software provides the interface to the end user. Project JANUS began in 1990 in response to a request by the Columbia Board of Trustees for the Law Library to evaluate alternative modes of library access which utilized new technologies in lieu of physical expansion of library space...ideas of coupling massively parallel supercomputing, state of the art imaging, WAIS (Wide Area Information Servers) and free text searching to build a 'virtual library' - the library of the future (McKeever, 1993).

This would summon questions on whether a library should be totally virtual or digital or physical or even a combination of all criteria. As far as form and functions are concerned, the replacement of technological components

would mean a reduction of spaces needed in the building itself. Hence less space might suggest a new breed of building façade that was previously dominated by the image of grandeur whenever one would mention a 'library building'. Even successful library designs are actually an integration of traditional elements and advanced technologies.

If libraries are less functional physically, why bother designing a majestic architectural building for the sake of the 'library' label. Why would you need huge spaces for storage and books when all you need is a place for storing compact-sized super-machines and CD-ROMs? Gone are the days of heavy and bulky encyclopedias when you can own Encarta, a digital multimedia encyclopedia that fits in a CD or DVD-ROM. In this context, building forms are slowly deteriorating because of the current altered functions.

These might be the 'ideal' scenario of the new information society and the 'world' to live in. However, the impact on the architectural facet and visual aesthetics in building would prove otherwise. Even before the emergence of new technologies, library buildings are at least pleasing to the eye although the buildings might be in fact - recycled.

"All over the world, buildings that have been recycled from an earlier function to a new one seem to serve their users better than today than they ever did before - and better than contemporary, brand-new efforts designed and constructed to a form that supposedly follows and express its function... modern Milan architect Giancarlo de Carlo has been recycling certain structures in Urbino...most

notably a convent that Carlo converted into a library for the law school of Urbino's famous university." (Blake, 1977:20, 22)

Aesthetics was the primary concern during those eras where a library should at least contain some of the recognizing elements of an institutional building. Therefore if the preferable image of a building form should reflect its functionality and activities, how should you portray the built forms digital buildings? This will be discussed in the next section.

The New Role of Buildings

As William J. Mitchell (2000:105) wrote in his famous book *City of Bits*:

"Architects of the twenty-first century will still shape, arrange, and connect spaces (both real and virtual) to satisfy human needs. They will still care about the qualities of visual and ambient environments. They will still seek commodity, firmness, and delight. But commodity will be as much a matter of software functions and interface designs as it is of floor plans and construction materials."

As computers and humans are more and more adapting towards one another, buildings are just becoming a matter of platform to satisfy the needs of allocating the hardware and software. For example, there is more consideration given towards 'wiring' up the homes and offices as everything must be compatible with the connectivity of internet and other wireless devices. While more thought are given on these aspects, the exterior and built forms of some of the 'high-connectivity' buildings are not so convincing. Based on an observation through the Silicon Valley by Schwarzer tells us,

"If there is a language in the Valley, it is supplied by the sign." Everywhere, the company logos are downloaded onto roadsides appalling in the doldrums of mass-produced uniformity. In place of urbanistic gradation of scale, space, and density are commonplace buildings and streets made special only by their company stars, the emblem of Intel and Apple, a dialect that relates far more to global capital and cyber culture than to local history or public space" (cited in Horan, 2000:47). Therefore a building of such ingenuity should be at least convincing to the eye of passer-by in terms of its exterior presentation, as it is in the interior. Identity is the key architectural element to be considered, and it doesn't matter how advance or high-tech a building may be.

Building should not just be a camouflage that hides the innovative functions and mechanism inside but must also be as expressive and exciting. The quality and aesthetics of the urban fabric and landscapes relies on the composition of building forms. If the exterior form of buildings is as mundane as it looks, the quality of an urban experience (such as walking, touring, etc.) will depreciates as time goes by. Living in an 'information society' would be living as normally as you'll be. The only thing that changed is the continual support of technologies in your everyday lives. There will be time to take a walk in the park or jog through an urban scene, so architecture and forms should continue as usual, continuing to please the observer.

Thomas Horan (2000:6) in his book, *Digital Places* wrote:

"While the virtual world of websites and chat rooms provides an intoxicating array of new

experiences, it is not realistic to think that we can disassociate ourselves from our physical environment. Rather, the rise of cyberspace begs an examination of its connection to the physical world, the world of bricks and mortar”.

Then again, the virtual connection to the physical world might mean more than just a world in ‘augmented reality’ (AR). AR would combine the real and virtual objects in a real environment by correct alignment, occlusion and lighting or virtual objects in real view (Lange & Bishop, 2005:14). In this sense, the user walks through to the physical world with a digitalized vision, usually embedded with information. In the world today, the demand for more physical interaction is needed as the efficiency of technology has caused a diminution in ‘human connectivity’. Our physical habitat had also become more dispersed and fragmented due to the rapid development in transportation networks (Mitchell, 2003).

Recombinant Form and Functions

“We find it today in Tokyo, with its multiple programs scattered throughout the floors of the high-rise buildings: department-store, museum, health-club, railway-station, and putting-greens on the roof. And we will find it in the programs of the future, where airports are also simultaneously amusement-arcades, athletic-facilities, cinemas, shopping centers and so on...Here, all hierarchical relationships between form and function cease to exist.” (Tschumi, 1997; cited in Noever, 1997:126).

Today, computers and internet have already replaced the conventional functions of our daily activities that usually require a walk

down the road, for example shopping your groceries, dropping your letters at the nearest post-box, borrowing books from the library and so on. These activities have been replaced by online shopping, e-mail technology and web surfing for information or downloading e-books for that purpose. As discussed in the early topics of this essay, technology has changed the basic requirements for space in a building. Less space is needed for example for storage purposes as these are replaced by computer software and hardware. Therefore, this might be the one of the reasons behind the concept of recombination of functions in ordinary buildings. Conceptualized by William Mitchell, ‘recombinant architecture’ in which ‘telecommunication systems replaced circulation systems, and the solvent of digital information decomposes traditional building types,’ the process of creating digital places can be thought of as ‘recombinant design’ (Horan, 2000:12). Buildings are more flexible in form and functions, and these new breeds of buildings are increasingly becoming popular. Banks are also a built-in coffee house, and more residential houses have replaced the role of office buildings. Whatever you’ll find in an office could be found in most houses in towns and even villages. The roles of building form as the sole representation of its function are no longer the issues. Probably, nowadays most people are only concern on what the building will offer as a service to them, regardless of how it looks.

As the boundary between physical and virtual cyberspace are fading away day by day, architecture and building forms are facing more challenges than ever before. As more people are turning to computer interfaces

rather than building façade to serve their daily purposes and activities, we begin to wonder if the future of our building forms and functions are also fading away.

Recombinant architecture could be a sign of less number of buildings but with more functions and utilities. This could be a good sign for the environment as less constructed structures (building's) could mean a more preserved environment to the community. But buildings would be impossible to fade into the atmosphere as people are constantly changing the events and technologies. Buildings would be more intelligently constructed in the future in sync with the advent of new technologies.

Thoughts for the Future

Although we are constantly moving forward into the future of digital architectural realm, the basic fundamentals of architectural principles should be obeyed. Fundamentally, architecture is the art of space. Benedikt, (1992: 243) wrote: "There are three fundamental requirements for the perception of space: reference, delimitation, and modulation. If any one is absent, space is indistinguishable from non-space, being from nothingness. This would suggest that cyberspace does not exist until a distance can be perceived between subject and boundary, that is to say, until it is delimited and modulated". No matter how we're totally adapted into technology, even to a large extent that every aspect of our daily life would be embedded with digital tools even to our homes, buildings should ever remain as shelter and dwelling. Cyberspace and the virtual realm are quite near but yet so far in transforming the

fundamentals of the physical building form and functions. Form and functions are integrated in the context of the information age and society where functions and the events of technology would determine the built form of a building. It is this event of technology that separates us from our forefathers of the 'form follows function' dogma. Building forms should try to reflect the identity of a place regardless of function or even technology for that matter.

"...there is no such word as 'Technology' that presides over all social conditions and relations; there are different technologies and attitudes toward technology, some of which are indispensable to restoring the balance (between humanity and nature), others of which have contributed profoundly to its destruction. What humanity needs is not the wholesale discarding of advanced technologies, but a sifting, indeed a further development of technology along ecological principles that will contribute to a new harmonization of society and the natural world." (Bookchin, cited in Abel, 2000:203).

Virtual forms of houses and buildings could be a reality in the distant future but the experience of physical and real life is still immeasurable. Technologies would persist on expanding the functions and events of our buildings. Does function defies form in the architecture of the information age? Perhaps not, as quoted by Horan (2000): "...real life is still the best high-bandwidth experience!"

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