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SESSION

Catalysing Cross-scales: Emergent Urbanism and Smart Nodes

Annuska Rantanen, Ari Hynynen

Many scholars have called for more human-oriented interpretations of smartness. Therefore, smartness can refer to, for example, digital empowering tools for urban commoning, as well as to innovation nodes, platforms and networks of new economy. Or more generally, it may refer to urban self-organization, adaptation and exaptation, concepts highlighting bottom up emergent patterns, which catalyse urban transformation. We call this emergent urbanism. Emergence refers to the rise of qualitatively new system properties, behaviour and patterns, from interactions between actors/agents without an external control mechanism. New bonds are developed between urban actors, between social, material, ecological and institutional domains, meaning mutually beneficial interaction. This leads to new regimes represented in differentiating cultures of civic engagement, hybridity of evolving agencies, emerging of new urban qualities and novel cultures of planning. Emergent urbanism covers diverse initiatives from production of space and services to nurturing urban commons in everyday surroundings, helping make cities more inclusive, resource-wise and resilient.

How do civic initiatives rise and scale to larger ecosystems, and how can they be supported by authorities and spatial planning? We invite scholars, actors and innovators to disseminate their knowledge and experiences on the ‘new smart turn’, which builds on civic engagement and new forms of co-governance mediated by digital tools. We are interested in various dimensions of smartness and how they emerge in space, time and governance practices. You may focus on some of the following themes:

- systemic transition and practices (new economies, P2P, DIY, innovation platforms, commoning, sharing economy).
- concepts of emergent urbanism (innovation, adaptation, self-organisation, co-evolution, empowerment, co-creation)
- spatial manifestations: new nodes of urbanity; resilient heritage and ecologic memory; typological process and mobility in the algorithmic age; multi-functional infrastructures

**Tampere University of Technology
Finland**

Keywords

Emergent urbanism, Smart nodes, Hybridity

Driverless Government: Speculations on Parametric Urban Governance

Jason Shun Wong

Driverless Government challenges the current American bureaucratic system by creating tools that allow citizens to dispute an optimization led agenda by imagining representation in new forms. The project inserts itself into the decision making space, city council meeting, to conceptualize automated bureaucracy. As municipalities across America are increasingly using Industrial Internet of Things and machine learning algorithms to automate labor and predict behavior, they are pushing forward an optimization led agenda that fails to include the history, people, and environments that this technology is situated in. Consequently, this privileges technology corporations and municipalities to govern the city with little input from the people who live within it. Driverless Government disputes this inevitability by imagining how the urban citizen can collect and generate datasets to create new forms of representation, using data and artificial intelligence (A.I.) to advocate. Specifically, citizens can create A.I. representatives that advocate for themselves and other agents within the context of a speculative city council meeting. For example, a citizen could measure and collect data on issues such as the livelihood of animals to create A.I. representatives. An A.I. coyote could advocate for coyote population with the aid of sensors, algorithms, and automated speech for the creation of a wildlife land bridge crossing. City employees could deploy sensors aided with machine learning algorithms to facilitate an A.I. freeway arguing for infrastructure funding with a Department of Works employee. Driverless Government endeavors to think about the frightening, hopeful, and absurd outcomes of introducing A.I. into the American political system. By promoting adversarial techniques that advocate for egalitarian principles, the project outlines possibilities and responsibilities for the American citizenry to reclaim agency in this emerging smart city landscape.

**ArtCenter College of Design
United States of America**

Keywords

Speculative Design, Speculative Civics, Agency, Representation, Machine Learning

Proposed scenarios for assessing Social Resilience of Urban Open Spaces in the “arrival” cities of Greece

Eleni Oureilidou

Since 2015, the influx of refugees in the Greek cities - such as Thessaloniki and Ioannina in the mainland, Chios and Mytilene in the islands - has resulted in social instability, exacerbating an already tenuous situation accrued by the economic crisis (Sakellis, et al., 2016). In the light of the Smart City narrative and the use of digital tools in everyday urban practices, Greek cities have done very little to incorporate digital technologies and fortify their social resilience.

This study aims to investigate on co-creation digital platforms and propose scenarios in the refugees' social integration process. The study focuses on the open spaces of the “arrival” cities, in which the coming of refugees has challenged the social capacity and adaptability of local communities. The literature review establishes the analysis of terms like Resilience and its typologies and Urban Informatics, in order to provide the theoretical background. Main research hypothesis is that the use of digital tools related with the use of public spaces transform the latter into incubators of inclusive planning ideas. In addition, it is assumed that the digitally augmented urban open space sparks incentives for the process of refugees' social integration and enhances the timely self-organization and adaptation of the local population.

The proposed scenarios refer to the use of co-creation digital platforms and the involvement of refugees as stakeholders in decision-making processes. In the end, these scenarios aim to open a dialogue on how the use of digital tools could sustain the cultural co-habitation in urban open spaces, feeding the discussion about the empowerment of an increasingly diverse social capital in the “arrival” cities of Greece.

**Aristotle University of Thessaloniki
Greece**

Keywords

Social Resilience, Refugee Crisis, Digital Platforms, Co-creation

Street space transformation – a bottom-up revolution in Chinese smart city era

Naibin Jiang

In 2014, the world's first station-free shared bicycles company—OFO was founded in China and the market expanded rapidly, leading to dramatically transformation for traffic mode and behavior pattern in China overnight. The birth of shared bicycles and the continued popularity have created a new type of smart city ecology, "bottom-up, multi-collaboration." New regulations and laws are established according to this emergent urbanism.

Different from the government-dominated ones, the station-free bike sharing can be searched, used, and parked anytime, anywhere, satisfying the public's desire for freer needs, and effectively breaking through the limitations of fixed parking places. However, while it brings convenience, new problems such as random parking and over-distribution emerge.

Thus, as new factor of smart cities, the specification of parking issues has become the key to judging the sustainability of this pattern. Simply relying on enterprises and civic engagement lacks the necessary supervision and execution capabilities. The government still needs to intervene. Through public power, the reverse problem of parking is implemented to achieve effective supervision. Therefore, government, enterprises, and citizens gradually form a new cooperation pattern in which companies are at the core and users and governments collaborate in a three-way linkage.

Shared bicycles based on ICT technology and have formed beneficial sharing in traffic, regulations, planning, management, business, public welfare and other aspects. This emergent urbanism, as the first step, lead to dramatically revolution, and will gradually transform street space, and intelligently transform existing street facilities under the premise of ensuring the basic functions of the road, and finally realize smart city functions such as travel assistance, convenient living environment, and governance security guarantees. This paper discusses the transformation shared-bike pattern brings to civils' daily life, and the space innovation on street under the smart city era.

Qingdao Technological University
People's Republic of China

Keywords

smart city, ecosystem, shared bicycles, smart street

The Future of Ageing – Designing the Age-Adaptive Smart City

Ian Nazareth

While ageing is inevitable, there is some anxiety surrounding the mechanisms to manage an ageing demographic. This urgency springs from the unprecedented rate at which the global population is concurrently ageing and urbanising, crucial and inseparable paradigms. The reciprocity between urbanization and ageing will necessitate innovative approaches to models of housing, systems of the neighbourhood, transport, healthcare, amenity and the malleability of the urban fabric. With ageing as a keystone, can creative practices (architecture, urban design etc) collectively intervene to reimagine the city?

By 2020, over 50% of people aged 60 and over will live in an urban environment[1], and by 2050 2.1 billion people (or 21.5% of the population) will be aged over 60, outnumbering those 15 and under.[2] The economic footprint of the age care sector in Australia alone was \$13.5 billion in 2014-15. (Deloitte). By 2050 India (China and the United States,) will each have over 100 million people aged over 60.

Despite the immense dimension of this forecast, there has been scarce critical reflection or policy response and even less consideration of its impact on the form of city and urban futures. The paper assembles research and design speculation analysing and deploying the Smart City as a potential framework and enabling platform for the Age-Adaptive city. The proposition is for cities to embody an alternative system of values for demographic transition, that could be traced from low density suburban developments through to dense urban conditions. The research will engage with and leverage the smart and connected urbanity of the city, its architecture and palimpsest of interwoven service networks to frame a holistic proposition for its future.

**RMIT University
Australia**

Keywords
Ageing

SESSION

Tomorrow's City Today: palimpsest of the future

Nick Dunn, Paul Cureton

The ubiquity of 'smartness' in the contemporary world suggests an advancement of some kind, albeit predicated on various technologies. Smart Cities, in particular, offer an optimistic view on what can be achieved by using data to address and improve the operation of various urban management systems (Ratti and Claudel, 2016; Townsend, 2013). While some of the ambitions and goals behind Smart Cities are positive and potentially beneficial for collective life, the over-reliance on software that typically features in their concept has led to their visions largely being promoted by major IT corporations with a vested interest in the deployment of technical solutions for city development and management. Rose (2017) has observed that such visions present pleasurable albeit smooth and untethered views, replicating digital visuality rather than actual spatial experience and it is here that we may detect some problematic issues. Indeed, despite their diversity of approach and features, the vision of most Smart Cities is one of the conspicuously bland, generic, ahistorical, apolitical spaces whose identity is characterized by information technologies that could be applied anywhere. So where did this come from and what are the alternatives? This session seeks to question the definition(s) of smartness as part of the history of visions we have previously had for cities and their resonance over time. Submissions are sought to explore the smartness of contemporary cities and critically evaluate their future based projections, scenarios and cited precedents from a variety of international and comparative perspectives, via case studies, datasets and historical analysis. We are also interested in radical alternatives for the cities of tomorrow that elude the convergence toward smartness as counterpoints for debate and offer a repositioning of architectural and urban practices. We welcome both empirical and theoretical inquiries from a diverse range of disciplines and welcome presentations in non-traditional formats.

**ImaginationLancaster, Lancaster University
United Kingdom**

Keywords

Cities, Visions, Futures, Histories, Representation

‘Add-ons’ or integrated solutions: ‘Smart’ vision for Australian cities and suburbs

Deepika Mathur

Australia bought into the Smart cities vision fairly late after North America, Europe and India had already introduced smart cities framework projecting smart cities as the next generation cities. The Australian Smart Cities plan introduced in 2016, envisages Smart cities as those that are liveable, productive accessible and will attract talent, encourage innovation and create jobs and growth. The Australian government’s slogan for implementing this is through ‘Smart investment, smart policy and smart technology’. Towards this end, in 2017 there was a call for applications that would deliver smart solutions to problems in urban and regional areas under the Smart Cities and Suburbs program. This paper focuses on the 49 projects that were successful in the first round of the smart City projects. These selected projects tell a story about how future Smart cities are visualized in Australia. This paper examines whether the solutions towards Smart Cities highlight an over reliance on software, deployment of technical solutions, placeless and generic solutions or do they offer the vision of the city as a better place because of the integration of this ‘smart interface’ with everyday activities. This analysis is significant since it is critical to evaluate the ‘smart solutions’ arising out of the Smart Cities and Suburbs program since they provide the scenarios for future Australian cities.

**Charles Darwin University
Australia**

Keywords
Australian smart cities, Smart city visions

Intelligence and Armament

Kevin Rogan

At a sufficiently developed stage, it seems likely that the world's smart cities will function as a new "transconsistent" ecumenopolis founded on conceptual technological universalized "test bed urbanism". This produces an initial proliferation of similarity among smart capitals: a planetary megamachine of libidinal intelligence and hyperactivity, invisibly linked across borders and territory. Intelligence, at this preliminary stage, will likely be analyzed by its ability to optimize control, the management of economic flows, and the mediation of populations, founded on genericized software packages and rationalized, antiseptic master planning.

But the concept of a banal, hypersmooth smart urbanity is just the first stage. Once the conceptual test bed is installed at a planetary scale, urbanomic endogeneity (or internal development) takes over. The machinic phylum produces singularities building off of the template of intelligence, and individual smart cores begin to independently optimize away from the baseline in order to produce their own schemes of optimized intelligence to solve local problems.

The result is a Cambrian explosion, a wild speciation of models of urban intelligence that results in the increasing divergence and co-evolution of urban "minds"—ordinals of individualized, differing intelligences that autopoetically diverge. Thus, we can imagine a world in which smartness as it's currently conceived is technologically achieved and then transcended, revealing contemporary neoliberal paradigms of intelligent urban to be hollow technocracy. However, this fecund landscape of urban minds will likely find its endogenic encoding power haunted by the existence of the uncoded outside, either in the form of the dumb matter beyond its reach, or as rival intelligences. Digital walls and military perimeters rise around intelligent urban cores in the interest of protecting "intellectual property". Once this mobilization takes place, trans-consistency collapses back into a multipolar patchwork of city-state rivals and enemies. War leeches into the megamachine.

The New School, Parsons School of Design United States of America

Keywords

Militarization, History, Evolution, Political economy, Urban form

Radiant City

Thomas Forget

This presentation envisions the future of the New York City Subway as a smart system rooted in competing but ultimately compatible forces: the spatiotemporal determinacy of geographical context, and the spatiotemporal promiscuity of information exchange. The projection occurs through a video that is an extension of two recent research projects: a historical analysis of the system's four primary eras of construction and expansion, and a contemporary case study of the installation of an information technology network designed to improve rider experience in the wake of planned service cuts and unplanned service disruptions. The historical research foregrounds how politics intractably undermine the geographic logic of the system, explaining how the almost pathological dysfunction of the Subway belies the sophistication of the ways in which it negotiates its territory. The contemporary case study examines the social dimension of the system's long delayed and still intermittent connectivity to information networks, revealing how information portals re-map the social geography of the Subway, and how physical spaces assume new attributes based on their degree and type of network connectivity. The new video project speculates upon how the system's connection to its geography and its non-normative relationship to the world of information—how its physical logic and its immaterial logic—may coexist in a manner that demonstrates the complexity of the future city. It is both empirical and theoretical. All footage has been captured in the past year during the height of the system's dysfunction, and it has been recontextualized into a vision of altogether different system of socially progressive physical and immaterial ebbs and flows. The Subway offers a unique vehicle through which to consider the future of smartness because of its rich history, its current state of disrepair, and its context within one of the world's most complex social and political environments.

**UNC Charlotte School of Architecture
United States of America**

Keywords

Transportation, Projection, Politics, Representation

Scenarios of Interactive Citizenship

Renata Tyszcuk

Smart urbanism is often posited as the means for addressing the challenges of rapid urbanisation, promoting sustainable urban growth, socially inclusive societies and responding to climate change by increasing resilience (European Commission 2013; Marvin et al, 2015). However, the utopian rhetoric of smart cities scenarios ignores the complexities of urban societies and the vastly different experiences of citizens around the world. This paper explores the potential of scenarios of urban futures as a shared and necessarily contested cultural endeavour. It posits anticipations of the smart city in the 1960s and 70s, for example, Dennis Crompton and his 'Computer City' or Superstudio's 'Ideal Cities', as cautionary tales.

The paper will explore scenarios as a mode of storytelling for 'troubled times' (Haraway, 2016), that acknowledges the 'collective experiments' of climate change (Latour, 2003). It suggests scenarios as a 'rehearsal space' for more collective modes of acting on and thinking about uncertain futures (Tyszcuk & Smith, 2018). The paper will explore the potential of collaborative scenario-making in opening up civic space in the face of the high levels of uncertainty, global risks and collective action problems associated with climate change and uncertain urban futures. In other words, scenarios of climate change are proposed as the discursive context for developing an understanding of the capabilities of interactive citizens. The paper will bind together strands from democratic theory, the relationship between citizenship and sustainability and emergent scholarship that investigates participative modes of action on and engagement in urban futures. It will acknowledge and respond to some of the particularities of the cultural politics of climate change (above all shifting and contested responsibilities and vulnerabilities across space and time) and consider the possibilities for interactive citizenship that can help equip societies to better cope and potentially thrive in the face of these challenges.

**University of Sheffield
United Kingdom**

Keywords
Scenarios, Interactive Citizenship, Climate Change, Urban Futures

Smart City: Enroute to a Smart Planet

Amit Talwar

Human impulses, to interact, connect and evolve, are a critical aspect of our lives. Communication enables us to create an environment for the exchange and understanding of these impulses. Today, Communication of Information and ideas are at the tip of our fingers. The phenomenal speedy growth of enterprises like Google, Facebook, snapchat, DropBox and other companies are clearly an indication of the critical aspirations of these impulses. Technology is an integrated part of our lives today. We wear it, we carry it, we use it in our work, and we live with it in our homes. It is only natural our cities evolve into Smart Cities.

So what does the physical manifestation of such environments hold for us? How do we visualize our lives and cities of the immediate and far Future? Do we have a Standardized Global Model yet? Do we even want one? Over the years we have seen representations, of perhaps, various stages of a Smart City. Cult films like Blade Runner, Comic Books like Flash Gordon and Books like those by Isaac Asimov, all indicative of possible Future Cities and lives integrated with technology. Simultaneously, Historic Planning Strategies are known to align Cities with the Universe through Cultural Constructs like Axis Mundi's and Mandala Systems. Scale and Cultural Identity are critical for cities even today. How do Smart Cities look to cradle our Regional Diversities and Diasporas? I would like to present, Smart Cities as a compelling dialogue of the above mentioned intricate complexities. Technology could lead us into the realm of a Smart Planetary Communication Network, which could be a potential for the manifestation of a Digital Gaia Hypothesis. A Multiplicity of Sensory Cities interacting and communicating with each other and its users. However, we keep overlooking a critical factor in a city-Way of Life.

Amit Talwar Associates / Office of Blurred Edges India

Keywords
Human, Technology, Communication, Integration, Gaia

The Metaphor of the City as a Thinking Machine. A Complicated Relationship and its Backstory

Sonja Hnilica

In the 1970s, the Swiss architect Fritz Haller was fascinated by microchips and designed a city plan that looked like IBM's ZOLA-chip. In the 1980ies, the American science-fiction-author William Gibson dreamed that "all the data in the world [were] stacked up like one big neon city, so you could cruise around..." These examples show, that there is a strong metaphorical connection between cities and computers. In fact the "smart city", that links cities to thinking machines, is currently of the most dominant metaphors in the discourse cities. A city, as I have shown in my previous work, can never be thought without using metaphors, because it is a very complex entity without clearly defined boundaries. Architects use to think of the city as a house of many rooms, a landscape, an artwork or an organism with a heart, lungs and veins – to give just a few examples. Gorge Lakoff (1980) has shown, how metaphorical relations produce analogies, that structure our realms of experience and hence construct reality. As metaphors are always establishing two-way-relations, the "smart city"-metaphor affects our concepts of "cities" as well as of "thinking" and "machines".

My paper aims to trace the history of this complex threesome relation. A set of carefully chosen examples will show: The metaphor of the city as a thinking person has been coined by antique philosophers, while the machine-analogy became important in modernity. During the past hundred years, all three concepts have undergone substantial changes due to the industrial and the digital revolution. Today, the boundaries between the three concepts seem to be more permeable than ever: Cities might be machines and machines might be cities, living beings might be machines and cities might be living beings. A critical evaluation of the metaphor is necessary to entangle this complicated relationship.

**TU Dortmund
Germany**

Keywords
Metaphor, Architecture, Urban design, History

Toronto's Smart City: Everyday life or Google life?

T. F. Tierney

The City of Toronto's recent award to Alphabet's Sidewalk Lab for design services has sparked a heated controversy among urban planners and citizens alike.^[i] Toronto's decision not only signals a different model of professional practice, but it also represents a conceptual shift away from citizen to urban consumer. By engaging a private technology company, one that passively captures data on its customers and then re-sales that data to third parties, Toronto's smart city points to a significant change in the understanding and practice of contemporary urban planning and design.

Acknowledging the city as a site of disciplinary disruption, this paper introduces Bratton's stack theory as a way to understand networked urbanism more generally, and Sidewalk Toronto specifically. We build on Bratton's position by closely examining twenty-first century histories and anthropologies related to the internet, privacy, and the dominance of big data. Our principal concern is the transformation of personal and environmental data into an economic resource. Viewed through that particular lens, we argue that Toronto's smart city has internalized relations of colonization whereby the economic objectives of a multinational technology company take on new configurations at a local level of human (and non-human) information extraction—thereby restructuring not only public land, but also everyday life into a zone of unmitigated consumption.

[i] Google LLC is a technology company that specializes in Internet-related services and products. These include online advertising technologies, search engines, artificial intelligence, cloud computing, software, and hardware. In August 2015, Google reorganized as a conglomerate called Alphabet Inc. Under the new umbrella, Google's search, data aggregation, and advertising subsidiaries, were joined by Sidewalk Lab and its suite of urban products: high-speed broadband services, Android Pixel2 phone, mobile mapping, autonomous cars, artificial intelligence, smart homes, and all the data captured therein.

**University of Illinois Urbana Champaign
United States of America**

Keywords

Network Urbanism, Toronto, Data, Citizens, Privacy

From room to building to region: The BTDB Computer Centre and Price's design of the 'smart' (WITHDRAWN)

Gabriela Garcia de Cortazar

Cedric Price's work with cybernetics has been widely studied, yet it has always been through unbuilt projects – that is, in a discursive way. This paper looks at his relation with cybernetics as an *architect*, by focusing on one of his few built (and fairly understudied) projects: the British Transport Docks Board Computer Centre. Designed in 1964 and built in 1967, this apparently underwhelming structure (a square-shaped, single storey, small prefab building) is the materialisation of Price's understanding of cybernetics at an architectural scale, as the BTDB Computer Centre was designed to house the computer that would manage all the docks controlled by the Board (mostly in the south of England). In Price's typical way, however, the Computer Centre is not relevant only at the scale of the building, but also in the macro scale of the region, as the BTDB was itself a synchronised network of docks and railways built in the XIX and XX century, and in the micro scale of furniture, since computers took a whole room (and furniture, hardware, people and software were the actual materials to be laid out), thus participating in the creation of a multi-scale 'smart' environment. This paper will study the Computer Centre in relation to Price's involvement with cybernetics both previous and past, seeking to understand how constructing such a building affected his comprehension of cybernetics. In doing so, it will look at the BTDB Computer Centre in relation to the *history* of cybernetics through the study of the building's different *spatial* scales – paper, furniture, interior, building, region, country and continent, thus looking at the sedimented history of the construction of this particular 'smart' environment.

Pontificia Universidad Catolica de Chile
Chile

Keywords

Cedric Price, Cybernetics, Computer centre, Smart region

SESSION

Quantifying Urban Experiences through ‘Smart’ Methods and Technologies

Stefano Andreani

This theme aims to form the base for meaningful discussions on the role played by emerging technologies in enhancing our understanding of the individual experience of public space. In fact, novel digital, sensing, and augmenting technologies offer unprecedented opportunities for measuring subjective experiences in relation to spatial parameters and “objective” qualities of urban contexts. How can “smart” urban technologies mediate and enhance the interaction with our surrounding environment, highlighting the impact of dynamic urban qualities in shaping both individual and collective experiences towards a better-informed approach to the design of public spaces? What correlations can be drawn between subjective perceptions and specific objective qualities of space for the creation of truly human-centered urban environments, in varying conditions over time? How can mediated interfaces with urban environments augment the relationship and interactions between the individuals that share engaging public spaces? By setting up tactics and metrics that are not so commonly considered in design research practices, this theme aims to foster alternative uses of “smart” instruments for technologically-enhanced design methods in which the human experience - and even emotions - are placed at the forefront of urban design decisions.

**Harvard University Graduate School of Design
United States of America**

Keywords
Quantification, Urban experiences

Between Moments

Robyn Natatie Harkness

Within healthcare architecture, there is a void of attention directed towards the non-medical spaces; the waiting rooms, hallways and all ‘between moments’ where many people spend extended periods of time under acute stress. Nowhere is this more prevalent than in the emergency departments where patients seek care and treatment for real or perceived, serious injuries or illnesses. While waiting for medical attention, exposure to high levels of harsh lighting, sterile furnishings, chaotic activity and cavernous rooms with others in distress can cause and increase anxiety, delirium and high blood pressure. The critical experience of such spaces changes based upon a user’s unique sensory conditions and therefore their individual perception of space.

The architectural design tools and devices to explore these highly charged sensory spaces have been historically limited to sterile abstracted plans and rendered marketing perspectival images which do not fully communicate the immersive experience of these spaces when in use. Virtual reality is emerging as a powerful three-dimensional visualisation tool, offering designers the opportunity to comprehend proposed designs more clearly during the planning and design phases, thus enabling a greater influence on design decision making. This research explores the use of VR in a healthcare perspective, adopting a participatory design approach to simulate sensory conditions of blindness, deafness and autism and the realities of these conditions within space. This approach diverges from a purely visual method of design towards an understanding of the haptic, exploring the critical phenomenology behind these non-medical spaces. The research finds significant potential for the use of virtual reality as a design tool to simulate the experience of these spaces in early design stages.

Victoria University of Wellington New Zealand

Keywords
Virtual Reality, Healthcare, Emergency Department Design

Neuroscience and the Health of Urbanism

Kristine Mun

Contrary to what we may intuit, some research shows that those who live in rural areas suffer more depression than those living in cities and thus people are increasingly migrating to cities for its benefits. However, the chaos of urban environments that is saturated with intensities such as sound, smell, light (or absence of) are also creating an immense amount of stress on the body. Evidence of research shows that living in cities effectively ‘alter our neural processing of acute social stress’ (Meyer-Lindenberg). While there are benefits to living in a city, the stressors are evident and the creation of a healthy urban environment is becoming a major concern for many designers and policy makers.

This paper presents a deeper probe into how neuroscience is being used in contemporary discourse of architecture and urban design. Maturana and Varela state that any interaction between an organism and its environments is perception. The brain takes on many different roles in perception by sensing, filtering, analyzing, storing, generating response patterns, enacting behavior etc. Advanced body-sensing technologies, such as fMRI, EEG, EKG and facial recognition, are allowing us to measure intricate areas of the brain related to different spaces and events that we encounter. (Macagno) As our city is becoming a Digital City with layers of highly complex infrastructural networks that are aimed – with best intentions – to create a harmonious and qualitative life, embedded technologies projected at reaching 150 trillion IOTs active and “alive” in 10 years will effectively change the way we communicate and exist with our environments. We foresee cities in the near future having sensors to detect our physical and mental states, to monitor and improve the health of the urban environment. Adaptation will become the normal mode of operation as automated technologies will learn, calculate, compute, and produce necessary changes create a homeostasis.

New School of Architecture & Design United States of America

Keywords

Neuroscience, IOT, Environmental psychology, Adaptation, Perception

Travel Together or Not?

Dimitris Papanikolaou

“We are at the threshold of a new era of urban transport.” With this provocative statement and the grandiose title “Reinventing the Automobile”, Mitchell, Borroni-Bird, and Burns unraveled in their book a fascinating vision for urban mobility. Shared fleets of compact, robotic, electric vehicles, placed strategically at networks of recharging stations, allow citizens to move ubiquitously and on demand. By maintaining an optimal balance of vehicles at stations, more citizens can commute with fewer vehicles while cities can reclaim back urban land.

Yet, studies on the cost and performance of MoD systems are controversial. Some, claim that sharing reduces congestion, improves air quality, and enhances accessibility while reducing dependence on private ownership. Others, however, show that vehicle-miles traveled and traffic congestion will increase up to 8% and 14.0% respectively due to increased empty trips for charging and pickup.

The question I put forward is: *Under what circumstances is it better to share rather than own, and to what extent can technology affect them?* I argue that the question of sharing versus owning in mobility depends less on technological and more on contextual conditions such as urban form and land uses.

I organize my argument in three parts. First, borrowing concepts from urban economics and systems theory, I provide a definition of cost of sharing that serves as a basis for comparing shared to privately owned mobility. Next, using data from MoD systems across cities, I show that cost depends on urban form, land use patterns, and basic operational decisions, in ways that exceed technology. Finally, I show that, given any technology, there might be cities for which, sharing costs more than owning. I conclude with a projection. In an era in which human labor becomes more agile, shifting trips in time may have more impact than sharing trips in space.

**University of North Carolina Charlotte
United States of America**

Keywords

Sharing, Mobility on Demand Systems, Data Visualization, Complex Systems, Future Mobility, Urban Form

Scanning Heritage: Qualitative Representations of Cultural Heritage.

Gavin John Perin

While the documentation of heritage items in architecture uses a mix of photos and orthographic drawings, photos assume a supplementary role. The preference for two-dimensional orthographic drawing reflects the need to quantify objects for preservation and repair. In effect, this preference for the scaled indexing of 'culturally significant' form denies any interest in the qualitative, lived experience of a building. The orthographic drawing's matter-of-factness establishes a very specific political agency by evacuating experience. As a product of excluding personal judgment, this agency silences all but the institutionalised voices who presently get to decide on the 'cultural significance' of a heritage item. At the same time, the orthographic drawing can be said to play a central role in disguising the institutional privilege behind the determination of cultural value.

Digital scanning technology radically displaces the dominant quantitative paradigm that currently drives the documentation of heritage items. The paper will explore how techniques like photogrammetry exceed the limited and limiting ambitions of documents like the London Charter by seeing objects as immersive qualitative entities. On the one hand, the ability to modify digital scans in modelling and rendering software makes it possible to construct immersive renderings of the spatial qualities- irrespective of the how degraded the building stock is. The need to render these scenes suggests that the speculative aspects of artist licence become part of heritage drawing practice. On the other hand, the affordability and portability of such renderings through web-enabled 3D viewing platforms broadens the range of people who determine what items can be considered 'heritage'. Freed from the need for physical exactitude and proximity, and supported by the easy circulation of a new set of documents, these qualitative drawing technologies broaden the discursive basis by which societies identify and value the cultural status of a building.

**University of Technology Sydney
Australia**

Keywords
Photogrammetry, Digital Scanning, Experience

OPEN SESSION #1

Benjamin William Tippin

Soft Sibylations: GPS Navigation as urban speculation

How do sonic systems embedded within navigation software prefigure a transformation to movement and flow in urban development? Can the commodity structure of GPS navigation apps point to new developments within the production of space as a social phenomenon? Utilizing Marc Couroux's glossary of speculative sonic technics, this paper attempts to approach these incitements by positing GPS navigation, particularly the community-driven social navigation app Waze, as sonic amplifiers of technoablative systems of urban speculation and speculative urban development. This paper sees Waze as a site of techno-sonic cyberaffordance that speculates an urban landscape transformed through cybernetic affirmation. It utilizes navigation as a recently articulated form of commodity production and its resulting new lines of flight as new marketing territories. The sounds that move users away from centralized arteries of transit (e.g. highways, freeways, main boulevards) towards the periphery (e.g. side-streets, alleys, neighborhoods) challenge the visual feedback of urban travel. The lines and signage of urban negotiation are superseded by the beeps, dings and soft sibylations of the GPS navigator; sound revolts against the visual norm. Yet sound is just another site of capital development. Driving users away from the central axes of urban travel, Waze activates its logic of dispersion contra centralization, temporal logic contra spatial logic, the affordance of the user superseding the structural capacities of infrastructure. Through sonic cybernetic feedback, Waze turns conscious or unconscious participation in its data aggregation into urban redevelopment schemes—subjecting peripheral communities to aggressive speculation.

Torrance Art Museum United States of America

Keywords

Sound, speculative urbanism, digital platforms

Smart Spaces – Spatialized Smartness

Radostina Radulova-Stahmer

Urban technologies (Information and Communication Technologies ICTs) are globally implemented in cities in order to meet current challenges such as urbanization, global warming, environmental pollution and scarcity of resources. Against the background of global digital and technological tendencies of the last two decades this paper discusses on an urban neighborhood scale spatial conditions and spatial transformation in public space.

In current Smart City (SC) literature the discourse is divided in two directions of thinking, one is technology oriented and the other is socially oriented. This young field of research is lacking the spatial dimension of the urban process of digitalization. This paper contributes to this research gap by systematically analysing the spatial interfaces and interdependencies between physical urban space and the digital technologies. The specific research object are urban SC projects with different implemented technologies. The goal is to identify spatialization delays (Verräumlichungsverzug) of digital technologies on the urban neighborhood scale such as postal logistic services or advancing car sharing opportunities.

Following the European SC model by Giffinger et al. ten different urban SC projects with specific focus on the key fields mobility and environment in the German speaking area are examined. All SC projects include technologies implemented in dense urban areas and in cities with more than 300.000 inhabitants.

As part within the PhD research the identified spatialization delays will serve for future urban planning in order to not only improve technological and social convenience but also to assure a robust spatial improvement of quality in public space.

**KIT Karlsruhe
Germany**

**TU Graz
Austria**

Keywords

Vision, Mapping, Representation, Perspective, City space, Past and future, Traces

Delfina Fantini van Ditmar

The IdIoT in the SMART Home

As a result of the fast-growing market of Internet of Things (IoT) technology, an algorithmic logic is permeating architecture. With the incorporation of a wide range of 'smart' devices into the built environment, architecture operates as the nexus of data-driven processes and the domestic space.

The 'smart' home has its particular dynamics, IoT technology creates a different set of relations, and brings forward a whole new set of issues into architecture. In response to the rapid growth and accelerating commercialisation of the Internet of Things (IoT) technology in architecture; historical and socio-political research is crucial.

By questioning and critically analysing the process of data extraction from the domestic space, the paper will examine the process of datafication of the domestic space by tracing the elements of architecture that have been affected by the occupancy of IoT devices.

IoT technology embedded into the home is affecting how we perceive and conceptualise architecture. As a way of 'slowing down' research on the topic, based on Stengers' 'figure of the idiot', the paper will present the 'IdIoT Proposition' as a methodological framework to become aware of algorithmic issues of the 'smart' home. As Isabelle Stengers [1] suggests, the idiot creates an interstice, a 'space to think' resulting in a figure that is of great use to ask ourselves "what are we busy doing?"

Through the figure of the IdIoT the paper will critically analyze this new narrative. The IdIoT will by describe how the algorithmic logic presents a series of controversies and it will problematize the ambiguities of 'smart' IoT technology.

[1] Stengers, I. (2005). The Cosmopolitical Proposal. In B. Latour, & P. Weibel (Eds.), *Making Things Public: Atmospheres of Democracy* (pp. 994-1004). Cambridge, MA, USA: MIT Press.

Royal College of Art United Kingdom

Keywords

smartness, internet of things, idiot, domestic space, home, architecture

SESSION

Making the city smart together

Jonas Breuer, Shenja Van der Graaf

With the recent ‘smartening up’ of our cities, and public sphere generally, ICT in its various manifestations has become paramount to the governance, operation and experience of the urban. ICT, increasingly associated or interchangeably used with algorithms and artificial intelligence, draws attention to how public space is ‘translated’ into ‘code’, and how ‘code’ is said to ‘reshape’ public sphere (Kitchin, Dodge, 2011). In this view, the smart city imaginary, with a distinct set of rationalities, has become a recurring theme within critical urban geography (White, 2016; cf. Mansell, 2012), centre-staging digital technologies to tackle complex urban issues with a focus on pragmatic and functional aspects related to efficiency, safety and the like, conjoined by questions and critiques about privacy, control and ownership, but shaped mainly by mere solutionist visions unable to address the underlying complexity of issues at hand.

Against this backdrop, we seek to further the critical debate about smart citizenship and the role of citizens, urging cities and governments, at minimum, to anticipate and mitigate (un)intended consequences when the ‘human outlook’ is downplayed. We put forward the notions of participatory design and co-creation to further investigate what we consider to be a weakness in understanding today’s smart cities. A structured perspective is missing on how to systematically involve citizens, and achieve an equilibrium between diverse interests involved in the complex multi-actor and multi-sector setting of the city. Here, assigning an active, co-equal and structural role to all actors remains challenging in practice, despite the wide range of available technologies and digital public services.

This session seeks to discuss systematic involvement of citizens through participatory design and co-creation approaches. We encourage participants to explore existing concepts, propose new ones at a theoretical level, or to present a meaningful empirical case study that showcases the application of a related concept.

**imec-SMIT/Vrije Universiteit Brussel
Belgium**

Keywords

Smart city, Smart citizenship, Participatory design, Co-creation

Co-creating a practical vision on the Smart City

Nils Walravens

It is becoming increasingly accepted that the term ‘Smart City’ is problematic. It has become a catch-all, container concept that can encompass anything from a digital form on a municipal website to a ubiquitous sensor and data platform that gathers all kinds of data on citizens’ every move. At the same time, local governments are confronted with increasing service-related demands from citizens and a variety of new technologies that promise to solve all kinds of urban challenges. Local governments struggle to position themselves vis à vis the Smart City concept and to define their role in an innovation ecosystem that moves very quickly and in an agile way.

In order to deal with this challenge, cities are actively exploring and defining how they see their role as a ‘smart’ city. By defining a more concrete and practical vision on the concept, local governments become more suitably equipped to innovate in a more sustainable way. This means defining what being ‘smart’ means to *them* and perhaps more importantly what they do not take into consideration.

In an effort to position themselves within the Smart City debate, 13 Flemish cities have co-created a general vision on the concept and a working definition that demarcates what constitutes a Smart City initiative to them. This paper details the process applied to arrive at this definition and gives examples of how cities have started working towards a definition that fits their specific context, and is supported by other important actors in the ecosystem (or the ‘quadruple helix’), i.e. knowledge institutions, companies and citizens. By co-creating a more nuanced vision on the concept with these partners, cities arrive at a concrete perspective on how the Smart City can be viewed, that is more practical and sustainable than before.

imec-SMIT, Vrije Universiteit Brussel Belgium

Keywords

Mobility, Smart city approach, Big data, Trajectories, Nodes

Data accessibility, visualization and co-interpretation processes as the new urban commons

George Artopoulos

European cities have always been arenas wherein social, ethnic and cultural differences led to social friction. Today these arenas are characterised by an increased speed of transformation, and therefore for growing levels of complexity with which socio-cultural phenomena manifest themselves. The lack of dialogue among the different communities that occupy and appropriate the space of the city often leads to the establishment of a hegemonic cultural understanding of the urban environments. The integration of existing and newly brought cultural expressions with distinct socio-spatial and historical references, is arguably one of the most pressing challenges of Europe, one that necessitates the creation of opportunities for cross-cultural dialogue. People from various cultures meet in new spatial interfaces and this interaction intensifies their awareness of diversity. Can city ‘smartness’ enable creative responses to this challenge?

The paper will reflect on the resilience of smart systems that are promoted today for user-personalisation when interacting with, and the efficient operation of, city infrastructures, and will consider their capacity to respond to the pressing conditions identified above. More specifically, the paper will discuss about the capacity of smart digital tools, data management interfaces and participatory processes to stimulate flexible data visualization models, as well as interpretation, interoperability and sharing processes as another commons of the city. Instead of the application of data analytics on observation data for user-personalisation when interacting with the city, the paper foregrounds user-driven co-creation methodologies and ICT tools as the much needed cybernetic systems that can bring more open and inclusive ‘smartness’ to the smart city vision of the urban environments of our future. Enabling adaptive and flexible, cross-cultural, data interpretation by the many communities that appropriate public space digital technologies can act as catalyst for engaging people with the urban environment and its cultures and therefore with urban commons.

**The Cyprus Institute
Cyprus**

Keywords

Data management, Visualization, Sustainable communities, Urban commons

Participatory action research for the development of e-inclusive smart cities

Ilse Mariën, Nils Walravens

In order to understand how smart cities are conceptualized and how they can operate, involving multiple stakeholders in the debate is pivotal. But how can their participation in this discussion be guaranteed? We propose a participatory and action-oriented research approach (PAR) that combines action and reflection while enhancing collective participation from all stakeholders of the quadruple helix to develop a bottom-up and (e)-inclusive smart vision for future smart cities.

In the four-year research project PAR4-B, we will test a PAR-process for the Brussels-Capital Region (Belgium). Our goal is to present a common future vision for a smart and e-inclusive Brussels that is built upon priorities and policies established via consecutive participatory processes with all stakeholders of the quadruple helix on 6 smart city domains: economy, government, people, living, mobility, and environment (Cohen, 2013). For each of the domains, a particular PAR-process will be set up, allowing to improve the overall PAR-process and used methods.

Every PAR-process consists of (1) an analysis of the Brussels policy landscape to gain better insights into the vision of governments on smart cities and e-inclusion; (2) the mapping of relevant stakeholders per domain, along with a customized recruitment strategy, to ensure their involvement in the participatory actions. These stakeholders involve all groups of the quadruple helix, including vulnerable social groups as they are most likely to opt out of a smart city; (3) the identification of priorities and the development of a shared vision due to face-to-face participatory processes with stakeholders and an online civic engagement platform; (4) the development of accessible policy documents for the realisation of an e-inclusive smart Brussels.

This paper will set up the research context for the PAR4-B project, highlighting the requirements for a prosperous participatory trajectory and elaborating on the effectiveness of PAR in a decision-making context.

**imec-SMIT Vrije Universiteit Brussel
Belgium**

Keywords

Participatory action research, Participation, Smart cities, e-inclusion, Quadruple helix

Civic Data & Smart Citizenship in Midwest Urban Contexts

Priscilla Ferronato, Therese Tierney

Technology plays an important role in the communication of information (sharing and gathering processes). Although technology and open data have been related to the increase of information democratization, even traditional media and web-based technologies are limited to the audiences who use them. As a consequence, technology often excludes people who do not have equal access to it, which creates a gap between those who access information and those who do not (Fredericks et al., 2018).

This research aims to understand how people use technology to gather and share information about civic data, in order to propose new ways of exercising citizenship. Therefore, this research will test and discuss what level of technology accessibility and literacy is required for the development of “smart” citizenship. Furthermore, it will verify the various levels in which “smart” citizenship can be better exercised. The investigation process is organized into three phases. One, the contextualization phase is based on three case studies of smart cities and citizenship. Two, the data collection phase consists of a series of surveys and in-depth interviews that compare different forms of information access through internet-based technology in South Chicago. Three, the analytical phase applies both quantitative and qualitative methodologies, which allows for different social, cultural, and economic contexts to be considered. The paper concludes that while technology can be related to the improvement of the urban environment, there is a lack in the application of technology to improve low-income areas and under-represented communities from a top-down perspective. Moreover, different patterns of technology usage for information communication in under-represented communities is related more to levels of trust than to accessibility or literacy, which demonstrates an important finding for community engagement and the exercise of “smart” citizenship.

**University of Illinois Urbana Champaign
United States of America**

Keywords

Smart citizenship, Information, Civic data, Technology

SESSION

Smart Vagueness: Alternative Urbanities of the Global South

Anubha Kakroo¹, Anuradha Chatterjee²

This session addresses the theme of smartness and public space in the context of (smart) cities in the Global South. It looks at the intersection between the problems inherent to smartness, such as threats to democracy due to the emphasis on technology and over governance; and the speed of urbanization that the phenomenon entails, which is likely to create interstitial spaces, or gaps in the urban landscape that exceed the constraints of use and economy, and the boundaries of the plan. We suggest that these gaps may be the way to complexify the debates on smartness beyond the paradigms of technology, control, and efficiency. Such spaces can be thought through Ignasi de Sola Morales's notion of *terrain vague*, which is defined as: "Unincorporated margins, interior islands void of activity, oversights, these areas are simply un-inhabited, un-safe, un-productive. In short, they are foreign to the urban system, mentally exterior in the physical interior of the city (1995)." However, as Karl Kullmann (2014) has more recently argued, it is important to think of such spaces through the frames of "openness and potentiality" of uselessness, such that their potentiality is not co-opted by hegemonic forces, and such that their looseness is maintained "by people actively transforming their close-at-hand environment in real time." To this end, the session problematizes the citizen-driven 'activation' programmes of *terrain vague* spaces in cities in the Global South, which aim to create greater custodianship of spaces, through city beautification and public art projects. It invites participants to ask whether interstitial spaces in cities can provide alternative, and democratic public spaces. Is this already happening? Should these spaces be open to community appropriation and occupation, on what terms, and to what extent? What is our role as designers in this? Should these occupations be temporary, or permanent? Should these spaces be managed? Would the potential of these spaces be diminished if they were formalized, and absorbed into the gamut of planning? Can such spaces provide alternative urbanities that are beyond design, beyond typologies?

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New Delhi

²Cracknell and Lonergan
Architects
Sydney

Keywords

Terrain vague, Public space, Indian cities, Democracy

Cellular City

Nubras Samayeen

Today, Dhaka, the capital of Bangladesh, is one of the largest megacities of the world, accommodating more than 16 million people, with thousands of people moving from the rural areas into its spreading urban counterpart. Evidently, one gadget that connects all these people and accommodates them in the growing city is the cell phone. Henceforth, cell phones are creating a soft city, which is indiscernible. It is virtually operating in a much larger scale influencing the city and its urban spaces. The omnipresence of cell-phones, cell-phone users and its associated paraphernalia have an impact on built environment. My paper probes the cell phone and its direct- indirect influences on urban forms. It address the possibilities integrating cellular technology as a design constituent of future architecture and cities. Similar to the ways in which Eisenhower's highways have changed American cities in the 50's, the cell phone infrastructure has transformed urban landscape. However, unlike any past eras, the cell phone growth, emerging functions and spatial morphology is without many strict principle or order. Its imperceptible, Kinetic quality makes its presence integrated yet unrecognizable. Though this is more evident in cities of the global South and more specifically South Asia, it is global phenomenon. What does this ubiquitous phenomenon imply? How can we perceive the spatial production and instrumentalize this in creating future cities and urban spaces?

**University of Illinois
United States of America**

Keywords

Cell Phone, Urban Slums, South Asian Cities

Delhi InSites: Urban construction environments and the role of interim design

Divya Chand

Across Delhi construction activity today is extensive and the image has become synonymous with the urban realm. There are the ever growing suburbs and the burdened core— all building more to serve more. Urban dwellers thus interact directly or indirectly with construction sites on a daily basis. The plenitude and the protracted periods of construction inspire the discussion in this research – viewing construction sites in themselves as interim environments, micro-urbanities where many stakeholders interact to survive and create something.

This seminar explores the potential of a site during construction in affecting the conditions inside and outside its boundaries. In the process it questions the common practice of considering a construction site (especially largescale project) as transient given its deep and prolonged effects on the surroundings, the environment and the people in contact. Various practices around the world that result in better site conditions are looked at with the perspective of factors that make them work and considered in the context of Delhi. There is an attempt to understand where site environment falls in the priorities of the many stakeholders, and what kind of incentives and efforts work in the favour of maintaining better sites. The race of creating smart cities in the mega-cities of the Global South is currently being preceded by long bouts of construction. As the city adjusts and makes way for development, these interim spaces of destruction, disruption and creation hold possibilities of everyday democracies to play out. As designers how can we step in here to create healthier and more nurturing environments?

Research work was conducted in multiple construction sites in the National Capital Region in 2016. Authors are Suprima Joshi, Divya Chand, G. Lakshmi Chaitanya, Divleena Singh and Preeyambika Bagha who were students of School of Planning and Architecture at that time.

**Indian Institute for Human Settlements
India**

Keywords
Urban, Construction, Delhi, Site, Design

Smart underplaces: terrains vagues and the threat of the Global South in the North

Ian Sebastian Woodcock

This paper explores the tensions in Melbourne, Australia associated with a recent major infrastructure project to grade separate 8 kilometers of suburban railway line in the city's south eastern suburbs, part of a massive program of works to smarten the city's transport system. The project, dubbed 'SkyRail' by a sensationalist media and the project's political opponents, involved Melbourne's busiest railway line, one like many that passes through some of the widest extremes of advantage and disadvantage in the city. Responses to the project were diametrically opposed in these neighbourhoods.

A major component of the 'SkyRail' was the creation of a new corridor of public open space – a smart underplace - from what had previously been marginal land with railway tracks creating spatial separations. In the affluent neighbourhoods, this potential to create a new public realm raised significant fears about what would happen in a place that opened up so many boundaries. For some local residents, the new underplaces beneath the viaducts would literally create a space of the global south, by bringing the outcasts from Melbourne's increasingly neoliberal society, disrupting carefully bounded sites of middle-class reproduction. In the disadvantaged and most culturally diverse neighbourhoods further out in the suburbs, the SkyRail was welcomed as an opportunity to overcome spatial division, transform a lack of public space and create places for engagement and sociality.

The processes of implementation of such infrastructure megaprojects highlights questions around the limits of local engagement and the impotence of planners and designers in the over or under-determination of these smart underplaces in the attempt to meet the challenges of vagueness.

RMIT University
Australia

Keywords

Underplace, Railway viaduct, Public open space, Sky rail, Melbourne

MAPS & LEGENDS: Enabling the 4th City Through User Engagement

Michael Cowdy, Nichola Balch

This is a time of social, economic and ecological unravelling. Cities are not only vehicles for progress, but also centres of diversity and exchange, for goods, culture and information. But climates, global and political, are intensifying, threatening the heterogeneous fabric of the city. In this increasingly globalized world, the erasure of the local by the international is a primary threat. A juncture presents itself in *terrains vague*, sites of interpretation, receptive to the construction of an imaginary also, paradoxically, specific to place. These places deliver the sensibility of the indeterminate: discontinuities in which memory, coupled with expectation, become predominant characteristics. User-driven insinuations into urban space can subvert the temporal and hierarchical structures of traditional institutions by fragmenting chronology and celebrating the quotidian. Such operations produce spaces in which participants can engineer their own networks and relationships. Technology offers opportunities to not just engineer a more efficient city but to afford communities genuine ownership over their public spaces. Coupled with a rapidly urbanising global population, this demands a reinterpretation of traditional spaces in favour of new terrains offering novel opportunities within our existing urban fabric.

This presentation will explore processes of city-making that pursue genuine urban resilience using local knowledge, whether political, cultural or ecological. It will be illustrated by a series of McGregor Coxall Smart City projects that hybridise existing and emerging technologies to enable users to create their own places from the ground up, at many scales, and at all levels.

We aim to re-read the city, its systems and its inhabitants in all their complex potentialities and, in doing so, unlock hidden assets and latent demands. With these discoveries, users themselves formulate networks of connectivity and communication and an expanded cultural geography of the city, one of excisions and insinuations and, most importantly, one wide open to interpretation.

McGregor Coxall
Australia

Keywords

Narratives, Participation, Networks, Civic space, Urban ecologies

OPEN SESSION #2

New Sensorial Vehicles - Navigating Critical Understandings of Autonomous Futures

Fiona McDermott

If there has been one paradigm that has defined urban development throughout the twentieth century, it has been the car. Yet despite evidence of the multiple downsides of car-centric mobility in cities and urban regions, fresh speculation abounds as to the role of autonomous vehicles in future urban mobility, with significant vested interest from automakers and technology companies alike. Considering what we now know about the cars relationship to the city, do we even want the car to stay or is the autonomous vehicle an example of an outdated model that will persist due to the promise of technological progress? This paper maps out the contemporary discourses and critiques around autonomous vehicle adoption specifically in the context of cities. It questions the multiple narratives and assumptions sustaining the model of the car and examines the ways by which the proliferation of autonomous vehicles might reconfigure spaces and produce new kinds of epistemologies and urban cultures. Drawing on seminal works by architects in their observations of how the car shaped not just the built environment but societal and cultural ways of life, this paper argues for reflective, embodied, ethnographic, sociological and political thinking in determining future urban modalities. In order to overcome the perceptual risks and interpretive shortcomings posed by both the autonomous vehicle technology itself and the auto and technology industries at large, it advocates for the inclusion of more diverse thinkers into the process of understanding, imagining and designing for the complexity, unpredictability and irregularity of real-world environments.

**Trinity College Dublin
Ireland**

Keywords
urban mobility; autonomous vehicles; speculative futures; technology; urbanism

Dronesphere: Competing Aerial Imaginaries

Simon James Rabyński

No city has confronted a large scale domestic integration of unmanned or remotely piloted vehicles (drones) in urban skies. In 2018, federal regulators in both Canada and the United States, are set to change their policies governing their commercial use. Smart city ideology synthesizes a technocratic, centralized vision of command and control decision making, with a decentralized situational improvisation. (Picon, 2015) Both of these seemingly contradictory approaches are necessary to envision cities with active urban air mobility. Heidegger, in “Building Dwelling Thinking”, argues that a bridge makes the two banks of a river appear. This suggests that the application of technology changes human perception of space. As such, the concept of the aerial imaginary proceeds from air gaining a new visibility from the application of technology. Once visible it becomes the subject for projective visions articulating different ideas for its use and inhabitation. The work of different actors, including regulatory agencies, hobbyists, startups, corporations, militaries, think tanks and lawyers are presently arguing for competing aerial imaginaries. Strangely quiet from this matrix of concerns is an architectural perspective. While forms of popular culture, dating back to the 1920’s and earlier, articulate aerofuturist visions (e.g. Frank R. Paul, *Air Wonder Stories*, no. 1, 1929); these cultural artefacts focus on still distant futures. This project focuses on the transitional present North American cities are experiencing today. It maps competing ideas for the use of urban airspace within the smart city ideology. Further to this, it concludes by speculating on new possible protocols and forms for architecture and airspace. This presentation seeks to make changing demands on urban skies tangible through an accompanying set of analytic drawings.

**University of Toronto
Canada**

Keywords
Architecture, Airspace, Drone, Aerofuturist, North America

Smartness, Otherwise Considered: Gordon Pask’s Course on Information Environments (c.1980) and Alternative Models of Smartness (WITHDRAWN)

Dulmini Perera

The “smart city” is an operational and intellectual construct where the word “smart” is often linked to a specific definition of the word “information.” The mainstream idea of “smart” within contemporary discourse is aligned with a specific history of visions influenced by postwar systems sciences (particularly its first-order) where the questions of environmental organization were converted to questions of systematic information organization. Within these visions, the term smart was aligned with the concepts of *systematicity* and efficiency. To this date, courses in digital theory or courses in technocratic sustainability that actively engage with the topic smart city treat the term information in a reductive manner. In this paper, I will focus on an alternative model of the information environment introduced by second-order systems thinker Gordon Pask, who was part of a broader discussion on *systemics* developed by second order systems thinkers who were critical of first-order theorizations of the concept of information.

I will position Pask’s course within the broader context of Alvin Boyarsky’s AA and its openness to rethinking the term information environment in relation to educational environments, urban environments, and object environments. Pask’s course was a response to the lack of systems within architectural education to deal with the complexity of the emerging notion of the information environment. It was also one of the first courses that introduced information as a concept that belonged to a broader ecological discussion instead of its usual context which was digital theory. By the utilization of primary archives, the paper will expose a less known educational experiment, place it within a broader argument on rethinking the types of knowledge models that generate the smart city model and open up questions of the possibilities brought forth by considering an alternative vision of smartness.

**Dessau Institute of Architecture,
Anhalt University of Applied Sciences
Germany**

Keywords

Information environment, Postwar systems sciences, Gordon Pask, Architectural education

Standing out in a crowd: Big Data to produce new forms of publicness (WITHDRAWN)

Silvio Cartae, Rebecca Onafuyee

No city has confronted a large scale domestic integration of unmanned or remotely piloted vehicles (drones) in urban skies. In 2018, federal regulators in both Canada and the United States, are set to change their policies governing their commercial use. Smart city ideology synthesizes a technocratic, centralized vision of command and control decision making, with a decentralized situational improvisation. (Picon, 2015) Both of these seemingly contradictory approaches are necessary to envision cities with active urban air mobility. Heidegger, in “Building Dwelling Thinking”, argues that a bridge makes the two banks of a river appear. This suggests that the application of technology changes human perception of space. As such, the concept of the aerial imaginary proceeds from air gaining a new visibility from the application of technology. Once visible it becomes the subject for projective visions articulating different ideas for its use and inhabitation. The work of different actors, including regulatory agencies, hobbyists, startups, corporations, militaries, think tanks and lawyers are presently arguing for competing aerial imaginaries. Strangely quiet from this matrix of concerns is an architectural perspective. While forms of popular culture, dating back to the 1920’s and earlier, articulate aerofuturist visions (e.g. Frank R. Paul, *Air Wonder Stories*, no. 1, 1929); these cultural artefacts focus on still distant futures. This project focuses on the transitional present North American cities are experiencing today. It maps competing ideas for the use of urban airspace within the smart city ideology. Further to this, it concludes by speculating on new possible protocols and forms for architecture and airspace. This presentation seeks to make changing demands on urban skies tangible through an accompanying set of analytic drawings.

**University of Toronto
Canada**

Keywords
Architecture, Airspace, Drone, Aerofuturist, North America

SESSION

Smarter and Sustainable Urban Conservation: Myth or reality?

Ana Roders, Youfang Peng

Countries are well aware of the important role of urban conservation in their sustainable development, and there are enough international recommendations and conventions to confirm it. Recently, countries worldwide agreed to make cities and human settlements inclusive, safe, resilient and sustainable by 2030 (United Nations, 2015), calling on countries, cities and communities to strengthen efforts to protect and safeguard the world's cultural and natural heritage. Though, the question remains: how can efforts to protect and safeguard the world's cultural and natural heritage be strengthened? How does this effort affect architecture and urban planning? How is urban conservation contributing to sustainability? This session aims to enable the debate around the demand for a better understanding of the processes and impacts of architecture and urban planning in urban conservation, and consequently in the sustainable development of cities worldwide. This session welcomes papers that address how to become smarter in urban conservation. Fostering greater knowledge of urban resources and heritage enables an informed and evidence-based approach to architecture and urban planning that fosters respect for cultural identity and the environment. This cultural dimension of the city and its sustainable development perceives cities as a dynamic urban ecosystem, and relies on new forms of urban planning and architecture, linked to an integrative framework for smart urban governance. The challenge set to the authors in this session is to raise understanding and debate on how this integrative approach helps cities to further develop and become more sustainable, in particular while (or not) acknowledging the role of culture in sustainable urban development.

**TU Eindhoven
The Netherlands**

Keywords

Urban conservation, Smart, Heritage, Sustainability, Architecture

Backfiring, equalizing and recurring effects of heritage making in the context of the urban periphery.

Marijn van de Weijer

The periphery is a domain where urban development arguably hasn't been implemented in a smart or sustainable manner. Suburban sprawl – the agglomeration of residential, industrial or commercial estates which dissolves the historic juxtaposition of city core and countryside – poses great challenges to planners and designers engaged in the search for a sustainable urban future. At such sites, heritage discourses are being constructed and contested in a specific way, setting relics in the periphery apart from both urban and rural relics. Discussion on how and what to conserve specifically here, and on the relation with current-day concerns for sustainable urban development remains underexposed in heritage studies.

This contribution draws together and theorizes spatial practices and discourses which address architectural and urban redevelopment in urban peripheries. It outlines challenges to the making of heritage in the periphery, based on observations across several case studies in the Netherlands and Belgium. Typically, suburban sites reflect the transitory nature of modernity and the wastefulness of capitalist spatial production. As a consequence, notions of heritage are more flexible, continue to be 'in the making', and relate to sustainability in a complex manner.

Three cause-and-effect mechanisms are drawn forward, each of which typify an approach of introducing heritage into the discourse on redevelopment in the urban periphery. Firstly, canonizing heritage backfires when cultural arguments clash with other stakes of urban sustainability. Secondly, the bottom-up introduction of heritage claims by new user groups to influence urban design discourses equalizes the spatial claims of such groups vis-à-vis existing user groups. Thirdly, Sidetracking heritage values in planning, resulting in demolition, is followed by recurrence of appreciation for lost heritage with the passing of time. Building on this (non-exhaustive) taxonomy, this contribution proposes pointers for interrelating the research agendas on heritage making and on sustainable urban redesign.

**Universiteit Hasselt
Belgium**

**Zuyd University of Applied Sciences
The Netherlands**

Keywords

Heritage making, Periphery, Urban design, Redevelopment, Discourse

Heritage for whom? The exclusionary construction of Neapolitan past and its effects on the migrant community in Piazza Mercato

Alejandro Fernandez

The conservation and curation of historical elements of the built form in Naples have played a vital role in the contemporary construction of Neapolitan identity. How have the discourses on historical heritage influenced the exclusion of migrants from Neapolitan identity? In this paper, we argue that the Bassolino administration created a static interpretation of the Neapolitan past that has resulted in the exclusion of migrants from participating in the city's present. This essay brings together policy documents on the construction of heritage related to the URBAN policies of the EU and the lived dimensions of physical urban spaces. Firstly, the focus will be on the Bassolino administration and its construction of Neapolitan heritage. Through the analysis of historical documents, this research presents the mutable identity of Naples. Secondly, the research is placed in Piazza Mercato and its surroundings, one of the liminal spaces of the Centro Storico. This second part builds on a combination of interviews with a migrant tour association, policy documents and a new regeneration proposal for the area. This research explores how heritage in a "creative economy" can become exclusionary when built on an immobile and essentialist past. The final discussion reflects on the apparent neutrality of sustainability and smartness and tries to conceptualise a fluid approach to both heritage and urban identity.

**London School of Economics
United Kingdom**

Keywords
Heritage, Naples, Identity, Migrant, Sustainability

Urban Conservation and the Symbiosis of People and Building

Sytse de Maat

In order to make our cities smarter and more sustainable, we should remember where this challenge comes from. We know that in its most radical days, modernism rejected tradition and vernacular architecture was considered incompatible with progress. Later it became clear that this rigid approach led to the destruction of valuable urban qualities. Appreciation of the traditional came back in the form of conservation. Today conservation is an important factor in reaching balanced urban development. In a similar way, industrialization ignored environmental qualities and consequently disturbed ecological balances. Pollution and exhaustion of resources made clear that unbridled modernity was untenable, unsustainable. This gave rise to the call for sustainable development.

Both conservation and sustainability thus have their origin in the transition from tradition to modernity. But hang on, what exactly is this transition?

More broadly, how is people's relationship with their building changing, their architecture, their city? And prior to that, how does this relationship work?

In order to better understand the processes and impacts of architecture and planning in urban conservation, this paper will describe people's relationship with building and identify five major trends that characterize the transition from vernacular to modernity and beyond. With these trends it is possible to draw a map of opportunities and threats in the field of heritage, sustainability, conservation and development. Moreover, it affords a weather chart depicting the climate in which planners and architects have to navigate.

The presented analysis of this historical context makes it possible to identify the *raison d'être* of conservation and the fundamental causes of the sustainability issue. Both call for strategies that go beyond the current hypes of purely technical solutions, recycling and energy transition. Concurrently, these trends show how urban conservation inherently contributes to sustainability.

The Perfect Slum The Netherlands

Keywords

History, Vernacular architecture, Conservation, Anthropology

Challenging the Significance of Built Heritage in Sustainable Urban Development- A Glasgow Case Study (WITHDRAWN)

Linda Shetabi

The management of urban heritage has, in recent decades, become an integral part of sustainable urban development (SUD) policy in many countries across the world. This shift in heritage management is reflected in UNESCO's Historic Urban Landscapes approach which aims to integrate "the goals of urban heritage conservation and those of social and economic development" (2011:5). Despite the increasing importance of heritage management to SUD, substantial challenges remain. This paper engages with one of these pressing challenges, namely the relationship between heritage conservation and environmental sustainability, by examining the relationship between urban conservation, environmental sustainability and urban planning in Scotland. In Scotland, the significance of built heritage is attributed to the building's 'special architectural or historic interest' (Historic Scotland 2011, 23). In practice however, the aesthetic values of urban heritage is the primary, and at times, the sole consideration in designation of conservation areas and listed buildings, as well as the single most important value in managing urban heritage. Reducing significance to aesthetic values effectively leaves out the social, economic and environmental values of built heritage's contribution to SUD.

This paper seeks to explore the extent to which, and reasons why, there is a disconnect between the rhetoric of national and local planning policy on SUD and the reality of urban conservation in Scotland. The outcome of the research aims to challenge the significance of built heritage beyond its aesthetic and historic values, to include its contribution to the environmental sustainability and carbon reduction targets of cities.

**University of Glasgow
United Kingdom**

Keywords
Urban heritage, SUD, Significance, Policy

SESSION

Accessing data analytics: urban commons as city smartness

Carlos Smaniotto Costa¹, George Artopoulos²

The proposed session encompasses the following conference themes: Histories and Futures, Agency and the Public Sphere. The session acknowledges that despite the significant use of ICT-based devices in public spaces, there is a lack of interdisciplinary exchange of knowledge between researchers and experts, which is a gap that it intends to bridge.

Almost a century ago Modernism challenged the structure of the city and reshaped its physical space, in order, between other pressing needs, to accommodate new networks for a healthy, safe, and easy environment to live in. This transformation has had a great impact on the way we still design, move in, occupy and experience the city. Today we are employing smart ‘technologies’ in our pursuit of the transformation of our urban infrastructures in such a way to allow for an easy, and *sustainable*, everyday experience of the city.

This session addresses the relationship between ICT and their use in public open spaces (urban parks, streets, squares, arcades, etc.), in the context of user engagement and *smart* association within the public sphere. The consequences of technology pervasiveness in this context will lead us to inquire how do ICT affect the use and appropriation of public open space, what are the risks and how new, emergent, agencies fit in the concept of a virtual society.

The session builds on the findings and outcomes of the “CyberPark - Fostering knowledge about the relationship between Information and Communication Technologies and Public Spaces” project, financed under the H2020 COST-Programme (2015-2018). Based on these outcomes, the session will invite contributions regarding the impact of ICT and data analytics on social practices that could challenge spatial and social experts to use them in policies, design and research in order to produce responsive and inclusive urban places.

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Portugal

² The Cyprus Institute
Cyprus

Keywords

Spatialised cultural interaction; Open data; User engagement

Connecting the dots: How do we do a different kind of smart?

Jonas Bylund

JPI Urban Europe is a member states' initiative for collaboration on urban R&I funding with the aim to tackle the societal challenge of transforming urban areas to sustainable and liveable futures. The ambition to develop a European research and innovation hub on urban matters and create European solutions by means of coordinated research.

The session *Accessing data analytics: Urban commons as city smartness* relates to areas identified as of strategic interest for the *Strategic Research and Innovation Agenda* (SRIA) beyond 2020. Focus in the presentation will be on 'connecting the dots', an effort to support an emerging community of practice both in R&I and among urban practitioners accustomed to move in-between the current fragmented urban development logics and imaginaries. This concern can be framed by an 'age old' (in planning studies since the 1960s) debate between reflexive and cybernetic approaches, which in turn begets the exploratory question on what 'a different kind of smart' entails today?

Perhaps more specific to the session thematics, current digital transitions in societies all over the world also affects urban governance, planning, and management in various ways. For instance, to highlight broader trajectories at the moment: public participatory approaches augmented by ICT, big data processing of urban conditions and dynamics including securitisation, emerging kinds of urban visualisation and imagination practices, as well as new types of urban public spaces in hybrid- or fully digital formats. These may facilitate some pathways for urban transitions while also beget new dilemmas, frictions, conflicts, and wicked issues.

Because of the focus on these dilemmas concerning urban governance, public space, urban commons and community everyday life materialities built environment, and co-design approaches, the JPI Urban Europe participation in the session serves to shape an opportunity for exchange on concerns and challenges, funding opportunities, etc.

JPI Urban Europe Austria

Keywords
Smart

The Use of Social-Media Data to Spatially Address Waterfront Development: the Case of the Sava River Waterfront in Belgrade, Serbia

Jugoslav Jokovic², Branislav Antonic¹

The Danube and Sava rivers were a long-lasting border between Ottoman and Hapsburg empires and civilisations. The location of Belgrade at the confluence of these rivers caused that the city historically retreated from the rivers-borders. However, within Socialist Yugoslavia (1945-1991), the underused river waterfronts became the main ground to develop the city in modernist manner. These attempts were especially noticeable around the Sava River, where the huge urban modernist neighbourhood of New Belgrade was built, developed as a new “healthy area” with greenery, but missing to form a new city centre. However, during post-socialist transformation, many new and renewal developments have happened along the Sava waterfront, initiating a new city centre. Hence, the functional revitalisation of the waterfront has not been followed with physical upgrading. In contrast to this, national and city authorities have recently started with the planned redevelopment of the large plot of the old railway station in this area. This new mixed-use project is known as “Belgrade on Water”. This big project has sparked a lot of media attention not only relating it, but also to the entire Sava waterfront. The construction of the riverbank has been started parallel with the construction of the site and existing pedestrian path along the riverbank was extended.

The aim of this paper is territorially determining this attention before and after the inauguration of “Belgrade on Water” project. It is done by using the data from two different kinds of social media - Tweeter and Instagram and method of space syntax. Obtained data is further confronted to the genesis of the most prominent areas along the Sava waterfront (re)developed during socialist and post-socialist periods. This approach is a backbone to create the recommendations how to further modernise the plans for Belgrade waterfronts as a big potential for the city.

**University of Nis
Serbia**

**University of Belgrade
Serbia**

Keywords

Social media, modernist urbanism, post-modernist urban transformation, waterfront, Belgrade

Biosemiotics, geo-tagged data and Digital economy in smart city planning

Roxana Karam

This paper aims to reflect on the current approaches in smart-city planning through the lens of biosemiotics in architecture and urban-informatics. It aims to propose an approach for addressing short-term-accommodation services using digital economies and blockchain technology.

This research focusses on interdisciplinary approaches in biomimetic architecture from a semiotic point of view to contextualize morphological and social sustainability within smart-cities critically. It also aims to provoke ideas on reading and analysing data referencing Reichow's organic city-planning, focusing on the network and interconnectivity between people and places followed by the economy of scale by Geoffrey West.

Based on Uexküll theory, one of the pioneers of the biosemiotics, all organisms are information-processors which perceive and react to their environmental sensory-data as signs within a feedback-loop. This paper looks at this theory in a data-driven-culture. Online cloud-based geo-tagged information change individuals' decision making in-time through ratings, check-ins, reviews, etc. Smart-city planners have started collecting these information through data repositories and running data-driven workshops, events, hackathons, etc. to share, reflect and collect feedbacks from citizens and stakeholders.

One of the recent applications considering data, people and places, is the Blockchain technology. Blockchain system provides a platform for designers and decision-makers to incorporate multi-layers of information within a distributed-transparent-network with no third-party involved. This system is not yet contextualized in architecture and urban informatics.

To envisage the integrated system of people, places and smart devices within an optimal sign-system, the goal of this research is to discuss new value-propositions within architecture and urban realm using biosemiotics as a catalyst to understand the multi-dimensional system of signs in smart-cities. To better understand the process of thought followed in this research, all the stages from data to analysis and to activation through blockchain technology will be described in a concept-model for short-term accommodation services within smart-city development strategy.

**University of Edinburgh
United Kingdom**

Keywords

Biosemiotics, Data practices, Geo-tagged data, Blockchain technology, Temporary accommodation, Urban informatics, Data-driven architecture

SESSION

Smartness as Ideological Practice: Is Smartness an Empty Signifier in the Discourse of the Future Built Environment?

Chuan Wang

In recent years, smartness has emerged as a keyword in the discourse about the future built environment. Numerous ‘smart’ concepts, such as *smart city*, *smart growth*, *smarter city*, *smart home* and *smart parking*, are leading to the discursive changes in academic discussion, city initiatives, urban policies and development practice. However, the question on the scope of smartness emerges when smartness is interpreted variously in discourse and practice. For example, Cocchia (2014: 13) concluded that: ‘the concept of smart city embraces several definitions depending on the meanings of the word “smart”’. This session aims to explore whether smartness is merely an empty signifier to mask the tension between the desire of technological advancements and the demand to solve the existing urban problems, such as reducing urban inequality, improving environmental quality and retaining public interest in development. According to Laclau (2006: 107), the production of an empty signifier ‘signifies a totality which is literally impossible’, since the rhetoric with empty signifiers keep the calmness among conflicting parties in politics. If the common core of urban futures is absent, an equivalent relationship cannot be reached among different positions of antagonism or united by any shared positive features. Therefore, as an empty signifier, smartness may play a unifying role in the process of belief and aspiration of urban futures, giving coherence to a group of conflicting meanings by signifying it or giving a general label of explicit connotation and agreement for this contested ground (Gunder and Hillier, 2009). The session calls for papers, Pecha-Kucha presentations or short films to uncover the ‘floating meanings’ of smartness in the discourse and practice of the future built environment and explore how smartness channels the various ideologies under this overarching concept.

**University of Edinburgh
United Kingdom**

Keywords

Empty Signifier, Ernesto Laclau, Ideology, Discourse Analysis

Drawing as a Critical Act: Lebbeus Woods' Sarajevo

Burcu Koken

Resist the idea that architecture is a building.

Resist the idea that architecture can save the world.

Lebbeus Woods, "Architecture and Resistance"

From mind to paper, the process of drawing is strongly connected with negotiating between the tangible and the intangible in architecture. Drawing's critical and creative capacity alters the ways of understanding architectural products, by surpassing its responsibility for projecting an imaginary space. Architect Lebbeus Woods was an acclaimed architect who only practiced architecture through the practice of drawing. Between 1993 and 1996, Woods had produced a series of drawings for the city of Sarajevo under siege which visualize an alternative reconstruction scenario for the city. In his drawings, he depicted the possibilities of recovering the city by constructing a fiction for post-war condition that embellished with machine aesthetic. Moving, parasite-like machines added to the ruins of the buildings, Woods aims to heal the city with machines, rather than constructing the new.

Due to the political agencies constitute and supervise the processes of "building," architecture turns into an apparatus. By building, architecture employs to render the "political"; however, by drawing, as Woods does, the ideology under the cover of smartness, hi-tech products and technology driven architecture dissolves into a constructive discursive form. Therefore, this paper essentially aims to explore architectural drawing as a critical tool by particularly focusing on Woods' Sarajevo project and discuss its undervalued features; its potentials beyond projecting. The urban visual environment created with machines may seem over-utopian and inhumane at the first sight, but Woods's approach for the damaged city may provide a new and poetic insight for machine-city relationship.

Izmir Institute of Technology Turkey

Keywords

Representation, Urban architecture, Visionary architecture

Smart as a ‘crowded signifier’: exploring local enactments of smart through visions of smart district (re)development projects

Evelien de Hoop, Laura van Oers

Advocates and critics alike tend to see ‘smart’ as a concept informed by global social and technological processes. There remains relatively little consideration for the diverse emergence and continuous re-enactment of ‘smart’ as an unspecified overarching concept in particular socio-material settings. This paper seeks to address this gap by studying the local enactment of ‘smart’ in and through visions of smart district (re)development projects as presented on websites, in brochures, during meetings, in newspaper articles, plans and as expressed by individual or groups of actors. We argue that ‘smart’ visions emerge from local assemblages consisting of human actors and their ideologies, motivations and strategies; material specificities; historical specificities; institutional embedding; and place and space – and we explore the role of knowledge politics in envisioning smart districts, asking questions such as: what kinds of knowledge inform the visions of smart district (re)development projects? Whose knowledge counts and how does attributing value to specific kinds of knowledge (dis)empower actors? We draw on qualitative research in seven emblematic smart district projects in Europe: Lyon Confluence, Bergedorf in Hamburg, Schöneweide and Tegel airport in Berlin, Merwedekanaalzone in Utrecht, Brainport Smart District in Helmond, and Leeds Climate Innovation District. We conclude that the notion of ‘smart’ does not only differ across each of the case studies, but that different and potentially competing enactments of ‘smart’ can be identified among different actors involved, and that these change as projects unfold. Furthermore, we show that locally specific notions of ‘smart’ can constitute visions in themselves, while they can also act as an obligatory passage point and serves to legitimize and strengthen other visions of specific district (re)development projects. Lastly, we argue that knowledge politics serve to in- and exclude actors and their ideologies, motivations and strategies in the process of enacting ‘smart’ in smart district (re)development visions.

**Copernicus Institute of Sustainable
Development, Utrecht University
The Netherlands**

Keywords
Sound, Inclusion, Design, Auraldiversity

The answer is smart, but what was the question?

Oliver Schürer

Many cities around the globe are in the process of realizing the real utopia of the smart city. The paper claims that contemporary arguments communicated by the information technology industries and renown scholars alike are stressing elements of the utopian tradition. Hence the paper is discussing arguments about the smart city by the IBM representatives, Saskia Sassen, Rem Koolhaas and Adam Greenfield, among others. This discussion is challenged by arguments raised by Thomas Morus in his Utopia.

The so called smart city discourse is unveiled to be mere propaganda by the IT industries in successfully constructing a powerful floating signifier with the term smart city. The major drive underlying Mores argumentation is read as the claim for common wealth.

While propaganda is claiming to deliver neutral technological optimization for cities, smart city technology is affecting civil rights issues without any discussion. This development might contribute to the reestablishment of social structures comparable with feudalism, but enhanced by digital means.

In concluding the paper is raising two claims, one against using techno-centric values as premises for socio- spatial processes, the other, for the development of an involved and democratic narration to accompany the phenomena of urbanization while focusing on common wealth.

Vienna University of Technology Austria

Keywords

Thomas Morus, Utopia, Digital feudalism, Floating signifier

‘Smart’ Progress? Topographies of Avant-Garde Theories in Culture and Architectural Culture

Lina Stergiou

This paper elaborates a key issue within the interdisciplinary discursive field of the avant-garde, namely, progress, through the way it unfolds, and the forms it takes in conceptions and avant-garde theories in culture, and in architectural culture. With the chronological unfolding of selected avant-garde theoretical postulates of the two fields, and by discussing the types of progress they enable, it aims at creating a genealogical and a navigational tool of correlations, open questions or insights to ‘smart’ progress.

The first section concentrates in the cultural avant-garde discourse so as to discuss progress, map its six spheres of activity, and argue about the way they inform three main theories of the avant-garde. It summarizes their main attributes, and extends them over to current cultural conceptions of technological and scientific progress.

The second section focuses on architectural culture, specifically, history, theory, criticism. It argues that the architectural avant-garde has not been sufficiently examined, fundamental elusiveness pervades its understanding, and elaborates its main nature as empty signifier. While summarizing the few literatures that elaborate the avant-garde, it discusses two of them, in the way they relate to the six spheres of progress and to the cultural avant-garde’s attributes. First, the work of Manfredo Tafuri, and mainly the 1973 *Architecture and Utopia*, as a fragmentary concept of the architectural avant-garde; and second, the 2011 *Autopoiesis* of Schumacher, as a first architectural avant-garde theory.

The last section summarizes the key aspects of the above sections as an interrelation of avant-garde theories in culture, of architectural avant-garde theories, and of the spheres of progress, in such a manner so as to allow creative speculations on the development of ‘smartness.’

**Xi’an Jiaotong Liverpool University
People’s Republic of China**

Keywords

avant-garde, architectural avant-garde, progress, architectural culture, Manfredo Tafuri

OPEN
SESSION
#3

Reusability and Sustainability of the built environment as a part of a political project

Charlott Greub

The turn towards using found materials and the wish to involve audience are not exclusive to Rotor an architects' collective based in Brussels, the architecture scene in Belgium and elsewhere is gradually coming to the conclusion that reusing, augmenting, repairing, extending and improving can be more important than the never-ending quest for the new- in form of novel technologies that are promoting smartness and defining the built environment as a new urban lifeform. By contrast, the work of Rotor displays a valuable understanding of the designer's role in society, the material world, and the environment. Hence, the work of Rotor explores the notion of wear, that is, materials, objects and building structures in relation to use. Use is not to be conflated with program or function, but rather the social aspect of occupation and inhabitation of architecture during the life-span of a building, which allows Rotor to approach critical questions of reusability and sustainability. Material re-use encourages one to consider buildings as repositories, not just of the materials, but also of knowledge and past practices of crafting buildings as a resource for innovation and alternative urban futures. This presentation interrogates the radicalization of creative practices in relation to the built environment and discusses the strategy of appropriation by analyzing two artistic interventions by Rotor as case studies. First *Usus/Usures*, an exhibition presented at the Belgium Pavilion at the 2010 Venice Biennale and second The Bomel Cultural Center in Namur, Belgium, 2015 will be analyzed and discussed with reference to statements by the authors in order to explore the nature of critical practices when associated with reusability as a process of resistance.

**North Dakota State University
United States of America**

Keywords
Reusability, Sustainability, Radical Redesign, Aesthetics

INTERVAL strategies for a better urban environment

Juan Corral

The Kumbh Mela is the largest gathering on earth; it produces a temporary city for 70 million people that lasts for only two months. It requires all infrastructure a traditional city needs: hospitals, public spaces, fences, businesses, and roads. By the end of the festival, much of the infrastructure turns into useful materials for nearby communities. What was a temporary bridge could be used to create a new room onto someone's house, tent fabrics could be re-used for local market stalls, pieces of metal re-introduced into regional construction economies. If that is not a smart city, then what is it?

Studying the material flows of Kumbh Mela has been a major inspiration for INTERVAL. In the context of increasing resource scarcity and environmental degradation, as well as inequality and deprivation within societies around the world, we believe that the solution lies in the design of things. We are re-designing temporary infrastructures in much the same way the Kumbh Mela does, preventing unnecessary waste, and creating value for people and industries.

INTERVAL is an architecture, design and strategy studio that via self-initiated projects connects itself with politics, the city, economics, citizens, and businesses. It aims to improve living and environmental conditions in urban areas through design interventions that repurpose materials from construction sites, election campaigns, and other producers of waste materials, to build material structures that can benefit communities.

We believe, and we are demonstrating, that it is possible to avoid waste through design. That is our primary motivation and purpose - to take design to the next level and create more efficient and sustainable ways of working while benefiting and involving the community.

INTERVAL United Kingdom

Keywords

Sustainable development, Urban waste, Design strategies, Circular economy

Aesthetic Perspectives to Urban Technologies: Outlining the Experiential Sustainability of Smart City Solutions

Sanna Lehtinen, Vesa Vihanninjoki

The pervasiveness of technology has undeniably changed the way the urban everyday is structured and experienced. The experiential sphere consists increasingly of objects and activities that combine advances in technology and design in complex ways. Understanding the deep impact of this development on the everyday experience and its aesthetic elements is needed in order to determine how the skills and capacities to cope with the change, as well as to steer it, can be improved. We start with the inevitable recognition that technology has already profoundly changed the way urban environments are perceived and experienced. The overall aim is to describe how this shift within the experiential sphere is affecting people and their relationship with everyday urban environments.

Smart city solutions – how they are defined, applied and used – are changing the sphere of everyday experience for urban dwellers. An informed and thorough normative assessment of these consequences would be crucial from the overall sustainability point of view. Sustainability is understood in this context as a combination of fostering adaptive capabilities and creating opportunities, while the focus is here specifically on the experiential and aesthetic dimensions of sustainability.

Philosophical and applied urban aesthetics offer perspectives to understand technologically mediated sensory experiences as well as how meaning is formed through these experiences. We outline how the perspective of philosophical aesthetics can be used to understand and evaluate urban technologies and their role in the constitution of everyday urban lifeworlds. As an illustrative example we address contemporary navigation applications and the implications of their use on the aesthetic experience and evaluation of the urban environments.

**University of Helsinki
Finland**

Keywords
Urban Technologies

Urban Commons: mapping alternative futures (WITHDRAWN)

Ana Betancour, Carl-Johan Vesterlund

Urban commons could be defined as resources and spaces held in common, determined by those who need and use them, rather than by their formal ownership. For centuries there have been struggles over what is to be defined and practiced as “commons” and what is to become private or public property. Currently such struggles occur over natural and digital resources but also over urban spaces, manifested in movements around community gardens, sharing of land, alternative forms of ownership and co-creation of spaces. The notion of commons is at the centre of the discussion of democratic representation. Who owns the land, the resources, the infrastructure and buildings? Who is socially and culturally represented and by whom are decisions made? This paper attempts to map models and practices exploring more open-ended planning models, bottom-up initiatives and tactics, taking into consideration instability and the continuous change of local conditions. Drawing a from a variety of approaches and fields of knowledge to the notion of commons, from political philosophy, M. Hardt and Negri, urban geography D. Harvey, economy and social sciences, E. Ostrom, digital culture, to emerging alternative practices found in contemporary socio-environmental movements. Looking at new concepts such as de-growth, transition, the commons, re-localization, and environmental justice, they map models that resonate in historical movements and critique from earlier decades, green waves, eco feminism, deep ecology, social ecology, bio-regionalism, and eco-socialism. Learning from these practices might offer models of imagining alternative urban futures and construction spaces of commons.

**Umeå University
Sweden**

Keywords

commons, alternative urban futures, self-organisation, de-growth, co-creation of resources and spaces, social and environmental justice

SESSION

‘Smart’ Urban Heritage Management

Linda Shetabi, Lucille Tetley-Brown

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?

**University of Glasgow
United Kingdom**

Keywords

Urban, Heritage, Management, Historic, Conservation

Merging Smart and Affordable in Urban Heritage Management and Presentation: The Exhibition of Built Heritage of Niš, Serbia

Branislav Antonić

The qualitative management of historic urban and architectural heritage has always been a task in developing urban environment. In many situations, this heritage cannot be adequately accessed and presented to wider audience due to various reasons (bad physical state, financial pressure to manage it, low accessibility in urban area, ownership, etc.). In these cases, the use of modern digital technology and augmented reality can be especially practical to bring this heritage closer to prospective consumers. New, digital ways of the presentation of built heritage can even overcome its on-site presentation, adding new values, such as 3D manipulation by users or the 3D presentation of lost/invisible historic layers and development.

Serbian city of Niš is one of the oldest cities in the country, with rich history and abundant heritage. The city is especially proud on the fact that it was the birthplace of Constantine the Great, the first Christian Emperor of Roman Empire. Nevertheless, the city built heritage is not properly exhibited to visitors. The team from Niš's Faculty of Electronic engineering created a small digital presentation of built heritage in local museum hereof. A particular aspiration was to create this digital exhibition respecting the financial and spatial constrains of local institutions, without losing the focus on the main topic. In accordance to this, the aim of this paper is to show how local heritage can be managed and presented in both smart and affordable way. This is organised in two steps. The first one is to present the genesis of Niš, with special attention to the preservation of local heritage. In the second step, the relation between the exhibition and the other ways of heritage presentation is compared. Combining both steps together, final insights regarding affordable 'smart' management are highlighted.

**University of Belgrade - Faculty of Architecture
Serbia**

Keywords

Heritage management, Augmented reality, Museum exhibition, Affordability, Niš

Public ecologies: urban conservation after sustainability

Ellen Dineen Grimes

Conventional models of urban conservation are inadequate for post-industrial sites that operate at the scale of infrastructure and landscape. While these models often claim to be sustainable, they depend upon the futile recreation of an inaccessible past and create resource intensive interventions that often fail. This essay examines how ecological ideas and social network theory can shape new forms of urban conservation that simultaneously embrace the dynamics of ecosystems and the complex temporalities that characterize human culture and imagination. My argument uses the Midewin National Tallgrass Prairie, an 8,000-hectare site in the Chicago metropolitan area, as a case study for these ideas. As climate change unfolds and the need to preserve, rebuild, and regenerate post-industrial brownfields becomes more urgent, planners and designers need to devise more robust, dynamic, and adaptive models for heritage conservation. Abandoning conventional approaches grounded in modernist visions of a perfect past will require a challenging mix of technical experiment and cultural initiative that adapts models from ecological theory and critical social philosophy to the conservation of landscapes and buildings. Designers and planners can develop this new understanding of heritage by deploying two parallel strategies that link culture, technology, and ecology. The first strategy will require rigorous evaluation of the ecological and economic performance of urban conservation. The second strategy asks us to change the lens through which we view heritage, and requires a public debate and discourse that examines how we fabricate our histories and cultures. Taken together, this approach applies a 'smart' systems paradigm to urban conservation in order to construct more viable and resilient ecologies in metropolitan environments.

**School of the Art Institute of Chicago
United States of America**

Keywords

Urban conservation, Architecture, Landscape, Ecological models, Social theory

Smart Communities for Global Heritage Cities: Innovative Community Engagement Tools for Historic Urban Landscapes

Deniz İkiz Kaya

This paper focuses on the management of historic urban landscapes (HUL) located within global cities, referred as global heritage cities hereafter, and explores the means of employing innovative technologies to engage local communities and enhance their active participation in the decision making of such. For their effective management, decision-makers need to concentrate on the emerging management challenges induced by global development processes, along with the increasingly complex nature of existing legislative, administrative and operative systems. The UNESCO HUL Recommendation presents a wide range of interdisciplinary tools, including civic engagement tools, to be adapted to cope with these challenges. Well-maintained paths for collaboration and public participation enhance better site management practices. By offering faster, easier and accessible means of communication, new technological developments facilitates public participation and are currently used to build smart communities. The extent to which these management systems are equipped to address the aforementioned complexities depend on the existence of certain community engagement tools and policies, and how innovative technologies are adapted for their effective operation.

By examining how different means of community engagement are practiced in certain global heritage cities and the role innovative technologies play in them, this paper aims to explore how participatory means of communication and participation are enhanced with innovative technologies and smart city policies in decision-making for historic urban landscapes of global significance. For this purpose, it will examine cases such as the citywide participatory budget and project development strategies endorsed with digital technologies in Paris and the use of online platforms to involve citizen engagement for production of the new constitution in Mexico City. In this way, it will make an original contribution to the heritage management discourse by examining how new technologies are used to build smart community engagement for effective management of historic urban landscapes.

Ozyegin University, Turkey

Keywords

Historic urban landscapes, Global heritage cities, Urban heritage management, Smart community, Innovative technologies, Decision-making, Community engagement

The Adaptive Reuse of Cultural Heritage in Amsterdam Smart City: Revealing its challenges and solutions

Nadia Pintossi, Ana Pereira Roders

The pace of urbanization is unprecedented and its poor management can jeopardize urban liveability and human wellbeing. Cities are a privileged setting where inequality, climate change related issues, and resource scarcity among other challenges arise and can be tackled. Against this background, cultural heritage has been recognized as an asset to enhance urban liveability, ensure the endurance of the urban identity and foster human wellbeing. However, being a commons asset, cultural heritage is also a resource which is advised to be co-created in management, conservation, and interpretation. Particularly, the adaptive reuse of cultural heritage and built heritage in particular, is assumed to ensure the management and conservation of cultural heritage. Furthermore, the adaptive reuse of cultural heritage entails the circularization of cultural heritage conservation. The circularization of cultural heritage implements the circular economy paradigm, where resources and their values are maintained over time via management, transformation, and reuse to create wellbeing.

When it comes to circularity and smartness, Amsterdam is a frontrunner city in Europe, with initiatives such as “Circular Amsterdam” and “Amsterdam Smart City”. The city of Amsterdam will host a Historic Urban Landscape (HUL) workshop in the framework of a European research project on “Circular models leveraging investments in cultural heritage adaptive reuse” (CLIC project). Around sixty participants from public and private sector will attend the workshop; namely, researchers and professionals in cultural heritage, heritage economics, circular economy, smartness, urban development and management, and urban sustainability. The paper presents the outcomes of this workshop which employ the Historic Urban Landscape (HUL) approach to investigate challenges and solutions of adaptive reuse of cultural heritage in Amsterdam Smart City.

**TU Eindhoven
The Netherlands**

Keywords

Adaptive Reuse, Conservation, Heritage, Management, Urban

The city as a smart museum without walls

Hannah Lewi

Extending the well-known trope of the ‘museum without walls’ from Andre Malreaux’s conception in the 1940s, this paper will explore the promise of historical fabric in cities becoming open to the saturation of digital interpretation, as in a kind of museum imaginaire.[i] Interpretation here is taken to mean the annotation of places, buildings, markers and scenes with either denotative or poetic explanations. Long used in heritage practice to inform about the significance of sites, interpretation has acquired new energy in the post-digital age of ubiquitous and smart computing. Drawing on our experience of creating and evaluating a digital application for local citizens to post and share historical images, memories and information about an area of Melbourne called ‘PastPort’, examples of recent digital techniques of interpretation within urban realms will be examined that aim to foster awareness and attachment to historical and heritage places. Other international examples that have been pioneers in urban history interpretation and touring include the ‘Streetmuseum’ app by the Museum of London; the ‘Soho Stories’ touring digital sound guide for Soho in London; and San Francisco MOMA’s recent series of digital tour guides. Each have been targeted to different audiences, whether local or international, and each utilises different digital platforms and tools including GPS-located sound and ‘then-and-now’ photographic montage using a smart phone camera. This array of visual and aural techniques for ‘emplacing’ historical artefacts, images and collections into the streets and outside the confines of traditional archives will be explored. Through research on their creation and user experience, we critique the opportunities for smart technologies to extend the curatorial presence of cultural and historical organisations into the hands of those who wish to wander the city in new ways – that sit somewhere between the wandering of the nineteenth century flaneur and the prescribed.

**University of Melbourne
Australia**

Keywords

Heritage interpretation, Digital tours, Rephotography, Digital museum

SESSION

Utopia through smart technologies

Angel Callander

Under the theme of “Histories and Futures,” this session investigates the traditional concept of “utopia” through smart technologies and networked capitalism. Architects and intellectuals involved in founding Ekistics – the study of human settlements – in the 1960s had a profound enthusiasm for networks and global interconnectedness that revolutionized urban planning. Arguably a product of this hope for a global, networked utopia, the “Smart City” is seen as the ultimate solution to improve the social and economic problems experienced in urban life by way of technological innovation and connectivity. Posited most often in the West as “the only alternative,” global capitalism is sustained by translating everything into flows of constant exchange, including the movement of data. Frederic Jameson refers to capitalism as a totalizing structure “in which the informing power is everywhere and nowhere all at once, and at the same time in relentless expansion, by way of appropriation and subsumption alike.” Utopias are traditionally conceived of as communities of regulation, leisure, and connectivity. By opening the assemblages of both capitalism and utopian thinking in the histories of literature, architecture, and philosophy, the genealogies of the utopia through smart technologies becomes more apparent. In a world where our data profiles often precede our embodied selves, do smart technologies pose a threat to actual transformative futures? How do we perceive the relationship of smart technologies to power? In whose interests do smart cities and technologies function under late capitalism? If utopian thinking has become outdated, what tools do citizens have in promoting sustainable futures?

Humboldt-Universität zu Berlin Germany

Keywords
Utopian planning, Smart technologies

BotCo: Cobots That Can Be Thrown Away

Michael Milano

This paper explores the current state of the working relationship between robots and humans and the possible trajectories for what these relationships might look like, and need to be designed for, in the future. Will industrial fabrication settings be completely devoid of human presence, or will they work side by side with the robots in some capacity? This paper argues that, regardless of how the human-robot interaction materializes, the increasing industrial use of robots will result in even more reductions in price and improvements in technology, and robotics will eventually become so cheap that they will be implemented in every aspect of our daily life.

As in industrial work environments, the relationships between human and robot will need to be defined. These questions are also explored with a speculative short story in which home devices are being sold through infomercials. Infomercials sell home use devices that tend to over-automize an intended task while alluding to a utopic lifestyle, which reveals absurd outcomes when performing their tasks, and similarly to industrial interactions, repositions the user's role in the task. These home use devices, in most cases, do not make the task easier, but very clearly begin to expose how the relationship between a robot and human worker will change. Additionally, they put into question whether the bot is augmenting the human or the device itself.

Michael Milano Design
United States of America

Keywords
Cobot, Disposable robot

E-topia: Foucault's Heterotopia and the Digitized Mirror

George Themistokleous

The non-actuality of utopia and its paradoxical relation to an actual place (topos) are explored in Foucault's 'Of Other Spaces: Utopias and Heterotopias'. Utopias, according to Foucault, act as a kind of projection; they 'have a general relation of direct or inverted analogy with the real space of society' (1967). If utopia is the projected image of society then heterotopia - an actual site, introjects this utopian image. The impregnated meanings of utopia, i.e. eu-topia/ou-topia, in-form the heterotopos, its complex relation explained by Foucault through the mirror analogy where he states: 'in so far as the mirror does exist in reality, it exerts a sort of *counteraction* on the position that I occupy' (1967).

Foucault's notion of heterotopia can be re-considered in terms of social media. Social media giant Facebook has recently acquired a VR headset that aims to develop its technology to create, according to FB founder Mark Zuckerberg, a sense of 'unbounded spaces and experiences with people in your life' (Metz, 2016). The re-creation of this sense of 'unbounded' space however implies prescriptively containing and controlling the operations of the bodily senses through 'smart' technologies. Under the guise of creating a new experiential space, emerging technologies mark the body as a site for economic and political control, a contemporary 'eu-topos'. Yet, it is only through the subversive use of these 'smart' technologies that it becomes possible to encounter the virtual possibilities of a non-prescribed place, an 'ou-topos'. Digital processes thus offer another means of conceiving the heterotopic. Here Foucault's account of the mirror needs to encapsulate its digitized translation. The possible permutations of a digitized mirror will be explored by referring to a media installation of my own making- the *diplo-rasis*- that involves virtual trajectories that actively affect the actual environment of the perceiving body.

Leeds Beckett University United Kingdom

Keywords
Heterotopia, Digital embodiment, VR, Mirror

Epistemology of the Tech- and ‘Smartness’ in Architecture

Ioanni Delsante

Matching Eco’s dichotomy in between ‘apocalyptic’ and ‘integrated’ (1984), the ways in which architects embed technologies (including ‘smart’ ones) varies very much. If we are to identify opposite poles, we can think at those who advocate the use of technology as a positive tool towards wellbeing (technology as utopia) and those who firmly reject it as something stranger to the design process (technology as a dystopia).

Other disciplines including philosophy unfolded the notion of technology in relationship to the current socio, economic and political structures. Severino (2003), for example, by reflecting on capitalism and its endless will of power, puts technology at the core of the process, restating the difference in between the use of Technology as a tool and as a mean. Heidegger (1969) contributes to unfolding the notion of Technology, but also highlights the difference in between the notions of *technè* and modern form of Technology. He argues Technology is not neutral to the creative process, and its essence should be seek outside its boundaries. Other authors, in different disciplines including architecture, contribute to the development of the notions of technique and technology as separate means of production.

Starting from distinct notions of technique, technology and *technè*, the paper investigate the use of technology (including ‘smartness’) by contemporary architects via theoretical assumptions and/or projects. By interpreting their individual attitudes within the proposed framework, the paper aims at revealing potential pathways to ‘smartness’ in the contemporary age.

**University of Huddersfield
United Kingdom**

Keywords

Technique, Technology, Technè, Architecture, Smartness

Hyperwwwork: Is Alexa our new Chief Happiness Officer? IoT and the Logics of Soft-Production

Romain Curnier, Adrien Grigorescu

More than a representation of power and capital, the workplace and its spatial organization principles act as a mechanism of value production. Since its birth in the late 18th century, the white-collar workplace has evolved in response to particular technological innovations, social ecosystems, workers struggle and design principles.

However, the recent development of information and communication technology - and especially the ubiquity of the network - tend increasingly to blur the differentiation between workplace and domestic space, work and leisure, production and consumption. While network information economy transformed manual labor into cognitive labor, the Internet of Things and large-scale adoption of smart objects participate in the creation of a spatialized information economy. We are currently witnessing the rise of a new kind of space of indeterminate nature, in which every daily action that can be recorded, analyzed and used by third parties eventually creates value, consciously or unconsciously, in the name of efficiency and well-being. In this context, commodification of the self and every aspect of one's life are facilitated by an increasing panel of high-resolution smart objects and technologies such as the blockchain and machine learning, invoking a complex mesh of technical, social and political actors.

The HYPERWWWORK project, through the analysis of architectural plans spanning over two centuries and prospective fictional thinking, sheds light on these existing phenomena otherwise hardly perceived. Inspired by the work and thinking of Superstudio, "Twelve Ideal Offices" explores new ways to produce value and questions the status of the workplace in the "Smart City", by focusing on spaces, interactions and behaviors usually not associated with value production or mechanisms of control. Combining various material and immaterial formats, the twelve fictional workplaces tackle the trends associated with the "smartness" paradigm, such as the quantified self, information monetization, custom space experience, decentralization and 24/7 activity.

ENSA Paris Malaquais
France

Keywords

Work, Labor, Internet of things, Automation, Control

Revisiting Utopia: Architectural Praxis as an Instrument of Emancipation in the Fourth Industrial Revolution

Canan Seyhun

This research aims to propose visionary architectural strategies pursuing social emancipation within the framework of the Fourth Industrial Revolution. In the course of industrial capitalist development, technological advancements have triggered new (and mostly troubled) norms of social relations; and the problematical social structure that started to be formed after the First Industrial Revolution has brought contradictions concerning every individual's lives. Inconsiderate capitalist urbanization has since enabled the substructure for such problematical social environment driven by the determination of getting more profit, rather than providing emancipation and democracy.

By raising a historical awareness towards this crisis, coping with the period starting from the First Industrial Revolution, and focusing on the post-industrial era, this research discusses architectural experimentations that modelled utopian outlines. Their attempts to contend with capitalism are examined to provide an understanding towards the capacity of architecture as an emancipating agent, grasping the role of technology on society and architecture. By drawing attention to architecture's role in a potential social transformation, this study analyzes particular counter architectural/urban cases designed to construct social welfare in post-war Mediterranean territories. To grasp in what ways architecture could participate to social welfare, selected urban projects are discussed regarding how operatively they challenged the loss of humanistic relations within the society.

Considering the fact that we are experiencing a new industrial revolution, this study scrutinizes both potentials and risks of smart technologies. Once again in the history of industrial modernity, there is the need to question existing reality, and challenge it by proposing utopian urban environments. Contemporary cities are now offering smart technological solutions; however social problems are being ignored. Thus this research discusses the social context of architecture regarding technological innovations, while new relationships between human, machine and society are forming. A new counter-approach will be proposed with the aim of imagining a utopian future.

NTUA
Greece

Keywords

Utopia, Emancipation, Technology, Architecture, Post-industrialization

Space and Surface in Coded Environments

Hazem Ziada

This paper examines the increasing infusion of smartness into the built environment through its impacts on architecture's fundamental components. Non-nostalgically, the paper asks: What's happening to architecture as we knew it, as increasingly-interactive and quasi-independent digital milieu transform its spaces and surfaces? Two critical observations frame the discussion: First, smartness increasingly populates the environment through coded, networked devices with capabilities of spatial definition and control. This skews conventional programmatic activities into critical-path sequences; one may proceed into another space only after being sanctioned by an invisible code - e.g. movement sequences in airports (Kitchin & Dodge 2014). Conversely, code allows overlaying diverse activities into simultaneous programmes - or habitations of one enclosure, as occurs in co-working spaces. Eschewing presumptions of technological determinism and the submissiveness of coded bodies, the argument explores the morphological consequences of coding space, observing resultant variations on strong and weak programmes (Hillier & Hanson 1984) and their underpinning of qualitatively new spatial experiences.

Second, while smartness-as-coding operates mostly invisibly, smartness also evokes experiences through interactive surfaces: display monitors, touch screens, voice- and motion- activated screens, and even some smart materials; smart user interfaces lend themselves to surficiality. This brings into focus the notion of surface in architecture, long under-theorized in architectural discourse – particularly surface's traditional role as a medium engaging eye and body in ways that qualify the continuity of space through punctuating movement.

This paper challenges preconceptions that the built environment's developing smartness only creates alienating spaces that generate experiences unmediated by human perception and agency. The paper argues a more complicated picture where the body engages its smarter settings in tense dialectics and novel representations.

**University of Huddersfield
United Kingdom**

Keywords

Smart environments, Code space, Active surfaces, Body engagement, Agency vs. control

OPEN SESSION #4

Hypertypes: From Social Bridges to an Urbanism of Aspirations, Affordances and Capabilities

Shin Alexandre Koseki

Using multilayered individual massive data and geo-localization tracking, Computational Social Science and Social Physics attest the importance of face-to-face and place-to-place interactions in shaping human agency. The research suggests that collective and individual behaviors can be described by the “social bridges” that bind local communities in daily activities. By looking at various metropolitan regions across the world, findings point to the resilience of social bridges in predicting economic, political and health-related characteristics of local populations. Communities that share similar practices of metropolitan spaces also express similarities in those behaviors. Such results are akin to theories of urbanism that promote the importance of spatial configurations in describing markets, power and well-being. With this paper, I wish to look at the empirical findings of Computational Social Sciences and Social Physics through the lens of those theories, and propose a general understanding of human agency based on aspirations, affordances and capabilities. Instead of competing with previous approaches, the view that individuals act in accordance to their environment as an extension of their desires and aptitudes provides a long-awaited hinge to bind Social Physics and previous theoretical models. In a second step, I discuss how such model can afford tools to architects, planners and policy-makers to increase collaboration and cooperation between local communities and decrease the economic and political polarization of contemporary metropolitan spaces.

ETH Zurich
Switzerland

Keywords
Agency, Urbanism, Aspirations, Affordances, Capabilities

The uselessness as an inspiration: micro-scale interventions as a way to restore the public sphere in Rio de Janeiro

Priscila Gonçalves Santos

Considering the particularities of contemporary society as individualism, lack of sociability and bipolarization, what explains groups of people aiming to take care, resignify and activate “useless” spaces in the city in order to provide a community bond? And what do they actually achieve besides an update of social and urban utopias? This work intends to answer these questions based on two case studies in the city of Rio de Janeiro: Viaduto Laranjeiras, a group that promotes cultural activities under a viaduct, and Horta da General Glicério, a group that’s transforming a private vacant terrain into a public space with the implementation of a community vegetable garden. It’s also an opportunity to reflect about the role of urban designs and planners and to analyze alternatives to a top-down way of planning and administrating cities by examples of citizen stewardship of spaces. It proposes to go beyond dichotomous analyzes, understand the reverberations of these new ways of producing the public and the common sphere in their material and immaterial dimensions and update de discussion around the public space taking into consideration current issues. To this end, the potential and limitations of these interventions were analyzed based on a qualitative research where the data was gathered from the observation of primary data (such as testimony and interviews) and secondary data (such as newspapers and particularly Facebook pages). This research enabled to update and to complexify the discussions about the contemporary public space, identifying a new form of appropriation, and a new fetishization moment and scale of such spaces. In spite of the adopted clipping limitations, it was possible to understand the public space as a heterogeneous and polyvalence whole which constitute a complex space, with a strong politicization potential which makes it possible to transcend the micro scale

UFRJ
Brazil

Keywords
public sphere, micro-scale intervention, terrain vague, citizen-driven activation

Evaluation of Public Space Design Intervention in Neighborhood Parks in Bandung's Ex-Colonial Settlement

Dimas Hartawan Wicaksono

Bandung is one key city which played an important role in Indonesia's colonial era. Before Indonesia's independence in 1945, Bandung city, especially the area used as Colonial Settlement was developed with influence of garden city concept, morphologically resulting in organic patterns with boulevards and parks. Lack of design and control for several decades turned neighborhood parks into passive space, without activities. Then it changed just within five years since last city mayor, with his policy, turn those stagnancy of neighborhood parks into lively small scale publik parks. This research investigates the after-effects of public space euphoria in Bandung, as the development of those small scale public parks mostly took place in the city's historic district.

The research starts with syntax exploration to identify the parks' locational potential character in the city's tissue. It measure the neighborhood parks' relation with every other parts of the city and predict the service level of the parks. The data then compared with qualitative measure of public space quality of each park developed, and spatial transformation data of surrounding area. The results of this research is that the quality of public spaces have a very small relation with its syntax degree of relations with other parts of the city. Public space intervention could be a very successful project from space quality point of view, but at the same time acts as a threat for its environment spatial character. As the successful of public spaces development not balanced by physical control, the activities becomes threat to the historic district, showed by functional and typological transformations of the parks' enclosure.

**Universitas Katolik Parahyangan
Indonesia**

Keywords

Syntax, Public space quality, Transformation

Mapping the Vision of Hope and Fear: why are representations of the European city space 1450-1650 relevant today (WITHDRAWN)

Gordana Korolija Fontana-Giusti

‘Smartness’ suggests the hope that architects attach to the advancement of technology. In parallel, the strife for smartness discloses an anxiety in the face of the uncanniness of technology. How can we critically reflect upon this? How are we to judge when our cities are depleting human life? How shall we examine this condition historically?

The deployment of technological solutions for the development of cities based on big-data is an attractive proposition when confronting the unsustainable growth of cities propelled by an increase in population. The seemingly helpful arm of technology presents itself as a potent ally and the key ingredient of the space upon which we project solutions.

The problem becomes evident when we realise that these solutions are merely digital visualisations rather than captured human experiences. They might be ‘augmented’ or ‘virtual’, but they are not ‘actual’ or ‘authentic’. What does being human mean? Has the human finally disappeared as predicted by Foucault? Has this chapter that began in the eighteenth century finally come to its closure? Have we created a realm of digital mappings and artificial intelligence that no longer includes humans?

We are departing from ourselves through the daily velocity of our own lives. As architects, we observe, study and map the space into which our bodies erode, sensing disappearance due to our neglect of the aims and aspirations that architecture once possessed. The scariest moment is the acknowledgement of this failure, so we choose to escape by succumbing to the vision provided by technology.

By using the visual evidence of early-modern representation of architecture and city-space, I shall examine hope and fear of this period and compare it to the present by focusing on the shared passion for perspective and mappings. The examples include the works by Durer, de’ Barbari, Merian, Rembrandt, Hollar and Vermeer.

**University of Kent
United Kingdom**

Keywords

Vision, Mapping, Representation, Perspective, City space, Past and future, Traces

SESSION

Sound and the Smart City: Mapping Sound and Noise

Sarah Lappin¹, Gascia Ouzounian², Conor McCafferty¹

Efforts to define and quantify sound and noise have a long history across many fields, a history that dovetails with the refinement of architectural acoustics and noise control through the twentieth century. Yet the challenge of addressing sound and noise in urban and architectural space stubbornly persists. Concepts of the audible toggle between ‘unwanted’ noise as an objective measurable and ‘pleasant’ sound as a subjective qualification. Sound maps and noise maps invite the public, alongside practitioners of architecture, urban design, planning, acoustics and sound art, to provide new perspectives on these issues, in turn prompting further questions around the elimination of noise as an annoyance or the harnessing of sound as a creative building material.

Sound maps and noise maps enlist ubiquitous computing, powerful geographic information systems, new spatial media, and mobile devices to produce their cartographies. However, the ‘smartness’ of such projects does not mean they can bypass fundamental issues of theory and epistemology. Sound maps and noise maps engage publics in processes of citizen science and participatory art, giving rise to questions on the authority of maps, their authorship, and their critical and political purpose. By various methods, these mapping projects convey the audible as a key component of urban spatial experience. What remains less clear is how the maps assembled from such data might inform or, indeed, transform architectural and urban space.

This session will explore the politics of sound mapping and noise mapping in urban contexts. We invite papers that consider such pertinent issues as: sound and the smart city; sound mapping projects whose concerns range from acoustic ecology to urban sensorial history; the role of mapping in sound art, with particular attention to participatory and community-based art projects; recent innovations in noise mapping, including participatory noise mapping apps and automatic noise monitoring systems.

**¹Queen’s University Belfast
United Kingdom**

**²University of Oxford
United Kingdom**

Keywords

Sound mapping, Noise mapping, Sound art, Architecture, Recomposing the City

Mapping Subversive Sounds: Alternative Urban Narratives using the MyCities/Mysounds App

Eric Lewis

I will discuss the development and use of a new free app, MyCities/Mysounds (funded via the EU Interfaces project), which triggers embedded sound files as a user navigates through an urban environment. Unlike linear soundwalks, this app encourages an improvisatory relationship to urban spaces, as you can navigate through them however you wish, each time triggering different sound files in different configurations. The app therefore encourages an encounter between urban spaces, embedded sound files, and the actual sounds of the environment. I will discuss my ongoing work with this app to create sound maps that contest dominant narratives about urban spaces and sounds, that is to say the potential of this and related apps to allow marginalized and silent communities to lay claim to both sonic and built environments. In particular I will discuss the work I have done with Medea Electronique, an Athens-based new media art collective (and co-creators of the app), to create sound-walks for four neighborhoods of Athens (neighborhoods far off the tourist trail), and my ongoing work in Montreal to create counter-narratives to the official urban tours, by helping create a queer Montreal sound walk, an indigenous Montreal sound walk, and a radical Montreal sound walk. Having worked with local communities, I will discuss how via this app marginalized groups can reassert their constructions of both space and the sonosphere, and take hold of how these enter into their identity construction. Where the “noise” associated with the oppressed is edited out of the “sounds” that are officially sanctioned by those who control our urban spaces, this app re-inscribes the noise, and blurs the distinction between the two.

**McGill University
Canada**

Keywords

Sound walks, Sound mapping, App design, Alternative urban histories

Politics of soundscape measurement - modalities of sensing and listening

Dietmar Offenhuber

In the practice of architecture and planning, the auditory environment remains a neglected dimension. Smart city and citizen science initiatives promise tools to address this issue. We organize existing approaches into three sensing modalities, each tackling the relationship between sound and its material context differently.

- The first modality quantifies noise as a form of environmental pollution based on standardized measures.
- The second modality aims for a qualitative characterization of the soundscape, treating sound as a complex source of environmental information.
- The third sensing modality uses sound as a data proxy for detecting events such as gunshots or inferring parameters such as traffic volume.

We argue that each modality is connected to its own set of political issues, which we again organize into three distinct dimensions. While the modalities engage with the physics of sound, the political dimension is based on the auditory experience, which depends on physiology, culture, and personal history.

- The first dimension concerns the politics of measurement and the implications of treating noise as a negative externality. Socio-economic dilemmas familiar from the environmental justice domain can be found in this dimension.
- When a rich and qualitative characterization of the soundscape is measured, issues of auditory accountability emerge; e.g. who is allowed to “pollute” the auditory space. This has implications for the governance of the sonic commons - the notion that the auditory environment is a shared, scarce resource.
- The third modality leads to questions of surveillance and control. Cities invest in systems for shot-spotting and the detection of aggressive speech. Even when privacy laws are respected, such methods raise political questions regarding the governance of the public sphere.

In conclusion, we argue that the politics of soundscape measurement is centrally connected to the question of how the gap between the acoustic and the auditory is resolved.

**Northeastern University
United States of America**

Keywords

Hearing perspective, Sensor networks, Participatory sensing

[Re]mixing Space: A Sonically Inclusive Methodology for Charting Accessibility and Social Equity in Creative Urban Contexts

William Renel

Sonic inclusion - the ways in which sound includes people in space - has received little attention in the design of the built environment. It is proposed that the design and management of contemporary urban space is grounded in an 'auraltypical' perspective where the primary focus is those with 'otologically normal' hearing (BS ISO 226:2003). This position is driven by an idealized model of hearing, framing design through 'good/bad' ears and leading to spaces that are socially exclusive. In opposition, the emerging paradigm of 'auraldiversity' (Drever, 2017; Renel, 2018) acknowledges the diversity of human hearing and the multitude of elements that place the hearing modality within a state of constant flux.

This paper presents the methodology and findings of a participatory sound mapping workshop held at Shakespeare's Globe Theatre, London in 2017. The workshop brought together a cohort of young disabled adults, each with lived experience of sound and social exclusion. The group utilised digital technologies, such as binaural microphones, pressure sensors and smart-phone-activated sound stickers, to map sonic objects, environments and experiences throughout the building. Specific focus was given to mapping the elements of the environment that were understood as pertinent to the inclusion or exclusion of d/Deaf and disabled people. Findings highlight the multitude of ways that sound acts as an in/excluding factor and emphasise the important role that sonic cartography can play in charting accessibility in urban space.

The paper positions sonically inclusive approaches to sound mapping as a methodology through which to examine the implications of sonic exclusion in urban contexts - an area that remains under researched in design and narrowly represented in access legislation. Ultimately, the paper contends that the perspectives of auraldiversity and sonically inclusive design afford new opportunities for more socially and sonically equitable design of the built environment.

**Royal College of Art
United Kingdom**

Keywords

Sound, Inclusion, Design, Auraldiversity

SESSION

Tectonics of the Immaterial— The Material Footprint of the Immaterial

Cristina Nan

The technological shift towards smartness — driven by automation, machine learning and the internet of things — mostly perceived as an immaterial phenomena, decoupled from a physical dimension, resides on a vast material footprint, which exists almost unnoticed in the suburbs of our perception. This proposed session, *Tectonics of the Immaterial*, engages with the notion of data as an immaterial entity which revolutionises the 21st century, but at the same time relies upon a physical footprint, comprised of infrastructure and buildings.

Data, upon which smartness depends and feeds, presents itself as a new currency for architecture. The foundation for its existence are data centres. They epitomise in architectural terms the reinvention of the black box, as known in the aircraft industry, secluded from the system and continuously recording. They personify a new typology, excluding by default the human component: box-like machines to accommodate other machines. Crucial for the global grid, their existence is often hidden away.

But increasing the resolution of inquiry will lead to another facilitator of smartness: rare metals and minerals. Most smart-devices, connected to the global network of data centres, terrestrial or submarine cables and satellites, rely upon lithium-ion batteries. The extraction of lithium is correlated to large scale territorial transformations impacting on landscape, infrastructure and the urban.

This session invites contributions which address the material footprint of data and subsequently smartness on different levels of inquiry: from territorial to landscape, from urban to the built. What are the territorial and urban implications of this technological shift? How smart is smart, when it depends on vast material footprints, often messy and dirty? How can architects/designers use their expertise to inform [digital] strategies on these different levels? Researchers, architects, urban planners and other related practitioners are invited to discuss these complex themes, showing different angles of approach.

**University of Edinburgh
United Kingdom**

Keywords

Data centers, Material footprint, Immaterial tectonics, Data infrastructure, Geology of media

An architectonic instrument

Mihye An

What kind of abstractions, or, abstract instruments mediate our “smart” environments today? Be it a digital infrastructure or a machine learning algorithm, we do cast and craft a certain architectonic instrument towards the generic circulation of indexes between fundamentally different dimensions. Depending on how we view it, such an instrument leaves an inevitable fingerprint, or a contingent and often chaotic footprint on the reality. This paper assumes an idea of smartness closely around the notion of “invariance”, which perform as an indefinite, relational, pre-specific, and climatic mediator of transformation between form and matter.

In order to vividly discuss such an abstract line of thinking, the paper will analyse 10 ~ 15 recent architectural projects that are essentially data-driven: the so-called media architectures. While these architectures often feed on the very same kinds of data, they seem to leave, either intimate fingerprints or obtrusive footprints in the urban landscape. I presume that this comes from the different manners of how an architectonic instrument is embodied upon the physical, specifically from the different manners of abstracting and characterising the architectonic invariance.

The analyses will draw on a sort of “virtual-dialectical” skeletons, through which the spectrum of projects will be put into comparison. Our research institution has been developing and exploring the conceptual skeletons, which in principle consists of two opposing concepts, and as a whole, manifests an indefinite and open mediation. Such could enable a close examination on the virtual dialogue between data, “smartness”, and individual articulation of projects. Accordingly, the analyses will lead to an open inquiry on the role of architecture and architectonics today.

**Chair for Computer Aided Architectural Design (CAAD),
D-ARCH, ETH Zurich
Switzerland**

Keywords

Architectonics, Architectonic instrument, Media architecture, Invariance, Articulation

Drop that Yam?!

Yasmine Abbas

A successful 2013 viral marketing campaign for an international telecommunications company introduced the comparison of large and “dumb” or “not-so-smart” phones with “yam”, introducing both the expression and hash tag #DropThatYam into the everyday parlance of African citizens who seek to be seen as contemporary. Marketing wizards, blending old and new, have effectively enchanted an emerging generation of African consumers into adopting a lifestyle centered around the purchasing and public display of fashion accessories concocted out of a toxic brew of plastics, refined mineral ores, sweat and blood: disposable devices, aspirationally “Designed in California” yet “Made in China”—programmed to become obsolete prematurely by design. The subtext of the messaging hidden behind this clever marketing campaign is problematic at various levels, culturally—yam is traditionally the King of foodstuffs to cassava’s Queen Mother; economically—many men and women risk their lives daily selling yam chips or scraping (e)waste in electronic landscapes such as Agboghloshie, an informal scrapyards in Accra, Ghana; and environmentally—the advert perversely invites environmentally irresponsible practices. This paper examines the deep implications of advocating the adoption of disposable “throw-away” culture of Western consumerism in the African context.

**Penn State University
United States of America**

Keywords

Africa, Electronic landscapes, E-waste, Scrapyard, Smartphone, Programmed obsolescence, Yam

Recoupling Soft and Hard Materials: Supporting Richer Engagements with Software Embedded Design

Maya Przybylski

Increasingly architects and allied designers are counteracting the dominant smart-city implementations, which emphasize top-down, centralized operations, through the delivery of projects seeking out the smart-city's bottom-up capacity to empower individuals in creating inclusive ways to organize, use and shape the places they live. Through this work, labelled as software embedded design (SED), architects are engaging computation by integrating custom software to actively contribute to their projects' outcomes in time and space.

This paper argues that the immaterial elements associated with smartness and used by these architects, such as algorithms, data and code implementations, should not be decoupled from a project's physical dimension and instead be thought as constituting part of the project's material assembly. This reconceptualization of the relationship between these soft *materials*, physical materials and project outcomes elevates the obligations architects have towards their project's computational components by subjecting them to similar sociocultural considerations targeted at physical project aspects. The inclusion of soft materials in notions of a material assembly is supported by articulating offerings from the field of Software Studies which position software – its actual lines of code and data, not just its effects as a material practice with social and spatial outcomes.

SED architects are in need of new methods for expanding their engagement with soft materials beyond technical implementations to include management of the materials' sociocultural and ethical agencies. The development of new conceptual frameworks supporting richer engagement with soft materials is also presented as part of the paper. These frameworks emphasize the need for alignment between the values embedded in the code/data bundles defining soft materials and those supported by a project's physical materiality. Without this congruency, soft materials could be counteracting the outcomes planned in the design of the associated physical project components, compromising the pursuit of an inclusive version of the smart-city.

**University of Waterloo
Canada**

Keywords

Immaterial Technics, Computational Design, Software Embedded Design, Ethics, Internet-of-Things

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

Keywords
Tacit intelligent cities urban developing

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**

Keywords

HVS, Digital Imaging, Urban Images

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 “Augmented 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)**

Keywords

Digital and Analog, Civic Engagement, Digital to the Physical, Smart Growth, Video Simulation Game for Smart City

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 possibly 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**

Keywords

Innovative approach, Cognitive neuroscience, Utopia, Storyboard, Virtual reality

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 ‘enlightened designers’ of the 18th and 19th century desired to create a ‘healthy city’ on the model of a ‘healthy body.’ The idea 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. These are ‘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**

Keywords

Hyper Reality, Post Human, Augmented Reality, Spatial Individualisation

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

Keywords

Aerial lens, Synoptic view, Remote sensor, Surveillance, Urban representation

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