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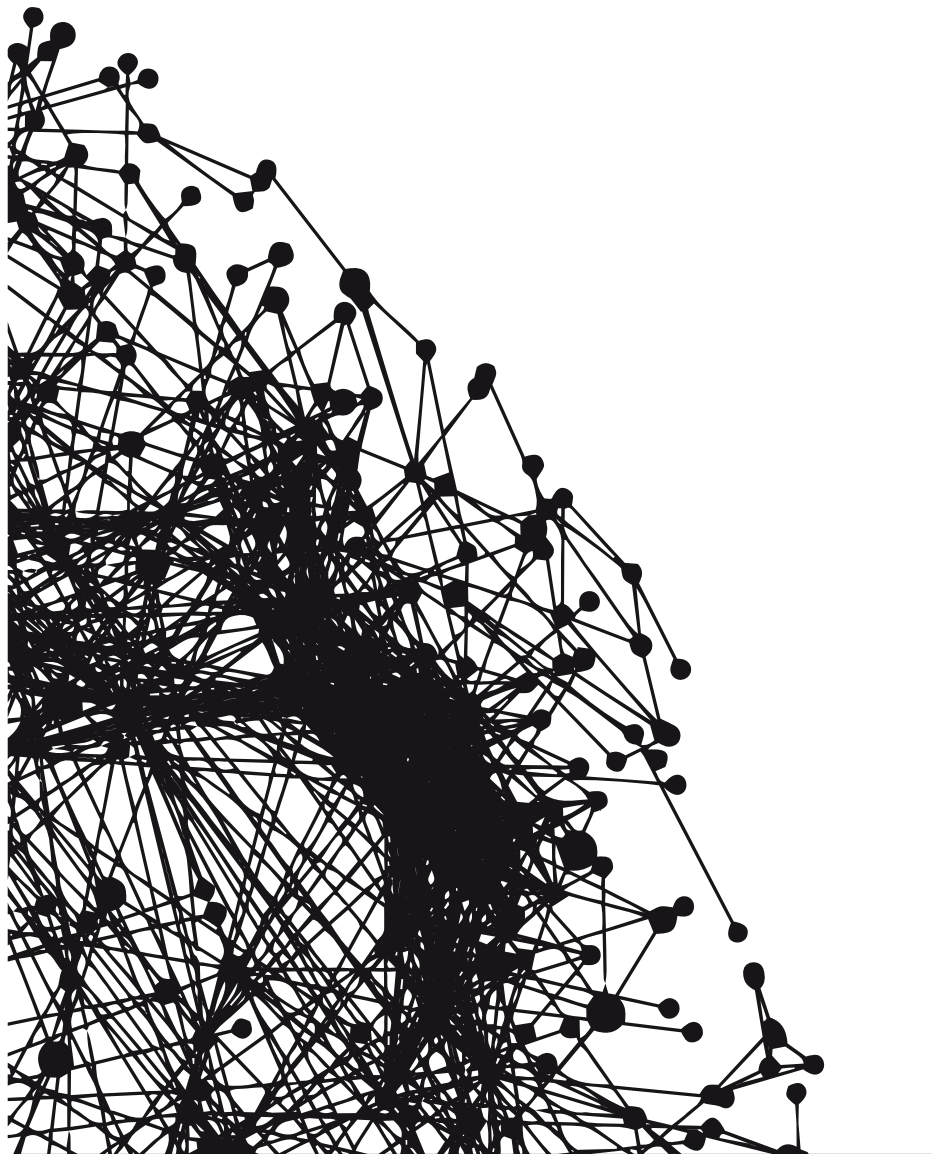
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IDENTITY OF NEW MEDIA SPACES

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ABSTRACT

This paper has the goal to analyze influence that new media and technologies have made on the identity and quality of architectural space. In the present Information Age, digital technologies have crucially influenced and changed our reality, the way we behave, connect or communicate. Being part of the overall reality, architectural space is not an isolated category. It has also received and adopted the influence of new media and technologies. The way people communicate with space, due to new technologies, is now different. In some cases space is becoming an interface, a navigational environment waiting for the user to explore it. This paper analyzes the emerging new categories of space - new media spaces, qualities that such spaces possess and the identity they have developed.

INTRODUCTION

The phenomenon of new media has a strong impact on both the theoretical and practical fields of art and architecture. Many theoreticians are being preoccupied with the impact of this phenomenon in the fields of art and architecture, trying to grasp its essence and define its language, giving us a valuable theoretical framework for further analysis. At the same time, contemporary practice leaves us without breath with numerous new examples of creative use of technology in the processes of defining and creating space on the verge of the believable.

How are the new media redefining the notion of space in architecture, what are the boundaries of such space, what is the role of the human body in such a space, how is our perception challenged, are all questions to be answered later.

NEW TECHNOLOGIES AND MEDIA - ELEMENTS OF THEIR IDENTITY

What are the *new media*? What does the term *new media* mean? The term *new media* also has a more precise form - *new technological media*, through which we can better understand its full meaning. So, the term *new media* in architecture

assumes that new technologies have been used as *medium*⁹⁰ for conceptualizing, producing, creating and presenting, even experiencing, space in architecture. Nowadays traditional media and categories in art and architecture such as painting, sculpture, photography, façade or wall surface, lightning, public space... and so on... are being infused and redefined by new technologies, therefore becoming more extended and more complex categories.

Digital Technologies

The most influential in terms of creating a new identity and new qualities, not only of space, but the overall reality, are undoubtedly the digital⁹¹ technologies. During the 1990s their rapid and unstoppable development⁹², became a phenomenon known as the digital revolution. An important part of this phenomenon was especially the advent of the World Wide Web, which added a special layer to global connectivity (Paul, 2008). The main characteristics of the digital media, defining its identity, are *interdisciplinarity, evolvability, participativity, dynamism, adaptability, system-based logic* and so on. New concepts derived from digital technologies, also strongly influencing the identity of space are: *Coding and recontextualization of information, processing; Interactivity, concept of the interface and the user; Connectivity and telepresence; Virtuality, composite and augmented realities; Cybernetics, concept of man-machine, artificial organism, science fiction*. Being infused by digital technologies, significant advancements appeared in the fields of light technologies and bio-technologies, which are nowadays becoming more and more present in space.

Light technologies

Lighting of architectural space has always been a strong element in defining the overall identity of space, with special influence and power on modeling psychological experience of the space. By differently defining the entrance points of natural light in space or, in case of artificial lighting, choosing a certain tone, color, source or position of light, architectural space can be radically altered, and the perception can be easily altered. Nowadays lighting technologies can give plain space additional layers, creating a virtual moment in space, not physical but perceivable. In the age of digital media light technologies such as LED technologies, laser, neon, electric light and fiber optics... have been paired up with digitally driven systems to become *dynamic, responsive or sensitive*. Modern concepts of light technologies are *computer-controlled dynamic light systems* as well as *smart light-infused materials*.

Biotechnologies

Engineers today are more and more interested in investigating “emerging and progressive biological advances upon architectural and design practice... This covers

⁹⁰ An agency or means of doing something.

<http://www.oxforddictionaries.com/definition/english/medium>, accessed January 10, 2014.

⁹¹ Involving or relating to the use of computer technology.

<http://www.oxforddictionaries.com/definition/english/digital?q=digital>, accessed January 10, 2014.

⁹² Although foundations of many digital technologies go back sixty years

a wide range of disciplines, encompassing biology, microbiology, biotechnology, medicine and surgery” (Castle, 2008, p.4). Nowadays we have emerging terms and fields of architecture such as *protocell* architecture, *neoplastic* design, *biomimicry* forms, *organic* architecture, and *biomorphic*, *morphogenetic*, *fluid* forms and so on. What is especially provocative from the architectural point of view is that these disciplines “put forward a wholly new proposition for architecture. It challenges the very notion of what the substance is and what it can be...” (Castle, 2008, p.4). In the core of such technologies and concepts derived from them, lies the ultimate phenomenon of '*biologicalisation*' of the present world. “Biotechnology, including disciplines such as genetics, molecular biology, biochemistry, embryology and cell biology, as well as chemical engineering, information technology and robotics, is the area in which developments possess, for better or worse, the highest potential for changing the way we understand life” (Cruz and Pike, 2008, p.9). These technologies have developed concepts in architecture such as *bio-architectural composites*, *semi-living spaces*, *synthetic but evolutionary spaces*...

THE IDENTITY AND QUALITY OF SPACE

Technological development is one of the main characteristics of the modern age. It seems that architecture is more and more becoming dependent on technological concepts. Architectural space has always been an embodiment of the technological spirit of the time. During the Industrial Age architectural space was strictly defined, constructed mainly out of steel and glass, with a clear notion of modular assemblability and prefabrication. First the Crystal Palace in London and later the Eiffel's Tower in Paris strongly demonstrated domination and possibilities of materials such as glass and steel.

The present Information Age, in which we live is dominated by digital systems. Frank Gehry's Guggenheim Museum in Bilbao Branko Kolarevic sees as “probably the best known example that captures the *zeitgeist* of the digital information revolution... Information Age, just like the Industrial Age before, is challenging not only how we design buildings but also how we manufacture and construct them” (Kolarevic, 2009, p.3).

Not only in relation to technology, has the identity of architectural space always embodied the *zeitgeist* in which society exists. It reflects the overall principles and qualities appreciated by the society. Architectural space in the Classical Period reflected principles of immortality and duration. Through the Renaissance Period it reflected order and proportion... and in the Industrial Age mass production and modularity. Nowadays architectural space reflects principles and qualities such as *mobility*, *adaptability*, *flexibility*, *responsiveness*, *interactivity* and *virtuality*. All of these elements of identity reflect concepts derived from new media and technologies. More than ever the line between science and art is thin. Today scientists, researchers, explorers, all those who explore possibilities of applying new technologies in terms of narrative, but also realization of space are pushing architecture forward.

So what is the identity of new media spaces? For modern engineers “...Imperatives of modernism – mass production and the prevalence of a rational and functional approach – are more obsolete. Instead, their pieces are intended as sophisticated fairytales for grown-ups. They speak to the mind in subliminal narratives, and instill controversial feelings of opulence... and fragility. The sensual darkness of their work opens the doors of a mysterious and fantastic world, where their designs become the protagonist in our own imaginary piece of theatre” (Freyer, Noel, Rucki, 2010, p.16). What are qualities of such modern fairytales? Virtuality, illusion, enhanced sensing, abandoning the physical, enhancing the reality?

NEW MEDIA SPACES AND THEIR IDENTITY

Interactive Space

Interactive space is an ever more present category in nowadays architecture. This type of space has, as the main concept, *interactivity* which derived from digital technologies and media. For most digital technologies interactivity is a fundamental concept. In order to use computers or some digitally driven systems it is necessary for the user to make input contact and continue using the system in the appropriate way. *Interface* is a navigational method or a device that guides the user through an action he has started with the system. The *user* is a much needed category in the world of digital systems and this concept of the information media has been translated onto the identity of interactive spaces.

Due to the use of digital media, architectural space is nowadays transforming into interface, a navigational environment waiting for the *user* to experience it or put it to purpose. Interactive concepts in space are in their nature *event-based*. The main identity characteristics of such environments are *flexibility, responsiveness, changeability* and *connectivity of remote places*. The aesthetics of such space is specific, non-static, usually time-based or limited, finally non-readable in some cases without the external context information. The main quality of interactive space is that it is responsive to “human body which is able to directly experience its environment in a very direct and personal way” (Bullivant, 2006, p.7).



Figure 1: Bridge. Michael Cross. 2006. <http://www.microsiervos.com/images/michael-cross-bridge.jpg>

BRIDGE. MICHEL CROSS. 2006. DILSTON GROVE. This interactive environment is seeking human interaction to enable a dream-like scenario. Floor space of the disused concrete church is filled with dark water. As a person approaches to water by stairs, a small wooden step suddenly raises from the depth, inviting the visitor to continue walking on water. As a person does so, another step emerges. As the steps emerge in front of the person, they also disappear behind him (Freyer, Noel, Rucki, 2010). By allowing us to fulfil the everlasting dream of walking on water, this interactive environment creates, as told by users, *a very immersive, slightly frightening, physically involving experience*. As steps are so subtly emerging and disappearing, they appear as almost non-existing, giving the human interaction with water a more intense and unsecure feeling.

3D KINETIC FACADE IN SOCHI. ASIF KHAN. 2014. Olympic Face Detection: An extendable telescopic cylinder should transform, within seconds, the faces of the visitors into digital data sets and into a model larger than life, on the textile white membrane of an interactive façade, during the 2014 Winter Games⁹³. As the main concept, the project has the concept of innovative communication between the user and the architecture. Boldly and questionably, this concept is putting terms like *selfie picture* and *architecture* in the same sentence. Functioning of the space is based on a photographic approach, and the developers are hoping to gain cinematic experience. The aesthetics of this space is not conventional. It is process-based, where we find beauty more in the process itself - the way architecture is becoming a photographic media, then in any other traditional way. Looking at it, we see space that combines and blurs media and categories such as photography, cinema and architecture. The main quality of this space is that it is offering bold ideas about how traditional architectural surface can be treated; that it can become interactive and dynamic media for interpreting and exploring information society phenomena and habits.

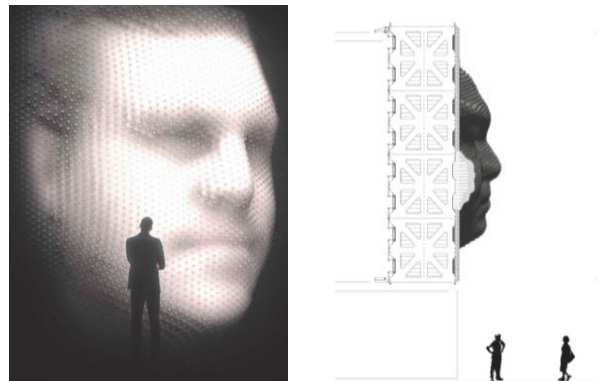


Figure 2: Kinetic Façade in Sochi. Rendering: Asif Khan.

<http://www.detail.de/architektur/news/selfies-in-3d-kinetische-fassade-in-sotschi-022685.html>

Figure 3: Kinetic Façade in Sochi, Graphics: iart ag

<http://www.detail.de/architektur/news/selfies-in-3d-kinetische-fassade-in-sotschi-022685.html>

⁹³ <http://www.detail.de/architektur/news/selfies-in-3d-kinetische-fassade-in-sotschi-022685.html>, accessed January 28, 2014.

Virtual and Augmented Space

Digital media have given a new dimension to the concept of virtual reality, augmented reality or the composite one. But the term *virtual* is not new. The use of the term can be traced back to the late 14th century. The first dictionary definition dates back to 1902, where "A virtual X (where X is a common noun), is something, not an X, which has the efficiency (virtus) of an X" (Baldwin, 1903, reprinted in Pierce, 1958, vol. 6, p. 372). So in the terms of reality, virtual reality would be not exactly a reality but having all its *virtues*. It is a *latent event, not real but can be experienced, not existing but existing* and so on... Virtual reality is perceivable, but not physical in all its aspects. *Virtual reality* and *virtual space* are complex philosophical questions. The concept of existing, being present in virtual space, can be grasped through the definition of the philosopher Michael Heim "Something can be present in virtual reality without its usual physical limitations" (Heim, 1993, p.160). When digital media appeared, they quickly established domination, not only over the term, but also over the category of space itself. Virtual space is nowadays, in most cases, generated and accessible by digital technologies only. Virtual space is a complex category in architecture, highly dependent on technology, challenging questions of perception, physical senses and presence in space. In the Digital Age, in a new way, *virtuality* is becoming a quality of space, with endless possibilities for developing. Virtual spaces especially challenge traditional concepts of reality and presence of physical body in space (Paul, 2008).

ONDULATION. THOMAS MCINTOSH.2002. *Ondulation* is a composition for water, sound and light. The main subject of the space narrative is visualization of sound. In semi-darkness, water in a large basin ripples, as waves radiate across its surface, with perfect mathematical purity. Two powerful speakers, concealed beneath the elastic lining of the pool, allow for the sonic vibrations to be transmitted into the fluid. Water movements reflect on surrounding walls (Freyer, Noel, Rucki, 2010). Due to mixing virtual categories such as sound and light, with physical medium of water into unified visual equilibrium, the overall experience of the space gets to be highly immersive. This immersive space possesses quality of augmented reality, reaching highly unstable, highly sensitive, fragile and poetic aesthetic values.

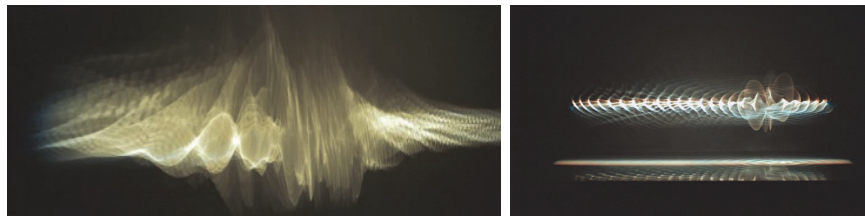


Figure 5: Ondulation. Thomas McIntosh.2002 http://www.undefine.ca/wp-content/uploads/2009/09/008_Ondulation-420x168.jpg

Figure 4: Ondulation. Thomas McIntosh.2002 <http://www.fondation-langlois.org/media/CRD/public/d00017911.jpg>

OSMOSE (1995), *EPHEMERE* (1998). CHARLOTTE DAVIES. These two virtual-reality environments present classics of the category of completely immersive environments that push viewers heavily into an alternate world. In *Osmose* the user enters the virtual space by means of head-mounted displays and a monitor tracking vest that tracks the wearer's breathing and balance. The world is at first a three-dimensional grid that introduces coordinates for orientation. "The breathing and body balance of the system users transports them into a forest and other natural environments. To avoid representational realism in the creation of her worlds, Davies provides in space an element of translucency and use textures that suggest a constant flow of particles"(Paul, 2008, p.127). *Osmose* is a sensual environment, but as Paul notes, it includes layers of „text“ and „code“, which illustrate the software on which the work is based. It investigates the relationships between technology, nature and body, three categories nowadays seriously challenged and interconnected. In *Ephemere* Davies uses a structure of three main levels – landscape, earth and interior body. *Ephemere*, like *Osmose*, includes *interior body* realm and blurs the boundaries between the subject and its surroundings. The main quality of this space is that by „immersing viewers in a virtual world driven by their own body and breathing“ it is radically challenging traditional notions of embodiment and the body's connection with its physical environment (Paul, 2008).

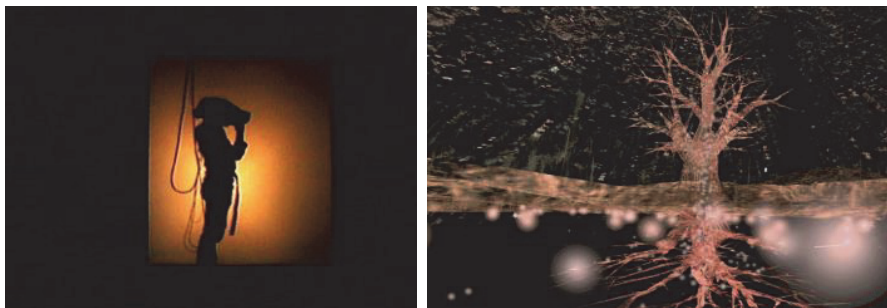


Figure 6: Virtual Reality Headset. <http://www.immersence.com/publications/1998/1998-MMirapaul.html>

Figure 7: Virtual Reality Headset. http://www.digitalstudies.org/ojs/index.php/digital_studies/article/viewFile/181/249/1192

Illuminated Space

Engineers today are using computer-controlled lighting technologies as a dynamic sculptural element in space. Digitally-driven light installations, flexible and responsive LED screens and surfaces, pixelated light, kinetic light sculptures, interactive laser installations... are nowadays highly effective visual systems that strongly define the identity of space. Such spaces partly inherit the identity characteristics of digital media (*interactivity, responsiveness or participation*) and partly the identity of light technologies - *immateriality, make-believe, transparency or lightness*. Some elements of identity are mutual for the digital media and for the lighting systems. Those are qualities of *virtuality* and *immersiveness*. Lighting

technologies have also paired up with physics in order to create materials that are light-infused. Such materials were at the beginning plain fibre-optics, but now, in order to achieve some new qualities of space, creative industries have paired up with science labs to realize the idea of reinventing traditional materials and infusing them with light. 'Dynamic fluo paint', smart materials that can glow as reaction to temperature changes, or other physical stimulus⁹⁴ are just some contemporary concepts of using light in a new way in architectural environments.

OPEN AIR. RAFAEL LOZANO-HEMMER. PHILADELPHIA. 2012. This work is an example of a digitally driven interactive light-system project that adds a new layer to plain earthly space by illuminating the sky above Philadelphia's historic Benjamin Franklin Parkway. Twenty four powerful searchlights create unique, dynamic light formations in the sky, which react to voice messages sent by participants using a free mobile app and website. Lights react, in brightness and position, to the frequency and amplitude of the voice recordings, creating an intense, dynamic and virtual layer in space. We see again technology and nature intersecting. Beautiful scenes of illuminated night sky, the depth and the scale of it, its dynamism, present us the usually hidden sub-layers of space at night.



Figure 8: Open Air. Rafael Lozano-Hemmer <http://www.lozano-hemmer.com/showimage>

Figure 9: Open Air. Rafael Lozano-Hemmer http://www.lozano-hemmer.com/showimage.php?img=philly_2012&proj=Open%20Air&id=66

VIDEO PROJECTION MAPPING. Techniques of video projection mapping are nowadays widely spread and used in architectural space. Their dynamic nature and carefully planned positioning in space have a strong power of creating illusion in space, giving it a virtual layer of dynamism. At first, projection mapping was used on large scale facades of objects in public space, but now it is also being used in interiors, becoming the dominant element of the identity of space, producing a more intimate connection with the viewer. Here we can see space becoming *media* in terms of mass communication. Animation, video and cinematic media in this case get a new canvas, in the form of an architectural surface. Joined together in a new

⁹⁴ <http://www.studiooosegaard.net/project/smart-highway/info/>, accessed January 23, 2014.

way, video and architecture influence one another as to create a whole new experience and a new dimension for both traditional categories.



Figure 10: Songdo. AntiVj. 2009. South Korea <http://www.antivj.com/>

Figure 11: Atrium Champagne Bar, London Foster+Parters, 2013. <http://www.dailytonic.com/atrium-champagne-bar-by-foster-partners-uk/>

SMART LIGHT-INFUSED MATERIALS. At the moment, Studio Roosegaarde is one of the first to experiment in practice with the light-infused materials and smart light technologies. One of the small scale projects of the studio, the Van Gogh Bicycle Path, whose final design is expected to be finished in 2014, and realised in the Province of Noord-Brabant in the Netherlands, demonstrates the possibilities of these techniques of lightning and the identity it can create in space. The Roosegaarde - Van Gogh bicycle path makes use of the light-emitting techniques of the Smart Highway concept, a joint development of Studio Roosegaarde and Heijmans for the highway of tomorrow. The path should consist of thousands of sparkling stones designed by artist Daan Roosegaarde. The light stones will be used to create patterns in the path that will charge during the day and emit light during the evening. "This creates interplay of light and poetry. The design this way provides a modern interpretation to Vincent van Gogh. Cultural heritage and innovation merge in this new, public landscape"⁹⁵.

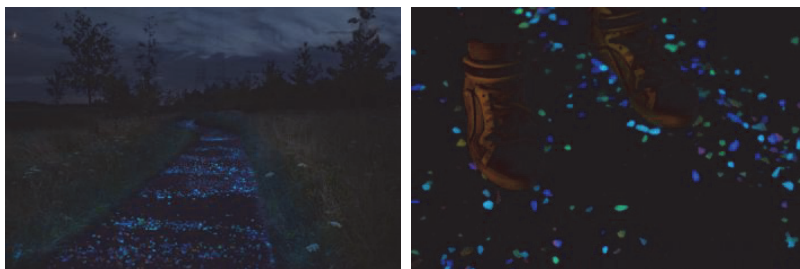


Figure 12: Van Gogh Bicycle Path. Roosegaarde. http://uk.heijmans.nl/Roosegaarde-%20Van_Gogh_Bicycle_Path#.UmjeGmkW2Sd

Figure 13: Van Gogh Bicycle Path. Roosegaarde. http://uk.heijmans.nl/Roosegaarde-%20Van_Gogh_Bicycle_Path#.UmjeGmkW2Sd

⁹⁵ http://uk.heijmans.nl/Roosegaarde-%20Van_Gogh_Bicycle_Path#.UmjeGmkW2Sd, accessed December 28, 2013.

Bio-Synthetic Space

Protocell technology represents chemical innovations of synthetic biology - “that is artificial cell systems that self-reproduce and maintain themselves” (Castle, 2011, p.5). In this technology we find science disciplines like microbiology, medicine, chemistry, but also ecology. In the terms of architecture, its main vision is to create synthetic but evolutionary systems of cells, that can evolve from a micro level to fully built structures and spaces, creating functional and sustainable environments. The main characteristics of the identity of this technology are *evolving*, *manipulation*, *repositioning* and *restructuring*. Space created on protocell principles should also gain these same characteristics and qualities. Such space would be an artificially designed living system, and this concept is yet to be explored for its possibilities in architecture.



Figure 13: Hylozoik Ground. Philip Beesley.
2010.http://i1.ytimg.com/vi/v86B9Nz_LVU/maxresdefault.jpg

Figure 14: Hylozoik Ground. Philip Beesley.
2010.http://i1.ytimg.com/vi/v86B9Nz_LVU/maxresdefault.jpg

HYLOZOIC GROUND. PHILIP BEESLEY. CANADIAN PAVILION, VENICE BIENALLE, 2010. Hylozoic Ground is installation based on protocell technology. “It is an environment organized as a textile matrix supporting responsive actions and 'living' technologies, conceived as the first stages of self-renewing functions that might take root within a future architecture” (Beesley, Armstrong, 2011, p.81). The protocell populations are designed with the same metabolism. They are sensitive to environmental conditions and respond locally to the presence of metal ions in the flasks. The chemical metabolisms are connected via the neural net of the responsive geotextile system as well as through the physical and chemical changes in the environment. The protocell metabolisms are able to respond to heat, light and the presence of carbon dioxide. As result they produce a colorful landscape of crystals at the oil/water interface that gradually become petrified over the duration of time. Protocells are chemical systems capable of behaving in ways we would associate with life. By building environments of responsive and complex protocell systems, gradually we could come to the point of communicating with space as if it is alive (Armstrong, 2011).

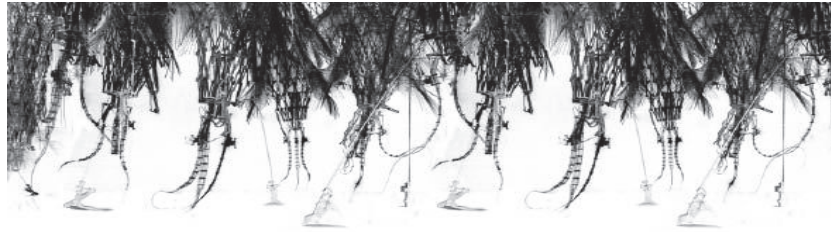


Figure 15: Hylozoik Ground. Philip Beesley. 2010.
http://i1.ytimg.com/vi/v86B9Nz_LVU/maxresdefault.jpg

CONCLUSIONS

The most influencing technology of today, becoming not only a tool, but also a media in architecture is the digital technology. Paired up with light technologies and bio-technologies, it is unstoppable in inspiring and suggesting new possibilities for development of architecture. It has influenced the notion of space in architecture by developing new concepts, new identities and new features of space as radical as being synthetic or semi-living. Space has become event-based, interactive, responsive, performative, augmented, virtual, smart, evolvable, adaptable, and so on. It has adopted the main principles and concepts of the technologies that mediate it. The main adopted principles, derived from digital technologies, which influence space are the principles of user/interface communication, processing and virtual reality. Advancements in bio-technologies have made principles like living, evolving, adapting and sensing become a possible direction of development of architectural space. In terms of light technologies light-infused materials, video mapping and dynamic light systems have made it possible for light to get a more dominant role in defining the overall identity of space.

What is certain is that nowadays the term *architectural space* is not a clear category; it is upgraded with the virtual space of new media. More often instead of *space* we use with the term *environment*, because of all of the extended layers in which it manifests and can be perceived. In such environments the role of the physical human body is radically changing. The limits and the future possibilities for the human interaction with space, and the experience of it, are yet to be seen.

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