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# Media architecture – participation through the senses

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## ABSTRACT

Pervasive media and interactive technologies have become inseparable not only from our everyday life but also from architecture and city spaces. However, the generic use of new technologies in the design process and material production that affects contemporary architecture, results in buildings that become mere visual objects losing their hapticity and non-visual qualities. Despite the substantial advancement in the research studies on human sensorial perception, the potential of cities to affect and co-create our sensuous experiences has diminished dramatically. The paper examines recent artistic practices that involve new media technologies focusing on their potential to create interactive environments that due to their multi-sensory qualities induce people to participate through their senses. The steadily growing interest in exploration of the role of media and interactive technologies in generating sensorial experiences establishes an important direction toward new kinds of their applications in architecture and city spaces. This work emphasizes the

power of media and interactive technologies as important tools that incorporated in architecture demonstrate the ability to enrich the sensory perception of the cities.

Categories and Subject Descriptors:

J.5 [Arts and Humanities]: Architecture.

General Terms:

Performance, Design, Experimentation, Human Factors, Theory.

Keywords:

Perception, senses, interactive, participation, media.

## 1. INTRODUCTION

The constant evolution and spread of new technologies that have become ubiquitous in our everyday lives, has influenced our work and life habits, as well as the modes of space use and structures of buildings and cities. The steady interdisciplinary interest in technologies and media in architecture has been followed, on the other hand, with exploration of their impact on human responses, space perception and social interactions. At the same time, the research on the significance of multi-sensory perception of space in architecture is being developed.

Many scientists, architects and researchers underline the importance of maintaining the sensorial qualities of architecture and city environments. Juhani Pallasmaa, one of the most notable researchers in this field, states that significant architecture and, in fact, all meaningful art “directs our consciousness back to the world and towards our own sense of self and being” and lets us “experience ourselves as complete embodied and spiritual beings”. Clearly embedded in phenomenological concepts of Maurice Merleau-Ponty, Pallasmaa highlights the role of the embodied perception in architecture, calling it “the art of reconciliation between ourselves and the world”. This mediation, according to Pallasmaa, takes place through the senses [17].

Paradoxically, together with gaining knowledge about human senses, sensorial systems of perception and their crucial role in our lives, scientists and researchers notice deteriorating conditions of sensorial city landscapes. It was decades ago when Edward T. Hall, taking the anthropological perspective, as one of the first, wrote that American city dwellers were devoid of opportunities to actively experience both their bodies and spaces around them. In Hall’s opinion city spaces are of poor visual diversity, giving no possibility to enrich the spatial sensations [8]. Nowadays, as Charles Landry claims “our perceptive capacities are shrinking because we do not sufficiently recognize or practice most of the senses. By diminishing our sensory landscape, we approach the world and its opportunities within a narrow perspective” [11]. Landry notices that paying more attention to the sensual aspects of the city spaces has a great potential to influence inhabitants’ opinions and contribute to numerous real changes in the surrounding urban environment. It gradually appears that the exploration of the potential of sensual qualities of urban spaces may significantly affect the future development of the cities. In this context, it is particularly important to recognize the possible paths of development of media architecture and its power to enrich the quality of urban spaces. Is it possible that new technologies will play an important role in re-

constructing sensual city landscapes and creating multi-sensory urban experiences? Based on the research concepts and examining recent artistic practices supported by new technologies one can remark their substantial role in re-creating sensorial qualities of contemporary cities.

## 2. VISUAL DOMINANCE IN CONTEMPORARY ARCHITECTURE AND CITIES

Contemporary cities owe their shape and condition mainly to the industrial and technological progress, which played the main role in changing urban areas to their current form and actually still has a great impact on their physical and social structures. New technologies and media products influence our perception and the qualities of the space itself. Noticeably, the visual dominance in contemporary architecture and cities seems to be prevailing. “The current industrial mass production of visual imagery tends to alienate vision from emotional involvement and identification, and to turn imagery into a mesmerising flow without focus or participation” [17]. Due to the dominance of sight, isolated from the other sensorial domains and the integrating existential sense, architecture is threatened to lose its material existence, its hapticity and tactile intimacy. Pallasmaa observes that very often the technological development is to blame. He warns that uncritical use of digital technologies leads to extension of the visual domination, which causes the sense of distance, alienation and unreality [18]. This kind of criticism is not unique. What is interesting, Christian Moeller, an acknowledged artist experimenting with media technologies, shares a similar opinion: “The electronic city is a flood of potentially decodable signs. [...] As modern display and projection techniques develop, the architectural dimension of moving images will continue to overtake the urban landscape. While this poses incredible artistic opportunities, it is also certain to bring a ridiculous and tragic media sprawl” [15].

Even though the technological development seems to have brought destructive changes considering the sensorial landscape, it equally opened new ways toward its regeneration. Remarkably, it was McLuhan who quite prophetically suggested that “by imposing unvisualisable relationships that are the results of instant speed, electric technology dethrones the visual sense and restores us to the dominion of synesthesia, and the close interinvolvement of the other senses” [13]. Analyzing the impact of technology on the aural experiences Barry Blesser and Linda-Ruth Salter emphasize today that technology influences sensory perception, spatial cognition, and social dynamics. They believe that “the industrial revolution was also a sensory awareness revolution” [2]. In their monograph on experiencing aural architecture they quote Neil Postman, who argues that “technologies created ways in which people perceive reality, and that such ways are the key to understanding diverse forums of social and mental life” [2].

Consequently, a growing number of media artists, architects and designers use the potential of technologies to create sensual experiences or try to focus the observers’ attention on the non-visual aspects of their works. They construct their own approaches toward discovering urban spaces by means of technology and human senses. “Even the most ‘technical’ of my projects is not about technology itself, but about people, their ability to manipulate and to be manipulated by its environment”, says Christian Moeller. “Today and always, the spaces we inhabit are designable as sensation, as technology, as cognition. To explore the beauty of this condition is the first and last problem of media architecture” [15].



### 3. MEDIA SPACES AND SENSORIAL LANDSCAPES

Vilèm Flusser, an important media theorist of recent years, claims that “what we perceive as reality is a tiny detail from the field of possibilities surging around us, which our nervous system has realized through computation. If all reality is a computation from possibilities, then 'reality' is a 'threshold' value”. Adam Somlai-Fischer, media teacher, theorist and researcher, finds it important to focus the architects' attention on this matter, particularly on the fact that “electronic media saturate our cultural environment, influencing our perceived reality” [4]. Media theorists and designers have distinguished new realities that emerged together with the pervasive technologies and “ubiquitous computing” [6]. To wit, a range of terms has been created, starting from “intelligent environments” [6], through “relational architecture” by Lozano-Hemmer, ending with “augmented space” – term invented by Lev Manovich [12]. Moreover, Daan Roosegaarde in the publication of his works defined them as 'interactivelandsapes' [20], while Lucy Bullivant extracts 'responsive environments', by selecting installations which “impact is phenomenological, meaning that the body is able to directly experience its environment in a very direct and personal way” [4]. Finally, Usman Haque makes a distinction between the meaning of reactive and interactive environments.

Consequently, technology becomes an important means of both constructing and revealing the reality of the contemporary city. Research concepts and recent artistic practices disclose the substantial potential of media architecture and interactive spaces to extend human perception. Architects, artists and media designers, cooperating within various interdisciplinary groups, create installations, spaces, landscapes, that through their sensual properties contribute to the urban environment. It is achieved not only directly, through the introduction of the new sensorial stimuli as sounds or innovative genres of light, but also by the noticeable strive toward unveiling the hidden, but nevertheless existing layers of reality. For instance, the ambition of the artistic research group Senseable City Laboratory established by Carlo Ratti is to map invisible flows and networks, such as distribution of cell phone calls in selected cities. As a result of these investigations a dynamic digital field is identified, that transformed into graphically represented network, constitutes a starting point for artistic and architectural concepts for the particular installations [19]. These kinds of experiments gain additional importance in the context of the scientifically confirmed extensions to the list of five senses, identified by Aristotle, that includes nowadays, depending on the sources, between nine and twenty one human senses like for instance sense of balance or electroperception [11].

What is more, studies on users' active responses triggered by technologically based media and interactive installations reveal their significant role in the enhancement of the urban sensorial dimension. Frequently, artists and architects not only 'seduce' a passive observer to become an active participant by involving attention, body and senses, but also introduce new elements which contribute to sensorial city landscapes. Designing the choreography of movement through space, the constellations of unpredictable encounters, they expose visitors to experiments challenging their sense of balance, closeness, distance or relations. It allows users to discover different types of their sensory intelligence including visual-spatial, body-kinesthetic, interpersonal, intrapersonal, using the terms developed by Howard



Gardner [7]. By filling the once neutral space with memories, reflections and emotions they transform the sterile urban areas into personal and social urban landscapes, which could constitute a remarkable step toward more complex strategies of urban regeneration.

Consequently, media and interactive installations are recognized as an efficient tool for provoking social interactions and their potential to transform existing configurations of public spaces is gradually recognized. Analyzing the 'media city' Scott McQuire poses the question about the capabilities of pervasive media to change the dynamics of public space, and suggests that "the experimental practices of contemporary media art can offer a useful test-bed for exploring the critical potential of relational space – the demand to actively construct social relations to others across heterogenous spatio-temporal regimes – by promoting new forms of public agency". McQuire claims that "public sociability is not natural; it needs to be learned, nurtured and practiced. [...] In an era in which public space is dominated by spectacular 'brandsapes' and pacified by the distributed technology of surveillance, new forms of public interaction facilitating qualities such as collective participation and unpredictable collaboration hold increasing social importance. In this context, the role of artists using new media to construct experimental interfaces in public space can assume strategic value" [14].

The explorations suggested by McQuire are in fact, the focus of many artists, architects and designers involved in different genres of experimentations. Most of them, however, clearly unveil their intentions to create objects, landscapes and installations, conceived as imaginative interfaces between the sensorial city spaces and the user.

#### 4. ARTISTIC EXPLORATIONS OF SENSUAL EXPERIENCES

Even though there is a number of meaningful examples of media architecture, the strongest interest is still concentrated on artistic interventions. Artistic explorations in interactivity offer a wider array of choices regarding formal solutions or the degree of public exposure, compared to the constraints associated with architectural construction. Due to their temporal character, less liability and often – nonstandard locations, the artistic explorations involve a broader group of people, offering almost unlimited range of playfulness from the application standpoint. Moreover, artistic explorations allow for "looseness in user experience, whereby users may be involved who would not ordinarily participate in an architectural setting", claim Michael Fox and Miles Kemp in their monograph on 'Interactive Architecture'. They argue that "developing interaction design on the fringes of the context of architecture also provides designers a platform with which to focus on specifics, and thoroughly isolate and test ideas. Artistic explorations open up the door to take a look at human emotion and human impulse" [6].

We can observe bold and imaginary, even sometimes willfully unrealistic attempts to investigate invisible aspects of our environment and human perception. Such projects are usually temporarily exhibited and experienced in Media Lab spaces, museums, and public spaces, very often during special media and architecture festivals, exhibitions, biennales and other events. Sometimes the successful project is being transformed and explored again for a longer period of time in the real city spaces, like in the case of one of the Daan Roosegaarde's most famous installation – Dune [20]. This public interactive landscape responds to sounds



and movement of the people passing by. Filled with interactive lights and sounds 'Dune investigates nature in a futuristic relation with urban space'. Roosegaarde claims that his work is “stimulating connections and making people aware of them”, if you interact with Dune “you become aware of your own body, of your relationship to other people, and to your relationship to architecture” [21].

A number of media installations concentrate on kinaesthetic perception, inviting users to co-create the experience with the movement of their bodies. Sometimes achieving that 'goal' involves more than one person, encouraging cooperation between people and fostering interactions, like it was in Body Movies project by Rafael Lozano-Hemmer [1]. To create expected shapes of shadows people had to intentionally involve their bodies and at times were induced to collaborate with other participants.

Sometimes installations engage more senses, responding to people's movement or touch with light, colour or sound. This is the case of White Noise White Light and LoRezHiFi by Höweler + Yoon Architecture as well as Audio Grove by Christian Moeller. Ben Rubin's Soundplay is a sound installation which translated a contraction of a single tight muscle and the slightest movement of any part of the body, into sound [4]. Flow by Roosegaarde, an installation in a form of a wall constructed out of hundreds of ventilators, responds with an artificial wind [20].

Beside numerous scientific inquiries into the possibilities and effects of the temporal experimental artistic explorations, there are many sophisticated studies on human perception and technologically produced stimuli influencing the senses. Usman Haque shows “how the perceptions of space and objects in space are intricately affected by things we are not immediately conscious of” [4]. Bullivant describes that “Haque's projects investigate the phenomenological potential of architecture based on systems that combine hard space, such as walls, floors and ceilings, and soft space – arising from the sensuous, non-tangible elements present, such as sounds, smells, heat, colours and electromagnetic waves” [4]. In his project Haunt the artist uses humidity, temperatures, air movement and particular electromagnetic and sonic frequencies, which are associated by parapsychologists with haunted spaces, in order to create the feeling of being 'haunted'. In his other installation Scents of Space an interactive smell system opens new ways towards experiencing an olfactory environment [9].

Similarly to Haque, architects Décosterd + Rahm explore the mutable impact of environments on human metabolism, sensory states and perception. They design prototypes and demonstration spaces, very often examining modification of light, air and water control. “By bringing the physiological distortion and expression through biotechnological means, affecting temperature, humidity and light, they provoke reactions and confrontations of the body” [4]. They created such projects as Hydracafé, Melatonin Room, and Hormonorium, which influence the hormones, by, for example, producing the sensation of high altitude which causes melatonin production to drop. These installations enlarge the scope of various sensory information or consciously reveal the lack of it. As it becomes clear, the range of possibilities to influence human sensations and behaviors, due to technological development and progressing research in this field, is impressively increasing.

There are many other advanced research studies and practices exploring the influence of environmental factors and impulses, non-visible but existing; on human perception and behaviors it induces. The participation of the people involved is either relies on the process of their movement, the act of touching, hearing or is influencing



their senses on the subconscious level, creating multi-sensory experiences in both cases.

While the potential of media and interactive technologies to enrich the perceptual landscape of the city is visible, there are still many issues to be searched and discussed. Lucy Bullivant stresses that “[e]volving effective responsive systems, and creating a credible interface between the work and the user, requires an awareness of many different types of user, contexts and function, as well as the phenomenological aspects of social and environmental conditions” [4]. Another question worth exploring is the mutual interconnection between artistic projects and strategies of urban regeneration, where both focus on achieving the high quality of urban landscapes.

## 5.CONCLUSION

There are only few architects whose buildings are filled with non-visual atmospheres and sensual values. Hitherto architecture has always been and continues to be regarded as “an art form for the eye” [17]. Similarly, contemporary cities are evolving media cities, albeit suffering from poor and vanishing sensorial qualities. The visual domination, new technologies and industrial development change the architecture, the city, and consequently eliminate haptic, tactile, olfactory and sound elements from its environments.

After many years of abandoning the subject of sensorial design, it gradually reappears. An important role in regaining the haptic quality of architectural and urban spaces is undertaken by media technologies. They become our new means of re-appreciating the ambiance of urban landscapes, their lights and sounds, their power to gather people, to let them see themselves and become aware of different relations. As research studies reveal, the role of media technologies in enhancing the sensorial quality of the contemporary city is growing. Pallasmaa describes the importance of the echo of our steps on a paved street [17], which is almost an extinct and difficult to experience sound in the city. Even though so often we cannot hear our steps, with the new technologies we can see it, as in the case of LED-s Urban Carpet, which enlightens the panels of the interactive carpet that were stepped on [5]. Interactive technologies seem to overtake the place of many other factors creating the sensual effects in architecture.

Participating in interactions fostered by technology-based urban installations and landscapes, we are not only immersed in the reality of the experience, but also more conscious of our senses, and of our existence, and of the characteristics of the place. Nadin Heinich and Franziska Eidner in their research on 'Sensing Space' share the opinion expressed by realities:united that new media architecture “bound up with existing realities, must penetrate through them and thus make possible new, more intensive perceptions and forms of expression for the built environment. This is the true, revolutionary potential of media architecture – it needs only to become conscious of this potential” [10].

Media and technologies have a tendency to fascinate people with sometimes unreal and almost magical impressions. On the other hand, they seem to constitute a coherent component of the new kind of natural-technological urban landscape – active environment that is personal, unpredictable, changing with flows and seasons [16]. In this context media and interactive installations “could be perceived as a kind of second nature, interventions that make their entire environmental setting



supernatural, like 'Alice in Technoland', to use Roosegaarde's phrase describing the effect of his installation" [3].

While artistic explorations keep interest in sensual aspects of human behaviour and confirm the potential of new media structures to create sensorial environments, many questions remain. What directions will the future development follow? Will media structures and interactive participatory installations evolve to the city scale and influence the real multisensorial urban landscape? Is the participation through the senses a solution for the unreality of the contemporary architecture, is it the future of media architecture? As it was stated in the introduction to the book of 'Interactive Architecture' by Michael Fox and Miles Kemp, "[a]dvancement will only be accomplished when interactive architectural systems are addressed not primarily or singularly, but as an integral component of a larger vision that takes advantage of today's pervasive, constantly unfolding, and far-reaching technology. It is up to architects, designers, and users to understand the foundations of the subject matter in order to extrapolate a vision of architecture to come" [6]. Is it going to be a vision filled with interactive devices creating sensorial experiences? How will they blur with natural elements like water or stone? We are about to discover in the not too distant future.

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