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PRESENTER ABSTRACTS
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Beneficial Effects of Design Applications Using Environmental Illusions

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Our sensorial system receives the environmental cues that are later processed in our brain, forming our reality. However, the objective world is often blurred by the lenses of these brain mechanisms that are responsible for our subjective experience. There is no one-to-one correspondence of the outside world with what we perceive due to misjudgments and malfunctions of our sensory systems that are susceptible to mistakes. But what if we could use this so discussed imperfection as beneficial knowledge to design environments?

1. EXTENDED ABSTRACT

We focused on possible applications concerning vision as it is the sensory system that has been mostly studied. The optical mechanisms combined with previous experience are responsible for visual illusions that cause misinterpretations of things we see and their relations to each other (Macknik & Martinez-Conde, 2013). In our research, we try to use illusions as a medium to “trick” the brain depending on the desired environmental type of use. For example, the finding that distance or depth is indicated by the distribution of light and depth (Luckiesh, 1922) could be used as a possible application in restricted spaces, as the room of a hospital, by providing specific lighting conditions (or other space qualities like geometry) in order to create the illusion of spaciousness when there is no other alternative to do so. Of course, the formation of illusions could expand to other senses too, and even combine them for a greater effect, creating multisensorial environments.

This research is part of a wider investigation on how our surroundings can adapt to our needs and update if the need changes (like in crisis alleviation in the example of the hospital). The main goal of this presentation is to review the illusions that could be used in environmental interventions and present the context of use by demonstrating possible applications. The ongoing research and the series of experiments that we are implementing will be analyzed with their potential benefits in real environments such as hospitals, work places and confined spaces. The general goal is to combine neuroscientific findings on perception for the creation of user friendly, and specially therapeutic and proactive environments. The line that inspires us is the use of a “deficiency” in interpretation of the objective world as a beneficial subjective experience which is the milestone of our reality.

2. REFERENCES

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Anna Kelesidi graduated with a Bachelor of Science in Psychology from the Aristotle University of Thessaloniki (2010). She continued her education with a MSc degree in Cognitive Neuroscience at the University of Sussex (2010-2011) where she studied the influence of the unconscious. Currently she is a PhD candidate at the TUC School of Architectural Engineering. Her research interests at the TIE Lab focus on the study of the interaction between space and perception aiming toward the creation of human-centered environments with the use of interactive systems. She is also working as a psychologist in the non-profit organization “Ksenios Dias” in collaboration with the Municipality of Chania and is responsible for the psychosocial support of vulnerable populations and is a mediator between social structures against poverty. She implemented research on schizophrenia in the context of the Psychiatric Clinical of Aiginition Hospital of Athens (2011-2012). She has also worked at the non-profit organization “Arsis”, offering psychosocial support and vocational guidance to vulnerable populations and was also responsible for the acquaintance of children with art at the Central Museum of Contemporary Art in Macedonia. Moreover, she is practicing contemporary dance and has obtained the first degree of sign language. Her work at the TIE Lab has been presented at the 9th International Conference on Intelligent Environments (IE 2013), in Athens, Greece and the 64th International Astronautical Conference (IAC 2013), in Beijing, China.

Marianthi Liapi holds a Diploma in Architecture and Engineering from the Aristotle University of Thessaloniki/AUTH (2002) and a MSc degree in Design and Computation from MIT (2005). For her studies in the US she was awarded scholarships from the Fulbright Foundation, the Michelis Foundation, the Gerontelis Foundation and the MIT Department of Architecture.

During 2006-2007 she was a research associate at AUTH investigating the impact of digital design tools and techniques on contemporary architectural education. During 2008-2011 she was an adjunct lecturer at the Technical University of Crete/TUC teaching courses in architectural design, architectural technology and digital design media, as well as supervising diploma projects. Currently she is a Research Associate at the TUC Transformable Intelligent Environments laboratory. She has also been accepted as a PhD candidate at AUTH. She is focusing on the study of transformable intelligent environments, extreme environments and learning environments. She is interested in the concept of spatial experience and particularly in the process of learning within playscapes, with the meaning of the word 'learning' spanning from acquiring new knowledge to adapting into a new environment. She is credited for coining the term experiential ergonomics. So far, her research work has been presented in international architecture (SIGraDi, ACADIA, eCAADe, EAAE/ENHSA) and interdisciplinary conferences (ICCMSE, EPA, ICSC, IAC, IPA), in refereed journal publications and books. She is annually involved with the organization of international architecture workshops and exhibitions. On a professional level, she is a registered architect in Greece. She is co-founder and principal at 124 | SKG Architects, a research and design office formed in partnership with Kostis Oungrinis to explore transformable, technology-mediated environments in various scales and building types. In 2008 she received the Europe 40 under 40 Architecture Award.

Dr. Konstantinos-Alketas Oungrinis is an Assistant Professor in Architectural Design and Innovative Engineering at the Technical University of Crete (TUC) in Greece. He is also the Director of the Transformable Intelligent Environments Laboratory (TIE Lab) at the same university. During 2004-2005 he was a Visiting Research Associate at the Harvard GSD. He holds a Professional Diploma in Architectural Engineering and a PhD degree in building morphology and kinetic structures in transformable spaces from the Aristotle University of Thessaloniki. His work on dynamic, human-centered architecture involves research on kinetic structures, smart materials and responsive control systems for the creation of intelligent environments that can respond actively with 'sense' to the needs and wishes of people. His research specializes in transformable environments, activity-based design methods, time-space relationships, user-experience design, educational environments and spaces within extreme environmental conditions. He has developed two specific approaches for the successful implementations of IT in design titled Spatial Economy and Sensponsive Architecture. His work has been presented and published extensively through international conferences and also through design and fabrication workshops. His thematic areas of study are interdisciplinary, rooted in the field of architecture and from there on branching out mainly into the domains of psychology, neuroscience, electrical engineering and computer science. He is the author of two books: 1) Transformations: Paradigms for Designing Transformable Spaces (2006) Harvard GSD Design and Technologies Report Series, Cambridge, MA and 2) Transformable Architecture: Movement, Adaptation, Flexibility (2011) ION Publishers, Athens. He is co-founder of 124 | SKG Architects research and design office. In 2008 he received the Europe 40 under 40 Architecture Award. He also writes sci-fi novels.