15th architectural humanities research
association international conference

architectural urban design and engineering

SMARTNESS?

between discourse and practice

ABSTRACTS

eindhoven university of technology

department of the built environment

Sessions

SESSION

Augmented Smartness: harnessing tacit urban intelligence

Gretchen Wilkins, Andrew Stiff

The historic fabric which represents a city's evolution and development is increasingly viewed as a set of assets that enhance the urban experience. These assets can create a sense of place, foster stronger communities, or help define unique identities that boost the urban economy by attracting investment in businesses, urban renewal projects and redevelopment opportunities. However, the unprecedented rise in urbanization trends has placed increased pressures on cities to utilize resources more efficiently, balancing development needs and carbon reduction targets while maintaining some of the historic fabric. It has therefore become imperative to manage heritage assets effectively and sensitively so that these continue to retain value and remain relevant to current and future generations.

This session aims to explore how urban heritage can be managed and maintained in a smart city. The range of questions the session seeks to explore includes, but is not limited to: How might smart technologies inform heritage policy? What smart tools are currently used and how have they assisted in managing urban heritage? How do these tools and technologies connect the intangible values associated with historic fabric to an increasing global population? How can information communication technologies, internet applications and other smart tools be used in view of budgetary constraints? What lessons have been learned and how can they be used to inform urban policy for an increasingly mixed range of pre- and post-1940's urban fabric?

**RMIT University
Vietnam**

Aberrant Patterns: Cataloguing the Visual Effects of Materialising the Hidden Patterns in Digital Imaging Systems

Gavin John Perin, Linda Matthews

The commercial imperatives behind promoting the contemporary city through the broad dissemination of its image have resulted in an escalation in the use of digital visioning systems. Importantly, these systems calibrate hard and soft technologies that aim to mimic the Human Visual System (HVS). To achieve this mimicry, patterns secreted in the camera's mechanisms and processing algorithms work to erase the aberrant visual behaviours inherent to these artificial visioning systems. Ironically, these immaterial patterns establish processes and protocols that clean up the image to present a city image that cannot be 'experienced' with the naked eye.

Past design-based research shows how embracing the aberrant behaviours native to the digital visioning system can expose the conceit behind constructing the impossibly perfect city image. Specifically, this research indicates that it is possible to disrupt the clarity of such images by simply replicating these secreted patterns on a building facade. Significantly, the application of these patterns across a range of scales and in either two or three-dimensions, can be calibrated and then catalogued to link aberrant behaviours to various 'real-world' functions. However, the rejection of mimicry associated with the simple act of making the immaterial material does more than disturb the city image: the tectonic expression of the immaterial ruptures the political economy that currently governs the contemporary practices used to image the city.

The capacity to disrupt the city image allows for a critical assessment of the political economy of such representations. It is also clear that the ability to catalogue the aberrant visual effects of digital imaging systems according to 'real-world' uses also brings with it a capacity to unpack and curate a range of political functions that accompany the deployment of the disparate effects of these patterns.

**University of Technology Sydney
Australia**

Can the video game engine of 'Cities: Skylines' be smart enough for building smart cities?

Chang Ho Yeo, Juchul Jung

On April 11, 2018, Land and Housing Corporation of South Korea officially announced that the video simulation game 'Cities: Skyline' is going to be used for the first time as one of the civic participation tools, and actively as a way to get vision and idea of smart city by holding the simulation contest for the outcome of the game. The direction of this research locates on the extension of the question raised from the session of "Augumented Smartness" : "How can tangible interactions within society challenge digitally -led, top-down approaches to smart cities '?".

As long as the Ministry of Land, Infrastructure and Transport selected a specific commercial video game as a 'bottom-up' tool for civic engagement of smart city, this study precedes to understand the structure of the specific game engine and the algorithm that constitutes the simulation, and to classify whether this part overlaps with the part necessary for actual construction of the smart city and whether there is a mismatched parts. As for the construction of the smart city in Korea, which is biased toward the actual 'top-down' policy, the study investigates how a commercial video game with strongly visionary simulation function does play a role as a bottom-up integration tool for creating smart city with smart growth.

Also, the video simulation game engine has been evolving significantly in combination with Artificial Intelligence, and the research is going to be extended the issues about how 'smart' evolution of the practical administrative system for convergence of bottom-up for smart city construction can fit together, and how much such simulation can be closely related to the actual implementation of the physical environment in the fabric of the 'smart city' with 'smart growth'.

Pusan National University
Korea, Republic of (South Korea)

Disrupting Perception Through Storyboarding and Virtual Reality: an Experimental Aesthetic Approach

Caecilia Srikanti Wijayaputri

The architecture which surrounds us influences our thought, and subsequently our behavior. The understanding of the relationship between the environment and our mind is important, particularly for designers of built-environments. Our brain is not only hard-wired to interpret certain spatial characteristics in certain ways, but also plays a role in how we make environmental decisions. By designing with greater insight into how the human mind processes architecture, architect might be able to help occupants to live healthier, more meaningful and happier, as architectural qualities of an environment do trigger a wide variety of human response. As architects, we should try to harness this understanding. Architecture also has the power to set the stage for occupants to create new meaningful experiences while memory plays a key role in helping to make all of this possible. According to Juhanni Pallasmaa, this dynamic flexibility of our interaction with the world is one of the important thing that neuroscience can illuminate for us. The main idea is that maybe utopia could be reach through the help of cognitive neuroscience.

Today the cognitive neuroscience has begun to provide a novel approach to the study of human social cognition and culture. An empirical research shown that people experience fictional realities through the same neurobiological mechanism with the real life experience. The finding could offer a revolutionary new basis on developing an empirical understanding of how design features influence the organization and use of information present in the built environment.

The use of storyboard and virtual reality encourage the sequential exploration of architectural space, and also identified elements and point of view that articulate space and event. This approach can posibly applied to deals with the relationship between architectural spaces and the way they are experienced by the people living and working in them.

Parahyangan Catholic University
Indonesia

The Hyper Reality Principles in the Age of the Post-Humanism: the Paradigm Post-Human Body - 'Hyper City'

Davide Landi

Since ancient times, the analogy between the human body and the built environment was direct. On one side, the Greeks used a 'physiological understanding' of the body, on the other the Romans used their 'geometrical understanding' of the body for the production of urban forms. The 'enlighted designers' of the 18th and 19th century desired to create a 'healthy city' on the model of a 'healthy body.' The ideas was that people could freely flow through the city along new urban infrastructures such as trains. These soon became the urban 'arteries and veins,' which produced an initial detachment between people and the urban space.

Nevertheless, in the 20th-century, cities acquired a spatial segregation in order to satisfy some specialization requirements and to improve efficiency, and economic individualism. This increased the detachment between people and the city; and brought a physical and socio-economic segregation.

The technological achievements of the 21st century such as information technologies (IT), have significantly affected cities. These new informational patterns have provided new ways of designing, and so, experiencing cities. Theseare 'quantified cities' made of digital data that dynamically interact with 'quantified human beings'Are these new 'contemporary digital arteries and veins' able to heal an 'ill and divided urban body' or will they emphasize the existing individualistic and urban socio-economic segregation patterns?

This paper will investigate a new concept of 'quantified city' based on the notion of 'Hyper-Reality' and the role of citizens who are entering in a 'post-human' condition living in a totally dynamic urban environment. In particular, the critical analysis will be used as a "tool" for redefining the perception of the city, the users (post-humans)' relational patterns, and how users take information from the city after the advent of IT (i.e. Google Maps, Uber, Instagram, etc.) and its future development (i.e. Hyper City).

**Liverpool John Moores University
United Kingdom**

Ubiquities enhanced: utopian thinking from the aerial "lens" to the remote "sensor"

Gokce Onal

As the cultural history of aerial view suggests, the intelligence of looking down has informed the epistemological optic of urban imagination always. The airplane eye, respectively, upon its advent at the turn of the twentieth century, had righteously become the representational measure of the modern master plan. The Enlightenment ideals of societal progress were mirrored in the overarching geometry of the modern city, bordering on the utopian futurism that characterized the grand schemes of the interwar era. The photographic space of the aerial lens -inherently static, detached and ubiquitous- hence constituted the visual vantage in satisfying this totalizing quest. Today, however, we stand at the cusp of a new rationale of surveillance and urbanism, in which the aerial "lens" is replaced for the remote "sensor," and top-down governing policies are increasingly-more-smartly enhanced by the bottom-up datascape of the street. As the former currency of utopian thinking, aerial representation no longer feeds the fixed frame of total empowerment fantasies, but instead becomes a numerical -and synthetic- function of remote sensing processes—transcending formerly unknown altitudes, the human optical region and conventions of space-time. Hence this paper asks, what becomes of the all-encompassing, futurist vantage -along with its instigator and subject- once the lens is replaced by the sensor, and once the image is digitized into an encoded, multi-authored and interactive construction of the datascape? What new ecological futures emerge from the representational parameters of the sensor, and how to formulate this emerging epistemological optic within smart urbanization, the image of which strongly relies on the processing of big data? In answering these questions, the visionary significance of the synoptic view and its technical advancement will be investigated by the visual representational domain of smart urbanization, and the pertinent transformation of the connotation of technological ubiquity in urban studies will be explored.

TU Delft
The Netherlands

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AUDE

signify
the meaning of light