

SERIES
CULTURE &
TERRITORY

THE MAKING OF THE MEDIATED PUBLIC SPACE

Essays on emerging urban phenomena

Edited by
Carlos Smaniotto Costa and Konstantinos Ioannidis

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THE MAKING OF THE MEDIATED PUBLIC SPACE

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CyberParks - Fostering knowledge about the relationship between Information and Communication Technologies and Public Spaces supported by strategies to improve their use and attractiveness.
COST Action TU 1306 - http://www.cost.eu/COST_Actions/tud/TU1306

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FOREWORD

The Mediated Public Space An Emerging Urban Phenomenon

Konstantinos Ioannidis
Carlos Smaniotto Costa

The critical role of wireless connectivity and the easy access to fast, automated, databases and information technology during most of our outdoor activities can be hardly disputed. The way the urban fabric is being experienced along with the affects to the phenomenal and experiential dimensions of public open spaces, is nowadays quite different few decades ago, thanks to the hyperactivity and new hybrid realities to which we are constantly exposed (Castells, 2004).

Historically, a significant part of urban space development was arriving at its material manifestation by following functional, creative and technical targeted pathways through tropes traditionally defined and studied by a variety of spatial disciplines – ranging from engineering, architecture, urban and landscape design to planning and programming. However, the challenge to meet people's needs and to instigate a meaningful spatial appropriation that would sustain public interest within the context of fast growing urban landscapes had always been a complex and multidimensional task. Ideally, it was requiring planners, designers, stakeholders and developers to balance several considerations related not only to the materiality and heterogeneity of practices and techniques for the future-to-come public open space but also its qualitative, emotive and experiential characteristics that mediate on how people will eventually respond and think about it. If on the one side, public spaces are expected to be robust and reassuring - physically, socially and psychologically; the same qualities, on the other side, expose their “natural” vulnerability of not being properly valued, and therefore misinterpreted and misused.

For the *Mediated Public Space* – understood in a broad sense to refer to the engaged human and aspects of the environment that affect his/her thinking, understanding and behaviour - the emergence of immaterial phenomena and their position as rather critical in the development process was certainly a significant moment for urban placemaking. Here, we can resort to those public spaces that followed the crisis of late postmodernism to the quest of creative inspiration in various principles for experiential - instead of the purely functional for example - placemaking strategies like interaction, interpretation or spatial narration. As the crisis re-engaged planners and designers with the human condition, the concepts and ideas that emerged out

of the spatial interrogation of the role of the embodied human in urban space raised the intellectual ponderings of public space development to a mediated turn involving interpretation, synergies or speculation implying, almost inevitably, a certain interrelation between them. In an analogous way to the traditional space/human relation, the space/information relation - as it is tackled in this book - is dictated by the quest to shift the mediating function from space's materiality (previously studied through, for example, models of space/behaviour/ physical activity¹ interaction) to the perceived absence (Hill, 2006) of space's mater studied through the role of information technologies, data and media in realizing the potential of a multi-layered urban space. In the case of the space/human/information nexus, however, the displacement is often reflected in the domination of algorithmic procedures that demonstrate a counting ontology (Berry, 2012: 90) of space's characteristics coming fraught with difficulties in terms of thoughtfully reflecting the embodied human as an essential part of the experienced hybrid space.

Moreover, while people have increasingly turned their mobile devices into everyday fellow travellers and the accessed data or scripted information into new forms of outdoor companions, traditional forms of spatial appropriation and the use of outdoor space seem to fail to sustain users' interest. If we look at how quickly people adopt new lifestyles and adjust the free time appeal of the wireless connectivity to their needs, we are faced with a trend of people spending either too long time indoors, being disconnected from the social environment, or outside being, however, embedded within a virtual environment choosing to spend much of their time in front of screens connected to the internet. Crucial aspects of public spaces, like these of being the "place" for social gatherings, face-to-face communication and people's serendipitous interactions, fail to recognise the existence of everything that materiality neglects - the wireless connectivity and information sharing. The public realm, as a reflection of the society, has always been subject of changes and frictions. All these forms of digital flâneurs as uninvolved screen-driven perceptive visitors, however, stand in yet another tension with the challenge on how to sustain the emerging forms of spatial appropriation. Following on from this presence of digital flâneurs, contemporary public realm seems to be concerned with another question: do social practices and people's interactions that are supposed to take place in all kinds of "lived spaces of people" really experiencing changes? The digital provoked spatial-alienation does not make the user's cocoons, as described by Hampton & Gupta (2008), just more visible and tangible? The authors advocate that people using the same place do not share it, but divide and shred it into individual or collective cocoons - creating invisible but tactile barriers. These cocoons are also a reflection of the heterogeneity

¹ Space Syntax interpretive models are only few of the many approaches established and developed around the study of the relationships between spatial form and function and their mediation to human behavior and response. For some models built on concepts such as these of co-presence and co-awareness, natural movement, virtual community and movement economy, see the UCL Space Syntax Lab [Retrieved on 11.05.2017 from <http://otp.spacesyntax.net/overview-2/interpretive-models/>].

of the urban society, as Gehl (1987) argues, then social segregation; isolation and little involvement of people together are a characteristic of modern urban environments. Yet, public spaces are the “places” to see and be seen, or even be anonymous in a crowd (Thompson, 2002), just the fact of being in a public space can result on increasing the sense of belonging. The question is what is changing through the pervasiveness of digital technology: Are technological advances just turning the digital flâneurs and cocoons more visible, or are they provoking fundamental changes in human cohabitation and in the way we use the city?

It is thus straightforward to say that, as forms of place-appropriation and states of space-occupancy have been steadily shifted towards the quest for technologically mediated opportunities for space/human/information interaction, the study of the Mediated Public Space becomes of increasing importance, both in material and immaterial terms. Certainly, and as mentioned earlier, the digital enhancement underneath derives much of its inspiration from the pervasive domination of ICT that expand, as Allan Martin (2008) states, upon three different levels: these of the digital competence, usage and transformation. Further, Martin conceives it as “an attribute of the person in a socio-cultural context; as an element of that person’s identity.” (Martin, 2008:167). From this perspective, the informational layering upon the physical space, quite simply, involves the use of postdigital technologies for accessing and creating new emerging activities as networks of interlinked variables including hybrid modes of communication, culture and human interaction. In this mediated approach, the linear and mono-dimensional tools of online information archives which were mostly advanced during the 2000’ are now proved insufficient to manage the transference of human-to-human internalities to space’s externalities. As a respond to this, the central argument of the book is that the Mediated Public Space sheds light to a series of emerging socio-spatial and technical mechanisms that highlight the multiplicity of interaction of human with space and data in the sense of useful tools that move far beyond the previous linear information-seeking process: They integrate, in fact, the user not only with the machine but also with a series of alternative modes of space perceptions, knowledge organization and outdoor behaviours.

In this context, the essays of the following pages argue that what is crucial is not the function of the online platforms to merely share information, but rather the function of these platforms to evoke human activities and awareness attached to the information. Most of the digitally mediated landscapes as further discussed in the essays, being developed with the implementation of synergetic or GIS technologies, became of an interpretative nature implementing and adopting a variety of tools and techniques that expand the borders between the virtual and the physical. Meanwhile, in trying to (re)position the making of public space in the postdigital landscape not only as a change but also as a continuity of its spatial identity, authors attempt to critically negotiate the central dilemma about how to link the outdoor Commons with the

individualism of the digital sphere as a method of inquiring and bearing a shared online culture. By building a bridge between the two, the authors make efforts to explain what is at stake for urban places in the postdigital turn and to regard tools by which the outdoor human activity can be interpreted and, furthermore, preserved, displaced and projected on the screen.

In this spirit, the two parts of the book discussing Co-creating Inclusive and Mediated Places and The Failed and the Enhanced: Mediated Urban Landscapes seek to offer twofold food for thought. Firstly, a basic understanding towards the development of an outdoor digital intellect as an essential part in the shaping of hybrid public open spaces. Second, that this hybrid space is created from the physical space that transformed into a virtual environment get a new layer where various technologies enable new interactive experiences, leading to the hybrid realities. David Berry (2008: 8) rather eloquently expressed this attempt by recalling Hofstadter and arguing that the endeavour of the postdigital turn is in fact to disengage the intellect as this “critical, creative and contemplative side of mind... [that] examines, ponders, wonders, theorizes, criticizes, imagines” from the intelligence that just “seeks to grasp, manipulate, re-order, adjust.” Donald MacKay, a noted information theorist, also acknowledged the disengagement of the term as a necessary precondition for the escape from the quantifiers of the intelligence. Already in his article Operational Aspects of Intellect written in 1958, he had argued (p. 39) that an information system with “intellect” is capable of activities that expand beyond mere calculations and are “logically undetermined”, allowing for tentative steps which are not “logically forced but are disciplined by the evidence.” MacKay was quite familiar with the restrictions of the artificial intelligence and the possibilities that the interpretative nature in the mechanization of the intellect could open up in the future.

The above-mentioned disengagement makes it clear that any possibility of a Mediated Public Space can only be found in the expansion of interactivity², contemplativeness and interpretability of its spatial experience and not on the grasping or manipulation of wirelessly offered information. Berry’s commentary resolves the conflict between digital and postdigital, opening pathways to explore the peculiar intersection of space and the digital interface, withdrawing the oxymoron of this book of aligning so disparate words within a single term - Mediated Public Space. To pose otherwise the oxymoron that this book is challenged with, we know how to correspond the dot-per-dot information of an image to the series of mathematical calculations that a computational device can afterwards use to recompose it in a virtual realm - projecting on the screen the same visual form as the analogue perception would have similarly done in user’s brain. However, there are still many things we don’t

²Public space in the digital landscape, more so than architecture and urban design, prompts not only the benefits from understanding the role of information interaction in its representation but also the anticipation of expanding other interactive possibilities like information retrieval and seeking, sense-making, human-centered informatics and personal knowledge management. For more on these possibilities see Blandford and Attfield. (2010). *Interacting with Information*: Morgan & Claypool Publishers.

know in terms of decoding interpretative contents of the outdoor spatial experience like the figural, symbolic or semantic dimensions as mapped through the narrative function of place and its transformational relations. Thus, a similar computational process seems incompatible when we have to internally translate aspects³ of the emerging outdoor intellect, such as the ability of a mediated environment to mean or the ability of the user to critically think and evaluate a technologically mediated decision. In the light of this incompatibility and the computational heritage of our age in which whatever is to be transposed to the digital platform demands a prior and necessary encoding into algorithmic relations, questions must be asked about the translation of the Commons and the subject matter into executable linkages of human-spatial interaction and communication.

While at first sight the notations of human outdoor relationships seem impossible to be reduced into digital code, the following essays shed some light on some innovative methodologies and multidisciplinary practices that attempt to provide with some answers. This book is conceived as a contribution to the debate that mediated public spaces can be seen as apt examples of a shift: from the analogue to the digital and from this to the post-digital information understanding; from the digitisation of the working tools to the current state of technology in which the human condition attempts to reside within; or else from the online information archive to the post-digital outdoor experience. This shift seeks to render the new media as delivery systems⁴ of disclosed interpretative entities relating space with users and technology in new forms and conditions. Moreover, it can be taken as the sign that public open spaces cannot be merely “invented” but properly thought and planned. Moreover, that the virtual neither eliminates nor diminishes the physical space. Even in the digital age the public space is not being blurred, but is rather acquiring innovative ways of complementing itself, offering the “space” for dynamic interplays between people and the urban fabric, for encouraging collective experiences and cultivating conviviality. But all technological advancements will be of no value if they don’t help us to create more socially inclusive and meaningful cities and public open spaces.

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³ On the structure of intellect, see Guilford. (1959). Three faces of Intellect *American Psychologist* (Vol. 14(8), pp. 469-479).

⁴ The “new media” are defined by Howells and Negreiros as new delivery systems for traditional forms of communication and it is in this sense that the book uses the term. For more see Howells and Negreiros. (2012). *Visual Culture*: Wiley.

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The book initiated to make public the results of two different but, in a sense, parallel international workshops: the CyberParks Training School in Thinking and Making Hybrid Spaces called “Enhancements: Mediated Urban Landscapes” held at the Aristotle University of Thessaloniki, School of Architecture, Thessaloniki/Greece from 29 March to 01 April 2016; and the Training School called “Co-Creating of Inclusive and Mediated Public Spaces” held at the Lusófona University, Lisbon/Portugal from 13 to 16 February 2017. The contributors to this volume, coming not only from different countries but also from different backgrounds and disciplines, bring diverse perspectives into question our contemporary outdoor life as dominated by screen action and the emerging phenomena accompanying public spaces permeated by the digital, to such an extent that they become fully mediated. In this sense, this book argues that mediated urban landscapes are simply real and therefore nothing more useful than to face these new phenomena.

We want to thank all people inside and outside the CyberParks network that share to a great extent such a viewpoint and our interest to track and foster the understanding of contemporary urban digital culture as territory of mutual reactivity between technology, space and human. First and foremost, we would like to thank all contributing authors for the enthusiasm to the objectives of this volume: Aelita Skarzauskiene, Aleksandra Djukic, Belén Bravo Rodríguez, Catarina Patrício, Diogo Mateus, Eleni Oureilidou, Ina Šuklje Erjavec, Jacob Davidsen, Jan Bovelet, Juan Luis Rivas Navarro, Kai Dolata, Kinga Kimic, Line Marie Bruun Jespersen, Marluci Menezes, Markus Löchtefeld, Milena Vukmirovic, Monica Bocci, Paschalis A. Arvanitidis, Simon Wind and Tatiana Ruchinskaya.

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The Editors

Carlos Smaniotto Costa

Konstantinos Ioannidis

PART ONE CO-CREATING INCLUSIVE AND MEDIATED PLACES



A framework for defining principles for inclusive mediated public open spaces

Carlos Smaniotto Costa

PROGRAMMING GOOD PUBLIC SPACES

Understanding public open spaces and their role in communities is like an endless playground. There is so much to probe and discover. When one explores one aspect, not only can many fascinating details be found, but these also disclose many others that are equally essential. Intriguing is that even during the discovery more questions often arise. The quest of what makes a good urban place has been at the core of different disciplines - from design practices to planning and environmental sciences, from social, to cultural and behavioural sciences. Although these different disciplines share similar underlying motivations, each has different emphases and proposes different conceptual understandings and frameworks. But the chief outcome is that they add value to public spaces and shed light on their societal benefits. These different concepts and values reinforce the multifaceted and multi-layered character of public spaces: they always have intricate tangible and intangible patterns.

There are many works attempting to define and delimit public realm and public open spaces. For simplicity's sake, and because it best captures what people care most about, its concept is drawn here broadly to recognise the intersection of built-social environment and its influence on socio-spatial practices, i.e. in the way people use or would like to use a space. Henceforth, the term *public space* is used, independent of the different connotations and features it may have.

Ultimately, in an urban context the main concern is *people*, whom a public space is meant to provide with safety and comfort for emotional, psychological and physical interactions - recognising that in the end people are those who bring life into public spaces. As a land use typology, public spaces play a relevant role in building cities' and societies' morphological, functional and social structures, along with the contribution to defining and negotiating cultural, social, economic and political functions in communities (UN, 2014). Public spaces allow people to meet on an alleged neutral ground, in planned and serendipitous ways, to interact with other people and/or with the environment. In public spaces citizenship is exercised, as they create opportunities for people to come together, to connect and share (or not) experiences. Because everybody can use them, they are regarded as democratic, and by facilitating this socialising, public spaces can contribute to the cohesion of communities. Engaging with public spaces generates material and non-material practices that influence people's and communities' life (Menezes, Smaniotto & Ioannidis, 2016). Furthermore, they are subject to the cumulative meanings and memories ascribed by users - embodying therefore ambiguous imageries. No doubt, issues pertaining to people's use of public spaces are diverse,

complex and tied to particular local conditions, categories of users¹ and specific situational opportunities and problems, but they are all rooted in the interplay of activities and meanings with the physical settings. Precisely because they constitute the arena for encounters and frictions, it is in public spaces that some of the best and the worst characteristics of urban life and society are created, observed and reproduced (Šuklje-Erjavac, 2010). Hence, being more than a physical manifestation of the public realm, public spaces allow us “to read” the vitality and sociability of a community (and a city), and above all how public life is celebrated.

Regarding the quality of public spaces as gathering places, Lynch (1981: 132 and 142) rightfully noted that a “...good place is one which, in some way appropriate to the person and her culture, makes her aware of her community, her past, the web of life, and the universe of time and space in which those are contained [...] sensible, identifiable places are convenient pegs on which to hang personal memories, feelings, and values”. Lynch also closely linked place identity to personal identity, acknowledging that the space where we live and which we use also forms our own identity. Moreover, he points out that an intense familiarity will result on a sense of place. Sense of place is therefore rooted in the dynamic interaction among people, space and the opportunities for gathering and appropriation. Moreover, the PPS² identified four quality features that successful public spaces share: they are accessible; people are engaged in activities there; the space is comfortable and has a good image; and finally, it is a sociable place, where people meet each other. Thus, the safe access to a space is crucial, as it enables other aspects to take place at all. Accessibility is also one of six interrelated core issues considered in the essay by *Francesco Bagno, et al.* aimed to identify the common key principles that could guide the production of inclusive and co-created public spaces; quality, participation, diversity, flexibility and hackability are other five principles.

Moving forward in increasing the understanding of public spaces, *Tatiana Ruchinskaya* argues that there is a direct link of good design to ensure inclusion towards cohesive and vibrant communities. Furthermore, she argues that the issue of inclusiveness in public spaces influences a wider range of sustainability objectives. Quality public spaces therefore ensure inclusive, safe, resilient and sustainable societies. Changes and advancements in technologies, economic organization, social practices and the production of cities and their spaces pose challenges and competition for *quality public space*, turning this into a never-ending task and into a fight that has to be won every day, and also requires new ideas daily!

Having said that, this introduction makes the call to clarify some terms and some positions, in order to better “locate” the contents of this book. In the following essays several aspects are discussed under different perspectives, in an attempt to capture the essence and paradigms of the role and value of public spaces.

¹ Bocci & Smaniotto discuss in their contribution the view of young experts and their attitudes towards open spaces.

² <https://www.pps.org/reference/grplaceatl/>, accessed March 2017.

CYBERPARKS PROJECT - A THINK TANK

The CyberParks Project³, which provides the backdrop for this book, is founded by the European Programme Cooperation in Science and Technology (COST). As a network, CyberParks opens up opportunities for participants to gather and explore, from different viewpoints, the emerging challenge that digital technology advancements and their increasing pervasiveness pose to the production and use of public spaces. CyberParks focuses its attention on Information and Communications Technology (ICTs) as an active interface between the production of knowledge about the use of urban public space (research purposes) and guidance for interventions (policies and design practices). The penetration of technology in people's life and the use of the city is transforming our physical living space into a mediated and hybrid place. The digital development poses a societal challenge with reflections on social practices and on planning and design approaches to public spaces. This in turn, might also challenge the future development of ICTs and their devices. Although this book is not the place to discuss the influence of *new technologies* on a general basis, their constant and accelerated development creates an environment where it can be difficult to study their social, cultural, political and urban impact (Smaniotto et al. 2017). The *newest and next generation* technology along with the constant stream of new devices result, in turn, in new uses and interactions possibilities, creating and reinventing again complex (inter) dependencies.

This book, however, focuses on the ability of digital technology to enhance communication and interaction with (potential) users, as a way to transform the production and uses of public spaces into an interactive process, enabling creative community participation and empowerment. CyberParks, grasping the idea of the mediated and hybrid place, is investigating the shape and scope of ICT impacts and the opportunities opened to improve the legibility and liveability of urban spaces, as well as new forms of integrating people's needs into urban design processes. The technology advancements challenge planners to respond and develop new, hybrid solutions for public space development and use. The workshop held in Lisbon in February 2017 was a step forward in this direction.

CYBERPARK: THE INCLUSIVENESS OF THE MEDIATED PUBLIC SPACE

The relationship between technology and the use of public spaces are not new, but they are increasingly creating new forms of social interactions and practices, and with them socio-spatial representations and imageries. All these are intriguing enough to spark the curiosity of the people involved in the CyberParks Project! The Project is making a bid to coin the term *cyberpark* as “a new type of urban landscape where

³ Cyberparks - *Fostering knowledge about the relationship between Information and Communication Technologies and Public Spaces supported by strategies to improve their use and attractiveness.* The project's goals and working structures are described on its website at www.cyberparks-project.eu.

nature and ICTs blend together to generate hybrid experiences and enhance the quality of life". The attributes of a cyberpark are defined by being readily accessible to the public through ubiquitous technologies used in sociable and sharable ways, where the virtual is made visible or augments the landscape. The use of sensor technologies creates a connectable space, and ICTs can be used in this context to give or gather information, to aid the co-creation of space, to allow crowd sourcing of information and opinions, and to allow affective sharing or self-monitoring of activities. *Cyberpark* is therefore a new combination of socio-spatial infrastructures, information and communication technologies and digital networks. However, as *Catarina Patrício* argues, urban spaces have indeed always been *mediated*. Language, planning, governance, architecture, etc. are elements that make space a mediated product, in a geometry that orients, captures and controls. Consequently, the *digitally* mediated space is almost a "natural" result from the development of technics. This is an interesting line of thought, as the intertwining of real and virtual worlds opens new ways of appropriation and attachment to urban spaces. Thus, there is nothing simpler than making technology an ally - for a more cohesive society, for setting the production of urban spaces in a more comprehensive perspective, and especially for increasing community engagement. Does this also mean that the production of public spaces will become more democratic?

Although interrelations between digital technology and cities are usually discussed within the technology-driven visions, i.e. smart cities, and with particular emphasis on energy and mobility issues, more and more scholars and practitioners emphasise the importance of people-oriented aspects in a fast-growing ubiquitous technology, stressing the need to increase the liveability of cities. This argument is also used by *Francesco Bagno et al.*, when pointing out that digital technologies employed in public spaces must remain people sensitive and not create further accessibility barriers. As a *cyberpark* is becoming a commonplace for social and public life, *Konstantinos Ioannidis* states that, even as hybrid space, a cyberpark must be an *anthropogenic* space. And being so, it should aim to track and foster the understanding of algorithmically defined cities as territories of mutual interplay of technology with space and people. The complex entwining of the physical and social environment with the virtuality of the technology, as argued, should not allow the digital divide to take place in outdoors environments. In a cyberpark the central value is inclusiveness - as widely discussed by *Tatiana Ruchinskaya*.

With the ubiquity of technology and the rise of the *cyberpark* concept, three overlapping questions linger just below the surface: Is technology capable of improving current urban management and planning towards a sustainable, resilient and people-friendly environment? Is technology capable of developing people's capabilities to articulate against technocrats, politicians and developers, and impose results that suit their needs? And lastly, is the shift from an old paradigm of "conventional" planning and decision-making to a new paradigm of *intelligent solutions* also in people's interest?

THE “CO” ON PUBLIC SPACES - REFRAMING USERS’ ENGAGEMENT

In the workshop, participants looked at the critical importance of community participation in addressing urban quality and in particular for defining the principles. From the discussion, it became clear that the problems public space development is faced with cannot be solved only by implementing new technologies, but, above all, require changes in practices and management of urban development. Upon reflection, I would dare consider, as in many different sectors, this is also a crisis of governance - of political and institutional nature - and the situation will not change until people become fully aware of the benefits of their engagement and that each single person can contribute to make changes happen. In this sense, as *Ina Šuklje-Erjavec* concludes, it is more than ever time to engage people in decision-making. This brings into the discussion the myriad of ways in which the production of urban places can be shared.

The prefix “co” in different attributes in relation to public spaces can be taken as confirmation of what is already known about them: they are “multi” in a variety of aspects (faces, layers, cultures, benefits, functions, etc). As social and democratic places in the urban fabric, they are not only a physical materiality of urban development but also a social construct that reflects society, which ultimately celebrates and enlivens them. To the terms commonly used in the production of public spaces, such as creation, mediation, research now associated with “co” has added a new dimension - expanding our thinking and practices to a level where the “producer” and the “end-user” work together (collaborate) to achieve common goals. Also, there is here a paradigm shift: there is no more *the one* who creates, and *the others*, who use the result, but stakeholders come together discussing alternatives and constructing a common sense. The “co”-addition also requires changes in positions taken for granted by planners, councils and citizens. Planners, questioning the obviousness of their own profession, have to give up the sovereignty of planning and accept to play the role a co-producer. This, of course, does not diminish the importance of a good planner, capable of developing and communicating good, innovative and sustainable ideas. By the public power, it also requires new thinking, since accepting and incorporating co-processes implies taking actions not only to meet the basic goals for participation, but also learning to listen, giving voice to the community and even accepting decisions that may be contrary to goals set by the council. Conversely, opening opportunities for communities’ involvement and becoming engaged in local decision-making, are not only basic human rights and fundamental principles of democracy, as well as being key to the sustainability and liveability of urban places. A co-creation process can ensure that the community needs are met, leading to positive environmental and social effects what can even result in economic benefits, besides widening the value of equitable and sustainable urban landscapes. Widening the discussion on co-creation, *Ina Šuklje Erjavec* brings to the arena how co-creation is applied and understood in business. This may result in even stronger arguments for investing in urban landscapes; as she already stated in Smaniotto et al. (2008), investing in the environment and green infrastructure can be more cost-effective and more sustainable than investing in technical solutions.

This is also an argument used by the European Commission when calling for *smart* investments in the future (EC-DG Environment). Observing how smart cities have emerged as a powerful tool to drive the future of cities, similar thoughts on *smart* solutions are expressed by De Lange (2015). He notes that smart cities as interpreted nowadays are more oriented towards control, efficiency and predictability, and their concept ignores the active role of citizens and their contributions. Furthermore, he states that such technology-driven visions are obsessed with high-tech solutions “assuming that technological fixes can by themselves solve complex urban problems”. In an opposite line of thought goes *Monica Bocci* in calling attention to the potential of landscapes to foster the relationship between cultural heritage, local communities, sense of place and creativity. She exemplarily discusses the opportunities for discovering the *uniqueness* of the heritage in the Marche Region. This uniqueness contrasts sharply with unadorned, pre-fabricated concepts. The idea of enhancing the local potential is also strengthened by *Marluci Menezes & Diogo Mateus*, who bring us back to a very basic human need - safely walking through our cities. They point at the fact that planners should walk, not as mere *flâneurs*, but as conscious act to appreciate, perceive and understand the environment before they plan it. For planners, walking means an affordable way to identify socio-spatial elements in order to make an urban landscape unique - also considering the analogies between the virtual and the social and physical environments, in order to generate (hybrid) spatial design alternatives.

Lessons to be learned are that the potential for co-creating inclusive and mediated public spaces has to be harnessed. It is critically important that planners and decision makers are able to understand the needs and the features of community engagement, as it is a proven approach to addressing sustainability and inclusiveness in urban environment. Digital technology is advancing, breaking many social and political taboos - and it is also opening new opportunities to attach people to their environment.

A PROGRAMME BEYOND THE WORKSHOP

THE MAKING OF THE MEDIATED PUBLIC SPACE - Part I - seeks to offer insights and reflections upon inclusiveness of hybrid spaces, and to contribute with arguments, concepts and findings to the growing debate on the ubiquity of technology, social responsibility and everyday living spaces. The reflections expressed in the essays locate this book at the crossroads of technology advancements, human relations and sustainability, in the sense of achieving a liveable and inclusive urban environment.

PART ONE of this book has two main thematic sessions. The first deals with the “Design principles for co-creating inclusive and digitally mediated public spaces”, and aims to guide the production of sociable public spaces. This essay is the result of intensive discussions among the participants and the tutors, during the workshop and in the follow-up. Participants were asked to reflect on creating responsive places in close connection with technology - on how to make use of the opportunities created by digital technologies to activate bottom-up processes towards inclusive public

spaces. The challenge posed to the young experts was based on dialogue and negotiation to extract the most promising principles from the vast spectrum of needs, which they successfully mastered and which culminated in an essay placed at the core of this book.

The second session contains six essays prepared by the tutors involved in the workshop. Unfortunately, not all the tutors involved in the workshop could, for different reasons, follow the schedule. Tutors were asked to provide different views and insights to instigate the participants in the search of principles. The essays encompass a wide range of topics in order to provide a sound approach to different issues. They aim to offer the reader an overview of the theoretical bases and practical experiences which guided the discussion in the workshop.

We hope that the essays will find a broad audience not only among urban and technology experts, but also that readers from other backgrounds will benefit from this volume, when the aim is to involve the community to celebrate publicness and to enliven public spaces through good design, policies and programmes - which, in the end make up the richness of urban life. Building *digital* bridges calls for experts who are capable of facing the challenge of a continually evolving society, and are able to operate and manage urban landscape projects keeping in mind that city-building and placemaking are a never-ending process.

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Design principles for co-creating inclusive and digitally mediated public spaces

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Abstract - New media technologies present spatial designers with a host of new tools, both for broadening civic engagement in the design process itself, and for inserting these technologies into public spaces. Designers can, thereby expand the diversity of groups that these spaces can cater to, through offering a variety of experiences. Moreover, such technologies offer new tools for generating co-created and shared value, and consequently an increased sense of ownership of these spaces by the public - a (re)valuing of the commons through meaningful investments. Digital devices increasingly mediate many of our daily social interactions as well as the way we interact with, and navigate, our cities. This chapter presents the outcomes of a four-day training school programme in Lisbon, where the primary goal was to develop a list of key principles that could guide urban planners and designers in the production of inclusive and co-created public spaces. These design principles inform the general structure of this report, giving rise to six broad themes of enquiry: participation, quality, diversity, accessibility, flexibility, and hackability. Adopting these principles in the design of public spaces is intended to harness the capabilities of digital technologies in providing diverse experiences and broad usability.

Keywords - Inclusiveness, design principles, new media technologies, meaningful experiences, participation, quality, diversity, accessibility, flexibility, hackability

INTRODUCTION

Aside from the morality and ethics of producing public spaces that are broadly inclusive, there are a range of social, economic and political reasons that make 'inclusiveness' compelling. Inclusive design for public spaces implies that products and services address the needs of a diverse population, regardless of age, ability, gender

or ethnicity (“Inclusive Design Education Resource | Design Council,” n.d.). Rather than designing for specific subsets of the population, which frequently results in satisfying the needs of majority groups or ‘generic’ users, this approach adopts a holistic view including all current and future users in the design process (Clarkson & Coleman, 2015). Adopting a user-oriented approach to design and involving users in the design process from the outset is considered fundamental for realising public spaces that genuinely include a broad range of users and their heterogeneous demands. As Rishbeth (2001) suggests, ethnic and cultural minorities may have profoundly different experiences of, and demands on, public spaces. The same can be said for different socio-economic groups, with homeless individuals and wealthy families placing very different demands on public spaces. In quantitative demographic terms, the user population could be represented as a set of bell curves, where the central bulge denotes an ‘average’ or ‘generic’ use employed by a majority of users, while the tails on either side represent more marginal uses or population sizes (Clarkson & Coleman, 2015). As most designers generally emerge from a central bulge, they commonly present inherent schematic obstacles with regards to designing for people at either end of this curve. Incorporating co-creation into the design process presents opportunities for including these ‘tail-minorities’ in both process and outcome, catering to all who make and remake public spaces on a daily basis. Co-design refers to the combined efforts of trained and non-trained designers working hand-in-hand in the design process (Sanders & Stappers, 2008). A successful example of co-design is the Gulliver project in Cologne, where homeless people were the sole participants involved in the design of a homeless survival station. Following this line of thought, Holmlid (2009) argues that genuine public participation is central to the co-creation process, and to achieving public spaces that are truly inclusive. In grounding this notion, we need not look further than our profession’s moral compass to learn that “cities have the capability of providing something for everybody, only because, and only when, they are created by everybody” (Jacobs, 1961: 236). The ways in which we understand ‘participation’ and the social landscape today are dramatically and continually transformed by digitally mediated interaction. While on the one hand digital media has the potential to include a wider range of voices in the co-creation process, it also has the potential to impose an inflexible structure and inorganic undertone on the ways in which this public participation can take place, excluding those who are not tech-savvy enough to participate, or those who are resistant to technological uptake (Bojic, Marra, & Naydenova, 2016). Digital technologies employed in public spaces must therefore remain sensitive to not generating further barriers to access.

Juxtaposed with concerns regarding the potential for digital technologies to construct further barriers to participation and inclusion, new media technologies also hold the potential to inject increased dynamism and ephemerality into public spaces, as well as into processes of civic engagement and public representation. This dynamism,

however, also makes it difficult for planners to incorporate new media into design, particularly when considering the fast pace of change and the sheer variety of technologies at our disposal, combined with the interactivity that these devices afford (Townsend, 2004). According to Low *et al.* (2014) and Amin (2008), new media has transformed a previously situated public realm into one that is fluid and ambient, permeating multiple spheres of urban life. Public spaces have been acknowledged as key sites for safeguarding socially inclusive future development in cities, and digital devices offer new tools for activating and enhancing the inclusiveness of these spaces. However, the ubiquity of digitally mediated interactions also carries with it the potential to divert interactions away from meaningful experiences in public spaces. The digital devices employed in public spaces should therefore exhibit novel and dynamic characteristics that both intrigue and remain relevant. As these dynamic yet highly scripted forms of mediated social interaction become enmeshed in daily life, it is worth considering the extent to which citizens are able to appropriate and adapt digital platforms and devices for new purposes and self-gain. Concerning their scripted nature, all digital applications are supported by complex algorithmic foundations, with each reflecting the particular agendas of their respective developers (Schouten *et al.*, 2014). Awareness of this urges us to tread carefully when ‘smartening’ our cities, being careful to embed digital technologies that reinforce progress towards ‘smart societies’ instead.

METHODOLOGY

Embodying principles of co-creation, twenty young professionals from around the globe met in Lisbon during a training school programme, regarding the design of inclusive and co-created public spaces. The programme involved a series of lectures interspersed with intense workshop and presentation sessions, with the aim being to develop a list of concise and relevant principles that could function as a checklist when designing digitally mediated public spaces. This chapter’s discussion is the expansion of those principles. A range of research and design thinking methods were employed in the process, such as highlighting the poverties of desktop research as opposed to fieldwork, or employing role-play as an integral component. This chapter presents the findings that emerged during these sessions, and is structured as follows: section 2 describes the methodology applied for arriving at these design principles; section 3 provides an overview of engaged stakeholders’ perspectives regarding the design and delivery of these public spaces; section 4 illustrates the final outcomes of the training school, and finally, section 5 provides some concluding remarks and recommendations for further research on this subject.

The primary method of enquiry and collaboration employed during the workshops was role-play, with the relevant mechanics of this illustrated in Figure 1 below. Two other methods included guidance from senior academics and professionals in the fields of urbanism and digital media technologies, and tactile urban planning,

comparing the virtual to the lived experience. Role-play is an interactive method for establishing mutual understanding and knowledge transfer among participants, and is particularly effective when involving multiple stakeholders with different skillsets and perspectives. Druckman & Ebner (2007) trace back the documented literature on role-play more than half a century; contemporary role-play, however, often augments realism through programming in role capabilities and parameters for action, and designing roles for specific participants (Schouten *et al.*, 2014). Most studies have shown that role-playing not only enhances participants’ interest in the topic at hand, but also offers them the opportunity to put theory into practice through active participation in an enjoyable and interactive experience (Efron & Munin, 2017). The main objective for using role-play in this instance was to put participants in positions that would facilitate engaging with multiple perspectives and their subsequent responsibilities in the design process. Tackling this challenge from the perspectives of the three main stakeholders involved in public space design (citizens, professionals, and administrative officials) helped to broaden the scope of enquiry and enhance the depth of knowledge co-produced. Further, seeing a planning and design challenge from multiple angles facilitated a breakaway from rigid professional boundaries, enabling participants to adopt alternative viewpoints, and think beyond each of our own professional enclaves. The applied elements of this research approach involved intense interaction, communication and negotiation sessions, enabling a refinement of principles as well as the collective intelligence of the group (Yardley-Matwiejczuk, 1997).

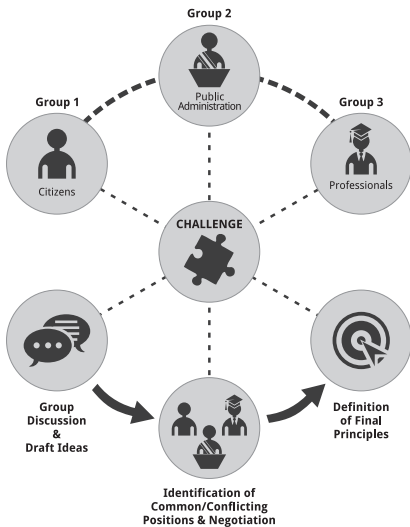


Fig. 1: Role Playing Methodology for Creating Principles¹.

¹ Some iconography was adapted from the 'Noun Project': <https://thenounproject.com>.

Three different roles were assigned to participants: (1) citizens, (2) public administration, and (3) professionals. Professionals included any fields of expertise related to the subjects of public space design and digital technology, such as urban planners, architects, ICT experts, engineers and so on. Citizens included all other people residing in the city, while public administration reflected the role of government agencies (local and national) charged with managing urban development. Each participant was randomly assigned one of these three roles, and groups of equal size were composed (6-7 people per group). The role-play process comprised three distinct phases, with guidance from academics enriching the debate in each group. The first phase involved initial discussions amongst group members and aimed to develop some draft ideas regarding the principles that should inform digitally mediated public space design. During the second phase, participants were shuffled and new groups were composed, including 2-3 persons from each of the three previous groupings. In these new groups, the challenge was to share knowledge produced in the previous phase, and then to identify points of convergence as well as where relevant powers and responsibilities lay on each one of these points. In the final phase of role-play, participants incorporated the cumulative feedback and lessons learnt during the two previous phases, as well as outside of the role-play process, in order to arrive at a set of principles that public space designers could employ. It is to these principles and stakeholder perspectives that the next section now turns.

OVERVIEW OF STAKEHOLDER PERSPECTIVES

Each of the three stakeholders is addressed in terms of roles and responsibilities, as well as appropriate jurisdictions. From the **citizen's perspective**, positions are generally defined by broad early involvement in the design process, ensuring that the public is able to influence a development's design. This is reinforced by the assertion that public spaces should be knowledge spaces and hold greater functional resource value for public space users, facilitating a move away from the 'tragedy of the commons' scenario and towards one where common co-created value inspires an enlarged sense of public ownership and belonging.

From the **professional's perspective**, while embracing the potential for ICTs to enhance the inclusion of civil society, the practices of civic engagement should be carried out by professional bodies that are accountable. At the same time, it is crucial for institutions and administrative bodies to be flexible to the rapid changes in both technology and society – from a regulatory standpoint.

From the **administrative perspective**, a reduced role is in line with current trends towards political decentralisation and shrinking administrative cabinets. This reduced role sees administrative responsibility primarily as one of oversight regarding public participation processes in all urban development projects, with continuous review procedures in place for this, in order to safeguard the public interest at all times. As

an extension, broad inclusivity should be encouraged by the ICTs installed in public spaces, customising the interfaces and experiences to diverse publics.

Thematic Analysis

Figure 2 illustrates the stakeholders involved in the design and management of public spaces, as well as the thematic categories of principles derived.

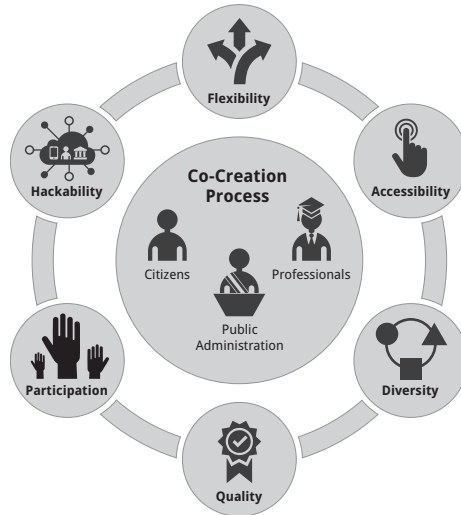


Fig. 2: Main Agents and Themes for Co-Creating Inclusive and Digitally Mediated Public Spaces.

Participation

Genuine and meaningful co-creation requires broad participation from all public space users from the outset, ensuring that the public are able to influence spatial planning and design. This is an essential component if public space design is to adequately reflect user needs. From an administrative perspective, moderate investment aimed at facilitating genuine and broad civic engagement in the design process is strategic, as it affords public officials the ability to offset the increased costs associated with re-designing and re-programming a public space. While administrative bodies should be responsible for overseeing all public participation processes, on-the-ground strategies should be carried out by professional bodies skilled in civic engagement practices.

The involvement of citizens goes beyond simply capturing their spatial sentiment and feedback, and includes generating meaningful attachments to places and a sense of ownership among the public, empowering citizens through their ability to contribute towards co-created spaces when given the tools to do so. This inclusion of the public at all levels of the design process is intended to encourage improved self-governance and maintenance of public spaces and their accompanying digital devices. The notion of ownership will be returned to and elaborated on in the section discussing

hackability of public spaces. As public spaces are ephemeral and re-made by their users each day, the co-creation process is ongoing, with digital platforms enabling a permanent and healthy flow of dialogue between different actors, fostering increased transparency in design processes.

Through employing a variety of digital platforms and applications, planners and designers of public spaces are able to disseminate information on a scale previously unmanageable. At the same time, these tools enable them to gather input from the public, which may be more genuine due to the relative anonymity afforded by smart-phones when compared with attending meetings in person and negotiating inherent power imbalances. Digital devices thus show promise for removing barriers to participation, but they must also be sensitive not to erect new ones (Bojic, Marra, and Naydenova, 2016). There are numerous examples of mobile applications that offer users the ability to voluntarily contribute towards a public opinion database. The WAY CyberParks application² is an example of such a digital tool that is tailored specifically to public spaces. This digital application (smartphone plus internet) can be used to monitor how people use and experience public spaces, providing an interface for direct exchange between users and planners, increasing our understanding of the needs and preferences of users, and equipping public space designers with a tool and information for being more responsive to users. Feedback is relayed via geolocated paths, audio or video recordings, as well as via uploaded photographic or written accounts. The only barriers to participating in this digitally mediated manner would include ownership of a smartphone, enough data to download and run the app, and the willingness to both learn the ins and outs of the application and contribute to the public database. Some advantages of participatory crowd-sourcing applications such as this, relate firstly to the capacity for real-time data gathering and processing, aiding the maintenance of an up-to-date database of public space experiences, and secondly, to the potential for a dramatically increased scale of data capture. The latter is a product of removing barriers and empowering citizens with alternative methods of participation that are flexible and meet the public more on their own terms. Open-StreetMap³ is considered a prominent example of volunteered geographic information and is a living proof of the sheer pace at which data can be recorded when participation is enacted from the comfort of one's own smartphone and when tools are made accessible to a diverse audience.

Quality

The quality of public spaces, commonly perceived as a measure of the quality of urban life (Beck, 2009; Dines, Cattell, Gesler, & Curtis, 2006; Smaniotto Costa *et al.*, 2017), was also recognised as a core principle in the discussion for co-creating inclusive and mediated public spaces. Woolley (2004) asserts that high quality parks, public

² www.cyberparks-project.eu/app.

³ <https://www.openstreetmap.org/>.

spaces and landscapes contribute towards enhancing public value through the development of shared economic, social and environmental value.

From the citizens' perspective, high quality public spaces were perceived as Montgomery's (1998) 'successful urban places', combining activity and meaning with a physical setting. Firstly, activities enacted in a public space inscribe meaning and are particularly important to the public's perception of these spaces (Gehl, 2011; Jacobs, 2013); they constitute a social force that encourages others to 'activate' these spaces. While initial activity generates further activity, maintaining a diversity of activities enables not only accommodating different groups across a range of temporalities, but also encouraging a shift towards a larger number of outdoor activities and a more healthy and vital urban life. Secondly, public spaces are subject to the cumulative meanings and memories ascribed through generations, and they commonly play a significant role in the perceptions of a city's identity, such as Hyde Park in London or Central Park in New York. In this context, digitally mediated public spaces reinforce the role of meaning in place-making (Karacor & Akcam, 2016). Lastly, the physical setting refers to a diverse assortment of public space elements, with each affecting a space's usability and functionality. These include the degree of comfort and cleanliness, protection from weather elements, physical safety, and the overall quality of infrastructure, and physical/virtual connectivity. As a point of departure, people are more likely to spend time outdoors if there is a clean and comfortable place to sit, which is safe, and offers protection from the weather. New media technologies have shifted the focus away from usability and functionality, and towards social interaction and experience (Schouten *et al.*, 2014). Digital devices should take their cue from here, exploring the kinds of ICT services that would encourage people to spend more time in public spaces, engaged in meaningful experiences. Services as simple as freely accessible Wi-Fi and charging stations could go some of the way, but whichever devices we choose to install, it is important that we consider the combined role of novelty and quality in attracting public usage, as well as the modularity and longevity of implemented technologies.

Similarly, professionals underlined the need for high quality design in public spaces. Taking into account the new demands that the introduction of ICTs has generated in public spaces, urban design needs revision to reconcile these demands. More specifically, public spaces should be of value to users, accommodating the use of electronic devices and satisfying the user's contemporary needs in an age of digital mediation (Abdel-Aziz, Abdel-Salam, & El-Sayad, 2016). At the same time, professionals highlighted the potential for digital technologies to enhance elements already present in public spaces in order to strengthen the place's identity and create points of contemplation, interaction and serendipity.

Regarding the use of ICTs as tools for enhancing a place's identity, public administration drew special attention to the challenge of subtly infiltrating ICTs into the

urban fabric without disrupting the form and continuity of their surrounding environment. However, the key role of public administration employees concerns the maintenance and management of public spaces, which is intrinsically bound up with the perceived qualities of public spaces (Beck, 2009). In order to sustain high quality public spaces, ICT hardware requires constant maintenance by skilled professionals, while software must be updated frequently to reflect ongoing technological advancements. Finally, high quality, vibrant, and attractive public spaces are viewed as sites of social integration that foster neighbourliness and community while, at the same time, contribute to reducing criminality (Carmona, Magalhães, & Hammond, 2008).

Diversity

Ethnic and cultural diversity adds richness to a society. Public spaces are sites of mixing and integration, contributing towards vibrant and socially connected communities. This heterogeneity is reflected in the diversity of uses that a space can be put to, reinforced by the diverse ICT services employed in it. For example, different kinds of technologies may attract the intrigue of children when compared with adults, or of able-bodied users versus disabled users. This represents an opportunity for urban designers to implement ICT services strategically in ways that cater to multiple users. This can be done in two ways, and preferably through a combination of the two. Firstly, by installing 'generic' and flexible ICTs that can be used by a very diverse audience and can be appropriated for their own specific needs. Some examples of this would be charging points and free Wi-Fi - services that all users can utilise, whether it is charging a mobile phone, camera, laptop or power-bank, accessing social media platforms, or taking part in an online course. ICTs and the supportive hardware in these instances present very few barriers to accessing and appropriating them. Secondly, the installation of niche-user ICT services targeted at specific users could address problems of exclusion for population groups at either tail of the curve (Clarkson & Coleman, 2015). For example, digital devices and technologies that are tailored specifically to wheelchair users or people with Down syndrome, which are unlikely to suit the needs or abilities of other users. These niche services have the potential to encourage far more social diversity in the activation of public spaces, as well as to include more voices in the design process itself.

ICTs in public spaces should aim at bringing people together in the same physical space, encouraging their engagement with one another and producing shared experiences, regardless of age, gender, ethnicity, or ability. Digital technologies make it possible to interact with one another in interesting and unexpected ways, opening up possibilities for more inclusive communities and public spaces. Technology has the ability both to bring people together and to bring people into closer contact with their physical environments, enriching the experience on both counts through digital mediation. This is where the real value lies for ICTs in public spaces, facilitating and nurturing connections and experiences. ICTs in public spaces should aim to produce

social interaction and engagement, contributing towards an improved and meaningful experience of public spaces, and reinforcing existing natural resources through improved public connection and ownership. Acknowledgement and support of cultural diversity should form the basis of digital additions in public spaces, with a view to building inclusive and participatory societies that are equipped with the tools to act.

Accessibility

Accessibility is an important structuring element in the design of public spaces, and of cities, more generally (Lofland, 1999). In this context, accessibility is largely defined in terms of spatial configurations, connections, and distances to places. However, ICTs have transformed the ways in which we organise ourselves, how we connect with one another, and the speed with which we can communicate with others and access information, mediating physical distances with digital proximities (Ampatzidou *et al.*, 2014). Concepts of accessibility have been made more fluid by the addition of virtual accessibilities. This should inform design schemes for public spaces that include digital services, programming these services into public spaces in order to facilitate enhanced accessibility. ICT services that aim to bring people closer to natural resources in public spaces have the potential to generate fuller experiences for users unable to access these experiences without digitally mediated assistance. This includes physical separation from public spaces, which can be made virtually accessible, as well as physical obstacles that render some of a public space's services inaccessible to the disabled. Digital technologies offer possibilities for facilitating virtual experiences of these inaccessible spaces.

Accessibility is a pillar of democracy and inclusion, simultaneously structuring and reflecting a city's stance on socio-economic and political equality. For example, higher quality and more accessible public spaces are often located in closer proximity to residents who are financially better off. This translates into weakened social capital for citizens that are unable to physically mix and interact in these spaces. But as social networking is increasingly mediated by digital platforms, how we accumulate our social capital is being transformed and diversified at an alarming rate. Madanipour (2010) argues that the way in which the boundaries of public spaces are constructed is of great significance to the quality of these spaces. However, as Ruchinskaya (2017) reminds us, accessibility is not only about physical access to the space, but also access to the experience. ICTs are important tools for achieving that, both through public installations and via open platforms that aid spatial management.

When programming ICT services into public spaces, their design should consider the diverse needs of all user groups. Interventions that contribute towards improved safety or navigation can be appropriated and enjoyed by all, aiding the physical accessibility of public spaces. Regarding the virtual accessibility of these spaces, all data collected and utilised in the operation of public space ICTs should be open and accessible to download. Compared with virtual platforms for interaction, urban public

spaces facilitate - to a greater extent - the possibility for spontaneous interactions and experiences. Technologies employed in CyberParks should aim to enhance those qualities of public spaces related to publicness, accessibility, safety, and integration, while supporting the need for meaningful interactions and experiences.

Public spaces should punctuate the urban landscape at regular intervals, bolstering physical connection with virtual connectivity, so that these spaces remain accessible to a wide variety of users. An assortment of amenities and infrastructures will facilitate diverse applications, accommodating a wide variety of needs and interests. Public space interventions are opportunities for providing information and knowledge concerning the ICT skills needed to utilise and optimise a park's services. Public spaces are always deeply integrated with the environments and fluxes of cities, making their study particularly revealing of a city's connections, flows and dynamics. Shrivastava (2013) asserts that public spaces communicate a lot about a city's functions, cultures, and attitudes towards its citizens. Harvey (2008) makes the argument that the 'right to the city' refers to a right to change ourselves by changing the city, and depends upon the exercise of a collective power. From an environmental perspective, public spaces are the lungs of urban environments, maintaining ecological balance, and from a social or economic perspective, they are the arteries that keep things moving and people working. These are also sites of play and relaxation; providing spaces for pause in a world that is obsessed with efficiency.

Flexibility

Public spaces should be flexible to being changed and appropriated by the users themselves, with technology facilitating this and reinforcing a sense of ownership of these spaces. Given the reduced role that political decentralisation allows for public administration powers, flexibility is key for public administrators to maintain efficiency and relevance. Just as digital technologies have radically transformed the ways in which we organise ourselves and conduct social and economic transactions, political flexibility ought to be programmed in to match this dynamism. Urban and social policy cannot function as closed static systems, but should be open to concessions and adaptations that allow for the creative use of public spaces and of the digital technologies employed within them. As the body responsible for oversight and evaluation, public administrators should create actionable fields of intervention and offer direction to other development stakeholders involved with urban development projects, while also allowing for non-planned interventions to emerge organically. Making space for non-planned interventions or for alternative uses of public spaces simultaneously makes room for community-based, bottom-up interventions to emerge. With the engagement of urban development professionals, digital technologies afford us the ability to monitor, map and manage public spaces, creating opportunities for gathering fresh insights about hyper-local needs and desires, and to act upon these insights. Digital technologies have the potential to narrow the implementation gap that often exists between research, design and action.

Flexibility is an important theme in the discussion regarding co-created and inclusive public spaces, both in terms of regulatory flexibility in order to make innovative interventions possible, and in terms of technological flexibility required to accommodate ongoing modifications and updates. Regulatory flexibility is particularly important from the perspective of professionals charged with designing public spaces, in order to allow ICTs services to remain current. In other words, digitally mediated public spaces should not be rendered unusable or out of touch as technologies are upgraded. In this sense, the flexibility of public spaces and their respective ICTs can be likened to the urban planning concept of ‘resilience’, enabling public spaces to maintain their relevance over the long-term. While this extreme dynamism represents a challenge to design and to development, these constant changes inspire opportunities for innovative uses of public spaces, which may lead to better solutions for managing resources and reaching common goals (Bala-Miller, Cagnin, & Cipolla, 2008). Interventions should be subject to constant review by public administration authorities in order to ensure that the services installed meet the needs of all users. The creation of a digital platform is suggested to facilitate this ongoing review of public spaces and their services and to make space for the effective engagement of all public space stakeholders.

Hackability

Hacking as a cultural practice re-frames participation, collective effort and co-creation in urban design. In the context of the city, hacking can be understood as the opening up, appropriation, iteration and improvement of placemaking. The influence of urban hacker culture includes the appropriation of disused spaces in skateboard culture (Borden, 2001) and the re-skinning of urban space as a ‘playground’, as in Parkour (Alfrink, 2014). We can also observe related forms of culture jamming, such as graffiti, guerrilla advertising, and pervasive games (Montola, Stenros, & Wærn, 2009), remixing context and meaning in the production of public spaces. In recent years, hacking has become a more mainstream methodology in civic participation. ‘Hackathons’, organised around the betterment of public services, bring together a mix of professionals, service users, designers and coders, to co-create and prototype innovative solutions (Johnson & Robinson, 2014). The use of digital technologies in these initiatives would seem to provide further justification for the efficiency of the ‘Smart City’. However, of more interest in the context of this discussion, is the emergence of bottom-up ‘Smart Citizen’ inspired initiatives (de Waal, de Lange, & Bouw, 2017).

‘Friends of The Flyover’⁴ was conceived by three friends who identified a new use for the earmarked decommissioning of a flyover (an elevated road) in Liverpool. As an alternative to its planned demolition, and with a public purse saving, a unique urban park and venue was proposed. Through the crowdfunding platform ‘SpaceHive’⁵, the

⁴ <http://friendsoftheflyover.org.uk>.

⁵ <http://spacehive.com>.

campaign went viral, with over 200,000 social media interactions, and enough money was raised to commission a feasibility study. In 2015, the collective set up a community interest company, and after securing additional funds, took on part-time staff. Last year, on-site events were programmed, and planning permission was acquired for the first phase of the occupation, 'Urban Workbench', giving locals the opportunity to learn making and construction skills. These kinds of projects are being initiated across Europe by a mix of community organisers, architects, designers and start-ups, which employ digital platforms to coalesce around interests, crowdsourcing projects with the intention of re-designing urban space for the public good (Ampatzidou *et al.*, 2014). Hackable citymaking initiatives provide a powerful lens for re-imagining urban design practices as thoroughly co-creative endeavours, and constitute an alternative to traditional forms of community participation (Kagan, Burton, Duckett, Lawthom, & Siddiquee, 2011).

Hackable citymaking empowers active citizenship: The democratic process of city-making should be open to transformation from the bottom up, engaging citizens in the initiation, design and development of public space. Hackable citymaking has the potential to empower new forms of active citizenship, employing digital platforms to re-invigorate co-creation processes. Hackable citymaking should be democratised and legitimised from a political standpoint, as well as elaborated and unpacked from a social perspective in order to make these tools accessible to a diverse public. This includes support for new media literacy skills, enabling individuals to appropriate digital platforms and tools in service of citymaking. Digital platforms are able to facilitate collaborative hackable citymaking between all stakeholders and at scale - connecting people towards a future that is both co-created and inclusive.

WORKING PRINCIPLES

The twenty principles below are intended to operationalise the achievement of the six broad themes illustrated in Figure 2, providing a roadmap for the use of digital technologies by public space designers.

1. Genuine public participation should be present from the outset in all developments impacting the public.
2. Digital technologies should broaden the scope of participation.
3. Digital technologies should explicitly aim to activate public spaces.
4. Professional bodies should be responsible for carrying out adequate public participation processes.
5. Digital technology should facilitate increased transparency in the participation and design process.
6. Long-term common good should guide all planning decisions regarding public space design.

7. Contributing towards a high quality public realm should be prioritised in all development projects.
8. Public spaces should be knowledge spaces and be of value to the public.
9. Visions for public spaces should be constantly reviewed against the objectives laid out for each space.
10. Public spaces should cater to a wide variety of population groups.
11. A variety of digital technologies should be employed in CyberParks to ensure their broad usability.
12. Public spaces with diverse amenities should punctuate the urban landscape at regular intervals.
13. All public spaces and their digital devices (including captured data) should be openly accessible to all.
14. Digital technologies should be employed to enhance the accessibility and usability of public spaces for all groups, particularly marginalised ones.
15. Public space interventions should function as opportunities for teaching the public the ICT know-how and skills needed to appropriate a park's services.
16. Administrative regulations should be flexible to hyper-local public space design needs.
17. A digital platform should be in place for evaluating public space design and negotiating on regulations.
18. Digital technologies employed in public spaces should be highly adaptable to be able to accommodate constant technological and knowledge innovations.
19. Public spaces and their digital technologies should be able to be appropriated for self-gain.
20. The digital technologies used in public spaces should encourage a sense of ownership for these spaces amongst the public.

CONCLUSION

Designing public spaces that are inclusive and co-created requires taking a user-oriented approach to design; one where genuine civic engagement is the basis of all design motives and departure points. Digital technologies present us with an array of new tools, both for engaging citizens on design issues via digitally mediated platforms, and for producing meaningful digitally mediated interactions and experiences within public spaces themselves. Digital technologies are able to facilitate participation processes and public space experiences that are more diverse, more interesting, and more autonomously driven. During the training school, twenty concise principles were developed for designers and future researchers to take further. On the whole, there was a general sense of optimism in the potential for ICT services to enable more inclusive and co-created public spaces. While there are some definite concerns

regarding the ubiquity of digital technologies in our lives, cyber-securities and the inflexible algorithms on which these platforms rely, these are topics for future research, to be undertaken by a more technologically centred group of researchers.

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Technologies of anthropogenic spaces: Co-creation aspects in co-mediated landscapes

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Abstract - This chapter highlights the emerging concept of the CyberPark as grounded within hybridized relationships of technologically mediated urban activity patterns and especially in Humanities' reflection that -beyond all- CyberPark is and must be an anthropogenic space. It aims to track and foster the understanding of our algorithmically defined cities as territories of mutual co-constitution of technology with space and human. The technologies to achieve this unfold critical arguments along a series of spatio-technological paradigms that re-envision and re-enable innovative architecture and design research along distinct aspects of shaping technologically enhanced public spaces focusing on the production of responsive and inclusive urban places. Focusing on how humans are being-in-the-urban landscape, the chapter uses the concept of Anthropos to inquire, critique, and (re)position the emerging material and immaterial characteristics of our contemporary open urban places towards a Heideggerian dwelling. Finally, the technologies identified and aspects of enhancement presented enable readers to understand, combine, and contextualize urban mediated heterotopies inquiring in the same time open urban space as being reshaped from postdigital and neoanalogue narratives and techniques to shift interest from the medium to the mediated design attempt.

Keywords - mediated technologies, anthropogenic, co-creation, persuasive

Get on your feet and step outside to find and catch wild Pokemon. Explore cities and towns where you live – and even around the globe – to capture as many Pokemon as you can. As you walk through the real world, your smartphone will vibrate to let you know you're near a Pokemon. (source: www.pokemongo.com)

INTRODUCTION

Public open areas have historically been spaces embracing two aspects of human activity: the *locale* of face-to-face communication, and the similar *locale* of interaction among people or groups. The former refers to the social dynamics of outdoor space, the latter to the processes and dynamics initiated by co-existence and co-presence, both grounded on the *anthropogenic*¹ specificities of the physical space. The former has changed dramatically over the last twenty years with the pervasive invasion of our

¹ [an-thruh-puh-jen-ik] from Greek, *anthropo(s)* + *genic* (*genetikos* - genetic), caused or produced by humans. Source: thesaurus.com.

everyday life by media technologies. The latter is correspondingly affected by the same change. However, the *anthropogenic* is what keeps characterizing the nature of the public open spaces of our cities by reflecting the historical present in which the “*Anthropos*” is captured – or struggles to be captured – within the configuration of spaces, in a variety of ways which we would, in fact, not tolerate to abandon [figure 01]. But is this the case?



Fig. 1: Thessaloniki Waterfront, Greece. Space-appropriation alternatives while living in an increasingly anthropogenic world.

It is with no surprise that, nowadays, we can both recognize the shrinking of the archetypal social form of open public spaces and the increasing domination of evolving forms of multimedia experiences “*on the go*” [figure 2]. Mobile connectivity might be considered to have established a familiar, to many, precedent of a virtual reality “*on the go*”, a reality in which the role of the *Anthropos* seems – at first – to be threatened. One example among many, facilitated by outdoor space and scripted code, is the emergence of numerous interactive platforms-as-games that mediate the dialectics between outdoor communication and interaction (Berry, 2012), replacing the immediacy of the otherwise traditional spatial dimension. *Get up, Get out, and Explore!* This is what can be read on the main page of the popular game *Pokémon Go*², an interactive databased storytelling which gradually unfolds as users meander around their local setting to “catch” externally invaded narratives in the form of projected imaginaries on their touchscreen.

In a way, the application, as presented on its main webpage, codes the game as a game of hiding a globally generated virtual environment inside the real local living setting

² See more at <http://www.pokemongo.com/>.

of the user, calling on something hidden to break the privacy of the local surroundings. Boundaries between *here* and *there* dissolve into a participatory storytelling which seems to expand the capacity for thinking and using the *overall* inside the *specific*. If we look more carefully, say, at the role of the user/Anthropos in the unfolding of the development of the story, we can find that its digitized and globally generated aspects tend to dominate the otherwise locally-bounded experience. In the course of the game, fundamental needs of the Anthropos intended to be performed outdoors, such as social interaction, gatherings and influenced behaviours by the co-existence of the other, tend to diminish.



Fig. 2: Carnaby Street, London, UK. Brits 'socializing' during lunch hour. Photo: Vanessa Tsakalidou.

Pokémon Go is just one of the many recently developed postdigital attempts to mediate the deficiencies of the traditional local play, and relates to the emergence of a variety of what can be termed as *Technologies of Space*. On the one hand, the above-mentioned example expands its territories evoking broader scripts/stories that have been invented, designed and materialized far away to a digitally connected global audience. On the other, there is always the risk of deteriorating the vital human activity in the outdoor space, especially the physical communication and interaction with others. By doing so, it enriches the experience of the *singular* physical dimension as the wireless hybrid reality dominates and proliferates, obeying universal codes. However, the man/machine/space relationships that emerge of this enrichment are far from symbiotic. The user/Anthropos tends to invest individualistic³ and lone aspects of his/her reaction

³ Researchers have shown that some of the non-social characteristics of outdoor multimedia experiences "on the go" are mostly related to negative effects on humans like depression, anxiety and addiction (Elhai et al., 2017). For example, according to Billieux et al. (2015) many individuals engage in a problematic use of screen action activities (smartphones, tablets, laptops etc.) "which involves excessive use accompanied by symptoms resembling substance-related dependence, withdrawal [when not using them], and associated functional impairment".

to such activities. Consequently the “making sense” of outdoor technological enhancement can thus be viewed as a discouragement of the social dimension which, as mentioned at the beginning, is what lends a strong sense of immediacy and vividness to public spaces, making them *anthropogenic*.

Within this framework, we can consider that aspects like co-creation and inclusion are often unashamedly displaced from the analogue (man-to-man) to the digital (avatar-to-avatar), promoting individual on-screen images and experiences while ignoring the vital phenomenology of human-to-space-to-human affectivity. It is also true that people cope with the increasing levels of information obtained from these respectable new Technologies of Space with adjustments to behaviours, communication, activity patterns, etc. (Berry, 2012), and the popularity of specific platforms can then be seen as such an adjustment. But what can we understand under this concept of allowing Technologies of Space to expand our boundaries? Is this concept a condition for threatening the outdoor presence of *Anthropos*? By creating a hypothetical parallelism between a game of outdoor exploration and the contemporary appropriation of public open spaces, I have tried to set the general framework on the anthropogenic figure as a well-timed discussion to retell the role of the fundamentals of outdoors space inside the broader digitally mediated global picture. This is a recurrent story that keeps affecting our understanding of the ways we can adjust to new outdoor possibilities in a particularly deep way.

NEW LANDSCAPES OF CONFLICTUAL TENSION

When you invent the ship, you also invent the shipwreck; when you invent the plane you also invent the plane crash; and when you invent electricity, you invent electrocution...Every technology carries its own negativity, which is invented at the same time as technical progress. (Paul Virilio, 1999, p. 89)

This chapter is partly the result of a workshop organized at University Lusófona in Lisbon, Portugal, called “Co-creating Inclusive and Mediated Public Spaces”, which took place from 13th to 16th February 2016. During these days, the author, along with other tutors, young researchers and professionals from around Europe, critically explored issues already mentioned above related to space and digital culture, namely ways of technologically enhancing public open spaces, the effects of their mediated use, and novel forms of spatial appropriation. Taking this opportunity, I will subsequently expound my thoughts on those *Technologies of Spaces* that allow for the interiorization of *Anthropos* in the public space. Therefore, the following text presents the author’s reflections and thoughts on the co-creation and co-mediation initiatives discussed during the abovementioned international event.

Only a few years ago, when ICT possibilities were not there to change behaviour, we had in fact no examples of technologies of spaces. Public open spaces were not ubiquitous. Face-to-face communication and social gatherings were the basic human co-creation techniques to mediate bodily and mental presence in the city for a series of relations

which were making both geometric/spatial conditions and the conception/understanding of urban space intelligible. For example, identity ascription and the projection of place on the emotional and experiential world of the user are only two of the effects of these relations. Not surprisingly, given the significance (in meaning and symbolic value) of the role of most historic squares, parks or market areas, we can argue that such traditional open spaces were in fact *anthropogenic*. And this because they could illuminate ways in which people were participating in the space's interactive agency without identifying with it [figure 03].



Fig. 3: Traditionally, a space can be transformed into a place and later into a room by the simple projection of the users' activities on space. Garden of Water, Parque das Nações, Lisbon, Portugal.

With the introduction of outdoor wireless connectivity this has all changed. Public spaces have become ubiquitous landscapes where the analogue and the digital merge and fuse. Technologies were introduced in the city and its environs. The past ten years have seen various and admittedly interesting attempts to bridge the emerging landscapes. Architecture and spatial design are among the disciplines that received significant examples of crossover bottom-up developments between physical space and digital experiences. In a constantly mediated reality, urban gaming and the design of playful events around the city – like the already mentioned example of *Pokemon Go* – is just one territory that seems to have greatly expanded its borders. During the days of the Lisbon workshop, participants came to understand better that urban game design is just one technology that succeeds in both the physical and the digital landscape, and certainly not the only destined to survive within the self-evident complexities⁴ of our enhanced outdoor experiences. Undoubtedly, in the past decade, other fields, such as architecture, and urban and landscape design, have also become

⁴ Already in the early seventeenth century, Bacon conceived the evolution of technology as a complex, labyrinthine and messy construct. It is no surprise, thus, that we are still coping with the inherent interplay between human organizations, spaces and immaterial forces. As Bacon noted, "all ingenious and accurate mechanical inventions may be conceived as a labyrinth" (Bacon, 1888: 237) and this labyrinthine sense of complexity is in fact a characteristic of all technologies.

richer from the same (over)mediated reality. In positive and negative ways. Smart materials and furniture, installations and concepts like that of *Augmented Space* (Manovitch, 2006) continue to grow out of today's influences of mediated forms of communication which, in some cases, lead to conditions that are antithetical to the nature of public space, by promoting, for example, *atopic*⁵ man/space relationships. As a result, the inherently anthropogenic nature of public spaces fades under the pressure of the technogenic.

If we embark on a negative dialectic of the man/ICT/space relations, and even if the ICT developers are conceivably unconvinced of the negative consequences of the change, it is possible that a simple observer of the city might be. To support this argument, I would like to turn to familiar scenes experienced by many of us in contemporary public spaces, where people are absorbed by and solely preoccupied with their mobile devices – even when crossing the road! Many would agree that people have turned their mobile devices into everyday fellow travellers, and the accessed data or scripted information into new forms of outdoor companion [figure 4].



Fig. 4: Photograph by Eric Pickersgill from his 'Removed' series, in which he shows his subjects' attachment to their cell phones and other handheld devices by asking them to 'hold their stare and posture' as he removes the devices from their hands and then takes their portrait.

Traditional forms of spatial appropriation and the use of outdoor space seem to fail to sustain users' interest, while negative responses to mobile technology include seclusion, lack of motivation and non-social behaviour. Moreover, outdoor people's

⁵ Here I am referring to the specific modalities of the virtual and non-material mediation (i.e. GIS, media, social connectivity, gaming etc.) of postdigital applications that transform the dateless relationship of users with their surroundings into a situated, albeit atopic, construct.

interaction tends to solely recognize the existence of everything that materiality neglects – wireless connectivity and information sharing. This negligence, in turn, generates dramatic frictions for the public realm⁶. The urban landscape is failing all on its own; green public spaces with their traditional landscape features seem unable to sustain emerging forms of presences, and the digital *flâneur* (urban explorer) remains an uninvolved screen-driven perceptive visitor.

It is thus straightforward to say that, as forms of place-appropriation have been steadily increasing towards the quest for technologically mediated opportunities for human/space/digital interaction, and that patterns of urban failure appear to open up new pathways for different enhancement strategies, the study of technologies of anthropogenic spaces has become of increasing importance, both in material and immaterial terms. The Lisbon workshop served as a significant discussion platform to present and evaluate some of these technologies related to the meaningful embodiment of the Anthropos in the attempt to remedy some of the above-mentioned conflicting tensions. However, the didactic and educational objectives of the presentation were the priority.

TECHNOLOGIES OF SPACE

Digital technologies offer nowadays a variety of innovative and mediating dimensions which can, namely, re-locate public and common experiences back to the physicality of the urban stage – the place that was traditionally addressed to accommodate the Commons. Considering that Information and Communication Technologies accompany almost all of our outdoor real-world activities, the experience of open public space is now permeated by the digital to such an extent that it becomes fully mediated. In this line of thought, the four-day workshop in Lisbon brought into question the contemporary outdoor life as dominated by the mediation of screen-action, and it was in this sense that a series of Technologies for Spaces were presented during my introductory lecture.

For the purposes of the workshop, *The Body Theory* was understood as quite central to current efforts at developing computational outdoor experiences with an emphasis on virtual affinity instead of the passivity of the “watched” experience (Armstrong, 1998, Lee, 2014, Shilling, 2005). It was argued that the user in the postdigital landscape should be an active co-creator not only in the presentation but also in the shaping of the activity. The learning objectives were fashioned around the idea that ICT mediated spaces are in fact multidimensional. They are made of snapshots that prioritize the engagement of Anthropos – that is, bodies and corporeal actions against technogenic installations, such as machine-supported performances, platforms, gaming, smart

⁶ COST Action TU1306 “CyberParks” is only one of the many research programs initiated out of this observation, indicative of its effect on human and urban space in general. The author is the Norwegian member of the management committee of the above mentioned program.

materials etc. Examples like the *Rider Spoke*⁷ initiative, in which everyday cyclists explore the city at night recording stories about their lives and listening to other people's narratives, were presented in an effort to veer participants away from the predetermined, preplanned, fixed mediated experience and back towards the co-created and co-mediated act, more affected by the user's interpretation than the digital tool itself. At the same time, such initiatives which during the workshop we called "*Technologies of the displaced body*" were based on the active interaction between bodies and technologies while amplifying an emerging imperative: that inside the reality of outdoor activity as dominated by screen-action influences, *with* (but not *by*) new technologies, the personal identity of the user should or had to resurface from the strange oppression of the non-personal dimension. In this way, the "time well spent" in outdoor mediated environments can increasingly be transformed into an anthropogenic collage of personal motifs: a time-enduring pattern of individual embodiment in both physical and virtual space.

When considering another application of *The Body Theory* in technologically mediated spaces, that of the *communicative body* (O'Neill, 1989), the lecture suggested that the expressive realization of the nearby Other⁸ invokes a peculiar co-creation urban dimension without producing actual space itself. It produces a kind of immaterial network-like space in which people can navigate depending, however, on the virtual existence and nearby presence of their fellow dwellers. To deal, again, with the quest for "time well spent" while on mobile activity and the impersonal globalized aspects of the Internet surfing, issues of "communicative bodies" become central to the locale of human outdoor interaction, particularly in relation to the establishment of digital networks⁹ grounded on local characteristics. This results in a new form of oscillation in the centrality of the role of the Anthropos within co-mediated landscapes. The examples of some more gaming platforms that require connected users to perform their tasks as well as the *NYCwireless* movement¹⁰ in New York were presented during the workshop to shed some light on a methodological change on how we think Commons in our days.

Continuing the line of thought on what kind of Technologies are now available to transform the popular but rather univocal Wi-Fi spots into anthropogenic places, a challenging aspect which emerged of the questions posed during the workshop was

⁷ This initiative challenges people's fascination with "how games and new communication technologies are creating new hybrid social spaces in which the private and the public are intertwined. It poses further questions about where theatre may be sited and what form it may take. It invites the public to be co-authors of the piece and a visible manifestation of it as they cycle through the city. It is precisely dependent on its local context and invites the audience to explore that context for its emotional and intellectual resonances". Source: <http://www.blasttheory.co.uk/projects/rider-spoke/>.

⁸ Here I mean the presence of the nearby user in the space around us. However, I imply the Lacanian definition of the Other, which invokes interpersonal relationships, fundamental for the constitution of the individual existence.

⁹ This kind of networks differ in the sense that they use Bodies as their nodes, while the established connections with the nearby Other form the edges of the network.

¹⁰ NYCwireless encourages active participation in the Internet commons to expand on the people-powered success of the Open Source movement. It "lights up" public spaces and under-served communities while encouraging more free, public internet hotspots around local communities. For more see www.nycwireless.net.

to re-involve some of the faded fundamentals, like user engagement and personal reflections with the physical space. In this way, I argued, technology can raise – on another level, of course – valuable dimensions of emotional and embodied relationships which traditionally outdoor users used to establish in analogue forms of space-occupancy.



Fig. 5: Liberate your Avatar. A live, interactive, public installation on All Saints Gardens, Oxford Road, Manchester, Urban Screens Festival, October 12th 2007. The artist Paul Sermon recreates the actual All Saints Gardens within Second Life (a 3D virtual world) allowing both members of the public and virtual inhabitants (avatars) of Second Life to co-exist and co-create the same park bench in a live interaction installation. Source: <http://www.paulsermon.org/liberate>.

In parallel, as the popularity of new media technology expanded the borders of the game experience, the notion of agency in what we called Technologies of the Marked Body was introduced as a conceptual tool to inquire into possibilities for the future of the human body in public open spaces. A series of participatory installations demonstrating how people resort to their digital *avatar* as a means of communicating with space, people and information offered novel approaches to tackling beliefs, like for example that having a metaphorical outdoor body may help catalyse conversations and social interaction by the means of technology. In fact, avatars can be seen as archetypes, and some Technologies of Space employ aspects of the marked body to give users the ability to communicate visually through “avatars” by involving images and words, entwined in an intentional way to escalate personality and public appearance [figure 05].

This renewed interpretation of the outdoors digitized body can be better understood by considering a rather critical and newly emerged dimension that pertains to the contemporary experience design methodology, and which seems to influence various fields, from the artistic to the technological and the technical. If we look more closely at the possibility of active mediated environments, it becomes interesting to note

that there are currently various software platforms such as “Liberate your Avatar” which attempt to extract experiential benefits out of the rapidly growing integration of new media with spaces like parks, urban squares and markets. Regarding the role of such digital environments in the spatial experience rather as influential processes (Carpo, 2011) and not as sole artistic events, actively co-mediated landscapes seem to bring to the forefront something significant. In the context of outdoor interaction between human and machines, script-initiated processes achieve, among others, an enhancement of human cognition. Out of these technologies, participants’ cognitive awareness of the possibilities of allowing the fundamentals of outdoor co-existing to transform the ways of seeing and thinking with new media seems to grow. This proposes a dialectical relationship between a neo-analogue (Ioannidis et al., 2016) use of innovative technologies and the acknowledgment of the local context. For example, if the idea of “avatar” is interactively explored by interfaces, simulation of feelings and visualizations of various evoked categories, configurations or definitions initiated by the participants, this, in turn, can enable them to establish an enhanced understanding of archetypal concepts like that of “marking myself”.

PERSUASIVE TECHNOLOGIES

I have argued above that shifting definitions of the digitized body theory within public open spaces not only introduce us to ways of using ICT in co-creating meaningful experiential outdoor networks but also show the pathway to imagine Technologies for Anthropogenic Spaces as creative solutions to bridge physical and digital aspects with the user. During the Lisbon workshop, and in the last part of my introductory lecture, I extended this framework to include the act of accommodating changing needs. The Persuasive Theory seems to influence the application development so prominently nowadays in relation to information, user and space by re-emphasizing the traditional and familiar to many positions: that places *should* respond to everyday behaviour changes. Consolvo and Landay’s *Designing for Behavior Change in Every Day Life*, along with works like B.J. Fogg’s *Creating Persuasive Technologies: An Eight-Step Design Process*, were presented as fundamental texts for the workshop in the interdisciplinary area of studying ICT, space and human.

In the last part of the lecture I employed some of Consolvo and Landay’s (2009) key points to stage the discussion not only of the state-of-art but also of the future of CyberParks. As mentioned earlier, there are some central concepts at work in my argument of CyberParks moving towards the employment of Technologies of Anthropogenic Space which were presented briefly above but were elaborated more extensively during the workshop. Within the framework of Persuasive techniques, I will revise three of them, acknowledging that they demand modification to become operative in spatial terms. Even in this initial textual form, they indicate how to critically discuss material and immaterial objects through information objects (Kirschenbaum, 2008).

The first fundamental concept that I am led to take up here from *Designing for Behavior Change in Every Day Life* is that of “engagement”. The previous examples of The Body Theory assumed that mediated spaces attempt to sustain “*the user’s interest and accommodate his/her changes in goals and abilities*” (Consolvo & Landay, 2009: 102). This term resituates the discussion of Technology, Space and the Anthropos in a context which fosters considerations on user’s engagement as a long-term endeavour. Therefore it is argued that “*to effectively provide ongoing support, the technology must keep individuals engaged in the behavior*” (Consolvo & Landay, 2009: 102). The way active participation occurs in an anthropogenic function is not merely a methodological concept, but a particular kind of engagement of the user with both landscapes – the analogue and the digital. In doing so, the second concept of the “relevant behaviours” needs to be problematized. During the workshop we argued that ICT in public open spaces should account for the range of relevant analogue and digital “*behaviors that contribute to the behavior change and not artificially limit support to those it can automatically infer*” (Consolvo & Landay, 2009: 102). In the examples mentioned, technology mediation is unique in the history of open public spaces in that it offers an enhanced material setting cultivating (or anticipating) the illusion of virtual affectivity. Persuasive technology is exactly what enables this illusion to be accessed by people, and the relevant – for the imagined story – responses are links that render technology mediation persuasive, even in cases where we find ourselves tempted towards a screen-led response without being able to justify or even understand the reason behind it.

Finally, aiming to build an understanding of more principles of making technologies of spaces work *towards* the human, we discussed one more possible strategic process. The third concept was developed around issues of the network Commons, collaborative thinking and online “social relationships”. It is argued that persuasive technologies allow for the social support of nearby users as a “*powerful motivator to change behavior*” (Consolvo & Landay, 2009: 102). Meanwhile, examples like Rider Spoke, Pokemon Go, or even Second Life¹¹, manage to reconstruct interpretive networks of connections between people, space and information that are necessary for the development of specific – commonly shaped – mediated relations guiding people towards the performance of a task. The increasing social dimension of networked media invites us to attend to the dynamic unfolding of our outdoor “time well spent”. Even so, its achieved wellness is not fully guaranteed, being still a difficult, ongoing and open challenge addressed by the TUI 306 CyberParks initiatives.

MORE TECHNOLOGIES FOR THE INTERIORIZATION OF ANTHROPOS IN THE PUBLIC SPACE

Facilitating what was termed *anthropogenic* in technologically mediated public open spaces can increase the potential of the accessed *information* from the limited and

¹¹ See more at Second Life. <http://www.secondlife.com>.

outmoded created-contextualized-stored model, allowing neoanalogue spaces to experiment, test and synthesize new forms of knowledge mostly from users' own digital interaction with others. Exactly as in *Pokémon Go*, the game introduced at the beginning of this essay in which a digital interactive storytelling takes place in several localities across the globe with the solution or decision to be found only by collaborating with other – often unknown – gamers, in Anthropogenic Spaces each user can contribute with his/her own semantically dressed interpretation of the *specific* and the *overall*. Nowadays, the “*what is analogue or digital?*” provides a common ground on which the *locale* of network commons can resurface. For the purposes of the Lisbon workshop, I mentioned only a few Technologies of Space. Definitely many more exist and keep emerging based, for example, on crowdsourcing, collective intelligence, citizen science and journalism, digital collection of localized knowledge, platforms for expanding human cognition and creativity, collaborative computing, and much more. I believe that, with the workshop providing valuable support to my argument, it is the future of CyberParks not only to address but also to challenge the possibilities as given by the human/human interaction not *by* but *within* digitally mediated and connected environments. Thus, by emphasizing the re-humanization of wireless connectivity in public spaces, I mean to suggest that the technogenic aspects of new media need to engage with the concept of the Anthropos at a much deeper level than the state of storing and accessing information on the Go.

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Smart cities and the re-invention of the Panopticon

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Abstract - *The Panopticon, Jeremy Bentham's 1791 prison design which Foucault drew on to theorise surveillance in disciplinary societies, condenses a shift where the system of violence was abandoned as useless and the ductile method of captivation successfully began. This paper is an attempt to transfer into contemporaneity the reading of this 18th century idealistic proposal to reform society, where the presence of an unseen watcher keeps order more efficiently than physical violence. Can smart cities be understood as a digital analogue of the Panopticon?*

Keywords - Apparatus, panopticon, smart cities, subjectification, surveillance, technics.

INTRODUCTION: ON MEDIATED SPACES

The Training School that preceded the colloquium “The Relationship between People, Public spaces and Technology” embraced the idea of co-creating inclusive and mediated spaces. Spaces are indeed mediated, they have always been, or at least since civilization was invented, approximately six thousand years ago.

Harvesting in Mesopotamia or along the Nile, for instance, required both geometry and planning – and consequently forced labour and slave supervision. On the top of the hill stood men in charge of supervision, ensuring commands were being heard and executed. Then ramparts and towers were raised, mediating space and amplifying the power of men over men. So began the Architectural Era¹.

PANOPTICISM AND MECHANISMS OF POWER

Some of the elements changed but the structure has remained essentially the same: space is still mediated through language, planning, governance, architecture, maps (and apps), hence through a geometry that orients, captures and controls. The difference lies in the management of the individual and in the concretization of technics. One innovation, for instance, is the operation of record – movements are being registered.

¹ This is how *civilization was called into life*, claimed Vilém Flusser, who further remarked: «The individual villages lengthen their streets, so that they converge at the bottom of the hill. Harvests and commands are transported up and down. The city that originated in this manner consists of three spaces: the homes, the marketplace situated at the bottom of the hill, and the hill. The home dwellers farm the grasses according to commands from on high (according to statutes and laws). Geometers (intellectuals) stand in the marketplace, to formulate the commands, and the “Big Man” on the hill evolves from a guard into legislator; king, high priest, and finally God. **This is the political structure of civilization into which we were thrown.**» (Flusser, 1988: 173, our emphasis).

The perceived body – watched, tracked, profiled, stimulated and contained – is then to be included or excluded (sometimes by force in both cases). A paradigmatic case is the Panopticon.

The Panopticon, Jeremy Bentham's 1791 prison design that Foucault drew on to theorise surveillance in disciplinary societies, condenses a shift where the system of violence was abandoned as useless, and the ductile method of captivation successfully began. To see how normalizing power work, let us turn to its functioning:

«We know the principle on which it was based: at the periphery, an annular building; at the centre, a tower; this tower is pierced with wide windows that open onto the inner side of the ring, the peripheric building is divided into cells, each of which extends the whole width of the building; they have two windows, one on the inside, corresponding to the windows on the tower; the other, on the outside, allows the light across the cell from one end to the other. All that is needed, then, is to place a supervisor in a central tower and to shut up in each cell a madman, a patient, a condemned man, a worker or a schoolboy. By the effect of backlighting, one can observe from the tower, standing out precisely against the light, the small captive shadows in the cells of the periphery.» (Foucault, 1975: 200)

The way of operating is simple and efficient: cells are like «small theatres in which each actor is alone, perfectly individualized and constantly visible» (Foucault, 1975: 200). But the inmate is only visible to the supervisor – any contact with adjacent cells is denied: «He is the object of information, never a subject in communication» (Foucault, 1975: 200). The design perfection is such that even if there is no guardian present at the surveillance tower this apparatus is still operative. Thus, a new power emerges which is continuous, disciplinary, and anonymous. Anyone can run it as long as he/she is in the correct position.

The Panopticon was thus an idealistic proposal to reform society². It is a multipurpose-design which renders possible a laboratory for eventual social transformations - prisons, madhouses, factories, and schools. And, if it functions correctly, almost all internal violence can be eliminated. Is this the model implemented by smart cities?

SMART CITIES: THE REINVENTION OF THE PANOPTICON?

In Foucault's terms, the Panopticon controls bodies through an efficient organization of space, bringing together knowledge, power and technology. It is an exercise of power through space.

² However, Dreyfus and Rabinow unfold its seminal purpose: «[it] was not a utopian setting, located nowhere, meant as a total critique and reformulation of all aspects of society, but a plan for a specific mechanism of power. Bentham presented this instrument as a closed and perfect design, not for the satisfaction of designing an ideal form, but precisely for its applicability to a large number of diverse institutions and problems. The very genius of the Panopticon lies in its combination of abstract schematization and very concrete applications». (Dreyfus and Rabinow, 1982: 188).

«The theme of the Panopticon - at once surveillance and observation, security and knowledge, individualization and totalization, isolation and transparency - found in the prison its privileged locus of realization.» (Foucault 1975, 249)

The Panopticon is not the essence of power as some have taken, but the power in operation.

«It is the diagram of a mechanism of power reduced to its ideal form [...]. It is in fact a figure of political technology that may and must be detached from any specific use. [...] It is polyvalent in its applications». (Foucault, 1975: 205)

Some general inferences on smart cities can be drawn from the analysis to panopticism: (1) it serves to act upon individuals; (2) power is exercised, not simply held. It's an exercise of power with limited manpower at the least cost; (3) it captures and manifests a reversal of visibility³ in the organization of space⁴; (4) it is, ultimately, an utopian architectural device, functioning automatically; (5) and it is an explicit program - Foucault remarked that discipline is not the expression of an «ideal type» but rather the connection between different types of techniques and the responses to local objectives (Dreyfus & Rabinow, 1982: 132).

With the Panopticon, we see how technics are essential; and to fully understand what is at stake when we talk of smart cities, we need to understand the nature of technology – apparatuses are constructed based on needs and intentions.

There is no disagreement that in today's urban world a resident's every move in public is to be recorded by a variety of devices. Living in a smart city means existing in the state of normalized surveillance, instilling the same nature of a totalitarian society in many ways, everything being known to the central authorities – however, this, too, is a fiction.

Traditionally, independent units manage urban infrastructures and services. Focused on their own operations, these departments or organizations have little access to the information assembled by other institutions. In a smart city model, information, both metrics and processes, should be shared across institutions in real-time.

To give an example, such might be the case of IBM' solution for the «Smarter City». In 2010 IBM implemented their first integrated operations centre in Rio de Janeiro, assembling sensor networks and developing an Emergency Response System in real-time,

³ «Hence the major effect of the Panopticon: to induce in the inmate a state of conscious and permanent visibility that assures the automatic functioning of power. So to arrange things that the surveillance is permanent in its effects, even if it is discontinuous in its action; that the perfection of power should tend to render its actual exercise unnecessary; that this architectural apparatus should be a machine for creating and sustaining a power relation independent of the person who exercises it; in short, that the inmates should be caught up in a power situation of which they are themselves the bearers.» (Foucault, 1975: 201).

⁴ This represents a shift in the regimes of visibility: «Whereas in monarchical regimes it was the sovereign who had the greatest visibility, under the institutions of bio-power it is those who are to be disciplined, observed, and understood who are made the most visible.» (Dreyfus and Rabinow, 1982: 191).

mediated through an automated command-and-control arrangement⁵. With the support of specific programs, urban-wide operational processes should continuously react to events that affect a city, serving primarily safety and transport grids.

A Smart City is an apparatus – it is an infrastructure-oriented model that captures and orients individuals, institutions, elements and devices. But these explicit programs are never completely realized in institutions because reality never totally replicates an ideal. There will always be counter-programs, conflicts and subjectifications not predicted by the program.

WHAT IS AN APPARATUS

We shall now turn to the notion of apparatus (French: *dispositif*), untangling the lines that constitute it while opening it into new directions and ramifications: smart cities and the subjectivation processes generated within it.

An apparatus is a heterogeneous set of discursive and non-discursive practices that include all kinds of institutions and processes, functioning as a network, connecting all of its elements, always having a strategic function that results from the intersection of relations of power with relations of knowledge. Hence a «grid of intelligibility»⁶ that sustains power and government, while unfolding the process of subjectification.

It is clear to me that the urban space was always mediated, and I would like to return to this premise later. In fact, technics is the medium between man and nature⁷. But some clarifications are needed: A first clarification concerns the recurrent terms technics, technique and technology. Technics refers to the technical domain or practice as a system. A technique is the specialization or skill of one or more individuals. Technology refers to the specific alloy of apparatuses in the modern period, but also the study of the nature and logic of technics⁸. The second clarification concerns the nature of technical objects. Gilbert Simondon calls for the understanding of a new type of knowledge, which he calls mechanology. In which, far from evaluating technics as an installer of man's control over the natural world, technical objects live in the resonance between nature and subject – something that is being repressed in culture:

«Culture has become a system of defense designed to safeguard man from technics. This is the result of the assumption that technical objects contain no human reality. The opposition established between the cultural and the technical and between man and machine is wrong and has no foundation. What underlies it is mere ignorance

⁵ Rio de Janeiro experienced devastating landslides and faced the subsequent challenges of hosting the World Cup in 2014 and the Olympics in 2016.

⁶ «We acknowledge that the disadvantage of this translation is that it underestimates Foucault's attempt to reveal something about the practices themselves. But if we keep in mind that the "grid of intelligibility" is the method of the effective historian as well as the structure of the cultural practices he is examining, then we might approach a more adequate understanding of what Foucault is driving at with *dispositif*.» (Dreyfus e Rabinow, 1983: 121).

⁷ See Gilbert Simondon (1958) *On the Mode of Existence of Technical Objects*.

⁸ Bernard Stiegler (1994) *Technics and Time*.

or resentment. It uses a mask of facile humanism to blind us to a reality that is full of human striving and rich in natural forces. **This reality is the world of technical objects, the mediators between man and nature.**» (Simondon, 1958: 11, our emphasis)

It should now be clear that the urban space has always been mediated by technics: from language to architectural forms, laws or administrative measures. Therefore, as complex systems that unfold assemblages of apparatuses, we can understand a smart city as an apparatus. But what is an apparatus? Let us recall what Foucault understands by this:

«[...] by the term “apparatus” I mean a kind of formation, so to speak, **that a given historical moment has as its major function the response to an urgency.** The apparatus therefore has a dominant strategic function. [...] we are speaking about a certain manipulation of relations of forces, of a rational and concrete intervention in the relations of forces, **either so as to develop them in particular direction, or to block them, to stabilize them, and to utilize them.** The apparatus is thus always **inscribed into a play of power**, but it is also always **linked to certain limits of knowledge** that arise from it and, to equal degree, condition it. The apparatus is precisely this: a set of strategies of the relations of forces supporting, and supported by, certain types of knowledge». (Foucault, 1977: 194-196, our emphasis)

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As a response to an urgency – the sustainable government of the urban space – a smart city might be called an apparatus. But the purpose of a concrete intervention in the relation of forces, to stabilize, block or consume subjects and objects, is still ambiguous.

Any disposition might be related with the notion of apparatus (*dispositif*). In its common usage, the word apparatus, or device, means a mechanism intended for a specific use. However, this does not embrace the totality of its meaning. For this, it is imperative to delve into the work of philosopher Michel Foucault, for whom this concept was a decisive reference. However, and despite being explicit in its applications, Foucault did not give a clear definition of its meaning⁹ – as most of his followers argue.

Hubert L. Dreyfus and Paul Rabinow, in *Michel Foucault: Beyond Structuralism and Hermeneutics* (1982), assert that Foucault uses the term *dispositif* to demonstrate how concepts should be used as tools of analysis and not as ends in themselves (Dreyfus & Rabinow, 1982: 120). But this definition only meets the requirements of its use. Thus, for lack of a translation that could be more accurate, Dreyfus and Rabinow complete the concept of apparatus with the notion of «grid of intelligibility» - accurate and auspicious when dealing with smart cities.

⁹ See Agamben, 2006. In an interview, Foucault provides what can be considered a definition: «What I'm trying to single out with this term is, first and foremost, a thoroughly heterogeneous set consisting of discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral, philanthropic propositions – in short, the said as much as the unsaid. Such are the elements of the apparatus. The apparatus itself is the network that can be established between these elements.» (Foucault, 1977: 194-196).

The reticularity of the apparatus is unfolded by Deleuze in his essay «What is a dispositif?» (1989): «[...] In the first instance it is a tangle, a multilinear ensemble. It is composed of lines, each having a different nature» (Deleuze 1989, 159). Hence, an apparatus is a grid in itself and a grid for itself.

«Visible objects, affirmations which can be formulated, forces exercised and subjects in position are like vectors and tensors. [...] Thinking in terms of moving lines was the process put forward by Herman Melville, and this involved fishing lines and lines of descent which could be dangerous, even fatal. Foucault talked of lines of sedimentation but also of lines of “breakage” and of “fracture”. Untangling these lines within a social apparatus is, in each case, like drawing up a map, doing cartography, surveying unknown landscapes, and this is what he calls “working on the ground”». (Deleuze 1989, 159)

In order to unfold an apparatus, one must install oneself over the lines that run through it while driving it. The first dimensions, explains Deleuze, are the curves of visibility and the curves of enunciation. The curves of visibility are «[...] made of lines of light which form variable shapes inseparable from the apparatus in question» (160). Each apparatus has its way of distributing the visible and the invisible. The curves of enunciation evoke all that was written and said: it is the dimension of discourse. Thirdly, there are lines of force, which is the dimension of power. Finally arise the lines of subjectification.

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SUBJECTIFICATION PROCESSES WITHIN SMART CITIES

Subjectivation, or in English subjectification, is thus extracted from Michel Foucault's concept of apparatus and refers to the construction of the individual subject. Further elaborated by Gilles Deleuze, subjectification draws parallelisms from Gilbert Simondon's theory of individuation – where the process of individuation precedes the creation of the individual. Subjectification is thus the process by which one becomes a subject and has an ontological pre-eminence on the subject (subjectivity is merely an experience).

Quoting Deleuze, «a line of subjectification is a process, a production of subjectivity in a social apparatus [dispositif]: it has to be made, inasmuch as the apparatus allows it to come into being or makes it possible. [...] The Self is neither knowledge nor power. It is a process of individuation [...].» (Deleuze, 1989: 161)

Individuals are not made. Individuals are in the process of being made. The word apparatus names that in which, and by which, one executes government without the basis on *being*. That is why apparatuses imply a process of subjectivation, i.e., **they must produce its own subject in order to function**. Giorgio Agamben provides a clear definition:

«The term “apparatus” designates that in which, and through which, one realizes a pure activity of governance devoid of any function in being. This is the reason why

apparatuses must always imply a process of subjectivation, that is to say, they must produce their subject.» (Agamben, 2006: 11)

Technologies, and apparatuses, have built the individual both as an object and as a subject through subjectivation processes. With Simondon, with his analysis of psychic and collective individuation¹⁰ we see a seminal technological constitutivity of subjectivation.

Surveillance devices, the «appification» of space, governance and discursive practices, the integrate solutions, all that a city is and can be (smart cities), act upon and continuously transform its users. A virtual cartography is inducing a new performativity¹¹ – thus smart cities are being programmed. But what about their users?

Agamben, in his essay «What is an apparatus?» (2006), reveals that the notion has an essential category to understand contemporary political mechanisms¹², while unveiling how *apparatuses act on the processes of subjectification*:

«Further explaining the already large class of Foucauldian apparatuses, I shall call an apparatus literally anything that has in some way the capacity to capture, orient, determine, intercept, model, control, or secure the gestures, behaviours, opinions, or discourses of living beings. Not only, therefore, prisons, madhouses, the panopticon, schools, confession, factories, disciplines, juridical measures, and so forth (whose connection with power is in a certain sense evident), but also the pen, writing, literature, philosophy, agriculture, cigarettes, navigation, computers, cellular telephones and – why not – language itself, which is perhaps the most ancient of apparatuses.» (Agamben, 2006: 14)

As machines of producing subjects, apparatuses must be grasped as machines of government. However, and unlike **panoptic tools** (such as prisons, madhouses, factories, etc.), which assumed physical coercion by the negation of an “old” subject while constituting a new one, in **panoptic ensembles** (such as networks, programs, apps, navigation, games, video-surveillance, smart grids) the ductile method of *captivation* instilled is indiscernible.

New technologies have instigated the emergence of new subjectivation processes. And herein lies the ambiguity: the hardness of things used to make the apprehension, generally speaking, more comfortable. Information, another kind of object, is a *soft object* (software) – it is more difficult to recognise as such¹³.

¹⁰ Gilbert Simondon (1964) *L'individu et sa genèse physico-biologique*.

¹¹ Another characteristic is its **performativity** (Cascais, 2009), i.e. its ability to produce meaningful effects.

¹² Agamben makes a crucial connection to his own work when reporting the rendering of *oikonomia* as *dispositio* (Agamben, 2006).

¹³ Regardless, and emphasizing the same nature of the processes, any object contains information: «La notion de forme doit être remplacée par celle d'information, qui suppose l'existence d'un système en état d'équilibre métastable pouvant s'individualiser; l'information, à la différence de la forme, n'est jamais un terme unique, mais la signification que surgit d'une disparation. La notion ancienne de forme, telle que la livre le schéma hylémorphique, est trop indépendante de toute notion de système et de métastabilité» (Simondon, 1989: 28). And there is a clear relation between the Theory of Individuation and Mechanology, further remarks Simondon in the interview with Jean Le Moine: «Cependant, une relation réelle me paraît exister, en ce sens qu'un objet technique existe, se constitue, d'abord comme une unité, une unité solide, un intermédiaire entre le monde et l'homme, un intermédiaire peut-être entre deux autres objets techniques, et que la première phase de son développement, c'est, avant tout, une phase de constitution de l'unité, une phase de constitution de la solidité; prenez un outil; qu'est-ce qui fait l'essentiel d'un outil? – c'est qu'il est un rapport, un intermédiaire entre le corps de l'opérateur et les choses sur lesquelles il agit, mais c'est aussi qu'il doit d'abord, pour être un bon outil, être indémanachable, être bien constitué.» (Simondon, 1968: 106).

In this brief account we have tried to conduct a contemporary enlargement of the Panoptic as an apparatus of power. An apparatus is not so much the individual elements that constitute it but, first and foremost, the particular coalitions and tensions between the elements.

We see how Smart Cities could be a digital analogue of the Panopticon, where the presence of an unseen watcher keeps order more efficiently than physical violence. Thanks to advances in data processing, machine learning and computer vision, we are nearing a world where surveillance cameras are also able to analyse our emotions and behaviours, while inducing movements and intentions, just as in Orwell's *Nineteen Eighty-Four* (1949) or Aldous Huxley's *Brave New World* (1932). On 7 March, 2017, WikiLeaks released compromising information, the «Vault 7» dump, on an «all-seeing-eye» surveillance programme codenamed «weeping angel» with which the CIA appears to be spying on billions of people around the world. According to the first releases, the CIA has malware, hacked and recorded images and sounds through smartphones, tablets, vehicles equipped with remote navigation systems, and smart TVs¹⁴ – just like the Orwellian «Big Brother».

A central position is occupied by science fiction literature, not only because it opens up possibilities yet to come but also because it is effective in mirroring anomalies of the present¹⁵. But it is also true that the network built for a smart city is such a complex interweaving that it will be almost impossible to be centralized by a single intelligent structure.

Through the concept of *dispositif*, used by Foucault to describe the mode of functioning of an arrangement of elements and forces, practices and discourses, power and knowledge, that is both strategic and technical, we have thus emphasised this configuration: power must be seen as the **multiplicity of relations of force** within a heterogeneous and dynamic field. We must acknowledge not only the apparatuses of power but also the **resistances** that necessarily run across it¹⁶. Rather than a descriptive account of power, the question of the apparatus is the ontological reckoning of a multiplicity that is strongly relational. Power is a fractured field. Lines of power are to be intercepted, interrupted and transgressed. As a final remark, let us recall the savage in Huxley's *Brave New World*, who refused the generalized comfort induced by the institutionalized use of the drug «soma» – the potent alienating drug that has *«all the advantages of Christianity and alcohol and none of the effects»*:

«"But I don't want comfort. I want God, I want poetry, I want real danger, I want freedom, I want goodness. I want sin."

¹⁴ The CIA has also apparently malware and hacked some of the most encrypted social media and communication platforms, such as WhatsApp, Weibo, Confide, Signal and Telegram. For more on WikiLeaks «Vault 7» see: <https://wikileaks.org/ciav7p1/> and <https://www.rt.com/usa/380010-wikileaks-cia-leaks-vault7/> (accessed on 9 March 2017).

¹⁵ This is shown throughout Foucault's works. For more cf. Bellour, R. (1992 [1989]). *Towards Fiction*. In Michel Foucault *Philosopher* (pp. 148-156). Trans. Tim Armstrong. New York: Harvester Wheatsheaf.

¹⁶ Internet Activism, for instance – such as WikiLeaks, to name one.

“In fact,” said Mustapha Mond, “you’re claiming the right to be unhappy.”

“All right then,” said the Savage defiantly, “I’m claiming the right to be unhappy.”»
(in *Brave New World*, Aldous Huxley 1932)

Paradoxical as it might seem, fiction opens the evidence of a future, because never before has the imminence of a state of total surveillance been more discussed. But we cannot precipitate ourselves in the “abyss” of diabolising technology¹⁷. In an age like ours, assailed by a multitude of crisis, I see a sense of urgency on the basis of this explicit programme that smart cities are – the sustainable government of the urban space.

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¹⁷ Technics evolves more quickly than culture. There is a tension between these two fields: «The most powerful cause of alienation in the world of today is based on misunderstanding of the machine. The alienation in question is not caused by the machine but by a failure to come to an understanding of the nature and essence of the machine, by the absence of the machine from the world of meanings, and by its omission from the table of values and concepts that are an integral part of culture». (Simondon, 1958: 11).

Walking as tactile method in urban planning and design

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Abstract - *This chapter discusses the act of walking as a method of capturing the socio-spatial needs of users in a contemporary urban space. Walking as method is considered a way to assimilate a socio-spatial proximity experience, and to (re)invent the response to urban space needs in a fast-changing city. This reflection discusses the purposes of urban planning, provides a framework, which goes from socio-spatial urban needs to (possible) responses, and discusses the complexity of evaluating the information gathered. It highlights the role of walking in planning, but also the relationship between plan and walk, discussing some of the key aspects to bear in mind when taking the act of walking as a way to learn how to plan. From the sensitive act of walking to the rational processes of collecting information, e.g., techniques for basic information collection for urban planning, this chapter also presents the role that ICT can play as an instrument of socio-spatial design in capturing relevant information for urban planning professionals.*

Keywords - Urban planning, walking method, socio-spatial proximity, ICT tools

THE PURPOSES OF URBAN PLANNING

This chapter discusses the role that the act of walking can play for urban planners and urbanists in better identifying the potential, problems and needs of the contexts. The main objective is, from a closer proximity to the contexts of action, to contribute to a better adaptation of urban planning, deepening and carrying out a careful observation and analysis of the territory based on the relation between cultural and social factors, and environmental issues.

As the first basis of reflection, it is considered important to think of the urban territory as a public place. This premise places us face to face with the need to assume the complexity of the urban question in a contextual approach. From an anthropological point of view, this could be described as more “near” and from “inside.” A second premise is the main reason for carrying out urban planning, which is to contribute actively to the adjustment of the territory to the purposes of the human being (Lynch

and Hack, 1984). In parallel, the result of this planning is an act of will and principle, where the territory should provide conditions for the development of communities (Bacon, 1974). Planning is a complex act, requiring a deep knowledge of the territory, and here it is crucial to have a sharing attitude between those who have the task of planning and those who use the territory. The act of planning must therefore be geared towards providing spatial conditions for the development of social and community activities. However, it is important to take advantage of existing resources – e.g. natural, social, cultural, economic or architectural resources. It is also important to respect the past, from the present experience with eyes set on the future. These assumptions emphasise the interest in improving and developing planning strategies more consistent with local needs.

As Dubos (1968) argues, people are so adjusted to problems that they consider them normal. People do not demand because their feelings are conditioned by their experience. In that way, an important task is required of urban planners: to adjust the place to the real needs of citizens in a way that allows the practice of citizenship. In the last decades, cities have lost the human scale, adopting systems to improve rapid movements, from one point to another, but forgetting the socialisation and interrelation needs of human life. The motorised movements are a fundamental achievement in the development of territories, but the problem is that this was made by imposing the car and giving up other forms of mobility, and, because of this, the use of public spaces by people has decreased, which in turn has promoted abandon and the emergence of undesirable areas.

What can or should be developed in planning to qualify discontinuous urban areas, where urbanity is absent? How can urban disorder, socio-spatial segregation and exclusion be avoided, without restricting the creativity, informality, as well as the social and cultural differences of making and living (in) the city? In the face of accelerated processes of social transformation that mutually affect the spatial realities in which they materialize, what responds to socio-spatial needs? Continuity and flexibility are two expressions that seem to respond to the needs of many urban areas. However, what kind of continuity and flexibility should we address?

This reflection is not intended to answer the questions raised above, but rather to take them as a guide to put together a set of points that emerged from the dialogue between an anthropologist and an urban planner/designer. In this sense, it highlights some aspects that seem appropriate in the context of another methodological stance of working the 'urban question'. That is, from a methodological (and potentially pedagogical) point of view, this discussion focuses on a specific aspect: walking as a method for planning. Hence, this reflection emphasizes the interest in promoting a culture of walking before planning.

BRIEF STATE OF ART ON WALKING TO PLAN

Walking as a technique of thinking was used by such philosophers and writers as Whitman, Nietzsche, Rimbaud, Rousseau, Thoreau, Kant, Marcel Proust and Walter Benjamin, as Gros (2015) recalls in his work *A Philosophy of Walking*. In this context, Thoreau’s thoughts about walking are underscored. In his essay ‘Walking’ (Thoreau, 1862)¹, besides the central point of nature and its importance, Thoreau considers walking an innate form of human mobility and the best way to feel the territory and experiencing – at each passage and at each moment – different sensations. For him, walking is the most concrete way of understanding each element of the territory and its specific function. The ‘Walking’ experience allows for a better description of places, as Marina Benjamin (2017) explains. For journalists who work on urban issues, “walking was being rediscovered as a tool useful” (Benjamin, 2017), fostering deep analyses and a more assertive critique concerning urban spaces.

Table I presents a brief synthesis of some scholars, whose act of walking featured prominently in their work logics, starting with Aguiar’s (2015) text on the use of walking through architecture and planning, and complemented with some other thinkers.

TABLE I: SYNTHESIS OF THE MAIN AUTHORS THAT APPROACHED WALKING AS PART OF URBAN PLANNING METHOD

AUTHORS & REFERENCE DATES	PERSPECTIVES	MAIN ISSUES
Auguste Schmarsow (end 19th century)	Valuation of architecture as a spatial art. Focused on the spatial heartbeat. Central: the notion of directionality from the observer’s movement.	Focus on: • Movement of the observer / walker; • Role of the physical and the imagined; • Projection of individual feelings about the static spatial form.
Le Corbusier (1950s)	‘Promenade architecturale’ / architectural walk. The gradation of the axes would contribute with the spatial effect, to accomplish the activity. The role of spatial experience and description in the plan.	Appeals to the condition of axiality and it breaks (inflexion) as a foundation in the order of the course: • Notions of spatial integration and segregation; • Consideration of the more and less accessible or visible.
Gordon Cullen (1960s)	Develops the concept of serial vision. The point of view of the observer in motion and that unfolds continuously in an existing vision and in an emerging vision.	Simultaneous observation of the sketch showing the sequence of: • Positions of the observer in motion; • Images corresponding to what is viewed from these same placements.
Kevin Lynch (1970s)	Legibility of places from a structural character.	• Perception of legibility through the view of the path; • Importance of a visual hierarchy; • Recognition of potential arising satisfaction (or inconvenience); • Recognition of the role of the presence of surprise elements in the urban movement.

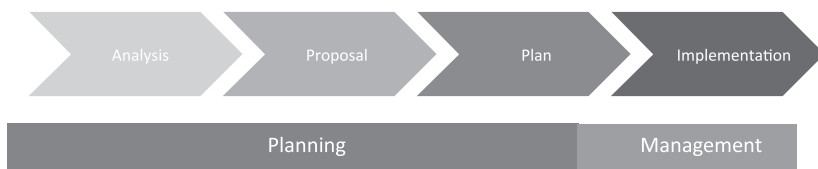
¹ “Walking” began as a lecture, delivered at the Concord Lyceum on 23rd April 1851, and many other times after that. It evolved into the essay published in the Atlantic Monthly after Thoreau’s death in 1862.

AUTHORS & REFERENCE DATES	PERSPECTIVES	MAIN ISSUES
Herman Hertzberger (1970s)	Quantification, in the plan, of spatial gradations (the gradation of the axes – see Le Corbusier)	<ul style="list-style-type: none"> The author proposes to show the territorial differentiation established through the accessibility gradations (that spatially order the activities), using diagrams; The basis of the spatial distribution lies in the observer's awareness of the different territorial demands and modes of accessibility required.
Michel De Certeau (1980s)	<ul style="list-style-type: none"> Walking in the city allows for a tactile experience, which provides a pedestrian understanding of space. The act of walking is seen as an art of thinking, considered as: Facilitating action to understand the urban space; A way of making space; A way of doing more research in the field of Urbanism. 	<ul style="list-style-type: none"> The role of everyday observation that should be captured from a tactile and walked observation. Walking enables: A process of appropriation and re-reading of the urban system by the ordinary practitioner of space; The (re)discovery of the sensory and subjective dimension of urban existence; The updating and organisation of the set of possibilities and prohibitions imposed by space.
Hillier B. & Hanson J. (1980s)	Development of the axial map (from the idea of gradation of the axes – see Le Corbusier and Hertzberger)	<p>Importance of the observer in movement in the updating of the cartography used. Each of the lines of movement has an identity relativized to the whole. The lines can connect to characterize the physical reality of places, being described in a diagram. The idea is for the observer to move, supported by:</p> <ul style="list-style-type: none"> Satellite photos and urban cartography; Depending on the situation, by diagrams that report the condition of centrality, that is the amount of integration and spatial segregation inherent in the walked spaces.
Francesco Careri (2000s)	Walking as a cognitive act capable of triggering physical-symbolic transformations of environmental as well as human scope.	To understand the city as an aesthetic experience. It is essential to capture the erratic and supposedly chaotic and discontinuous geography of contemporary peripheries, namely their complex system of public spaces.

WALKING TO BETTER UNDERSTAND THE SHARED TERRITORY

Planning requires a prior reflection on: For whom? For what? What resources? What territories? What expectations? The answers must aim to improve the suitability of the territory to the desires and social needs. To do so, from a shared perspective, it is necessary to collect information and data on socio territorial contexts, to study and analyse the information collected, and to integrate the analysis results into the planning process, transforming data into information.

The planning process follows phases, like:



In this reflection, we are more focused on the moment of analysis to understand the context (site and users), like a shared territory. The planner and the team responsible for urban planning are required to 'feel' the territory needs, leveraging existing resources. Hence, before planning, the planner and his/her team need to understand: Why do urban planning and urban design? Is it to give people conditions to achieve quality of life? However, this can be very complex. For example, what is 'quality of life'? In this sense and to do urban planning and design, planning needs to work for and with communities and their socio-territorial contexts, taking advantage of their knowledge and needs. This enables us to infer that urban planning and design are not a simple act to make the city. This means that planning just provides the tools for communities to achieve their objectives vis-à-vis quality of life when using the territory.

The pedestrian condition is defined by its peculiarity since the walker is an observer guided by privileged information (it is close and potentially more aware of what happens in places along his/her path). Walking is an essential methodology to understand the territory because it enables planners to come closer to and inside the settings. What contributes to a process of gathering and analysing contextualised information, which, meanwhile, can count on the active contribution of people who are linked to the territory? Walking, as planning method, is a way to gain detailed knowledge, for instance on behavioural scenarios, on the relationship between users, space/spatialities, time/temporalities and artefacts. Walking makes possible the creation of a statement, a narrative of the urban space, where the structure of displacement and the perceptions provided can be taken as a method of analysis. The observer-walker becomes more sensitive to the quality of places and to the relationships that are established between spatial and social organisations. Therefore, by assuming the role of observer-walker, a planner can help improve urban planning, making it more consistent with local needs. In the course of this process, one can find new ways to encourage involvement and social participation in proposals for urban development.

FROM WALKING AS METHOD TO THE TOOLS THAT SUPPORT AND DEVELOP THE STUDY

It is important to stress that the perception acquired from a particular territory, when it is walked through, varies according to different factors. These can be personal or individual, derived from knowledge, moment, motivation and interest, and can also be external factors, such as time available, etc. Adding to this factor a personal variation of facts, there is the changeover of sensations/ perceptions between different individuals, depending on personal aspects, but also on social, educational or relational factors (i.e. sociocultural context). Because of this, it becomes important to reflect on a method (or methods) that can guide the professional of the urban space in procedures to use "walking" for planning.

The traditional way of understanding territory is supported by data gathering (census, geographic data, etc.) and survey methods (questionnaire, interviews, etc.). Technology is an important part of it, because we use a great deal of technology. Albeit cautiously, researchers and urban planners need the new technologies (and techniques) to improve the understanding of space (Menezes and Mateus, 2015). *“With the enormous improvement in the techniques of mathematical manipulations of electronic computers applied to the problem of projecting past trends, we are in danger of surrendering to a mathematically extrapolated future which at best can be nothing more than an extension of what existed before.”* (Bacon, [1967] 1976:13). To achieve satisfactory results, an urban planner/designer must understand for whom and for what he/she plans, and have an overview of existing resources (in a material and immaterial sense). The *“Analysis of the site begins with a personal reconnaissance, which permits a grasp of the essential character of the place and allows the planner to become familiar with its features.”* (Lynch and Hack, 1984: 5). Furthermore, *“Experience allows us to set realistic purposes before a particular site has been fully analysed and to judge a site before detailed purposes are known.”* (Lynch and Hack, 1984: 29).

Therefore, when taking the act of walking as a method of study, among the main tasks to be performed describing and recording the observed socio-spatial situations stands out, along with one's own perceptions collected during the walk. Thus, bearing in mind that this discussion is intended to be a contribution to the CyberParks Project, and draws upon interdisciplinary research, Table 2 introduces some of the main aspects, which, in terms of the relationship between spatial and social organizations, can be easily captured through walking. These are also of particular interest in an ethnographic approach.

In order to capture the aspects described in Table 2, when walking, the following support tools can be used to describe and record the observed information (Menezes and Smaniotto Costa, 2017):

- Keeping field diary with notes about impressions, identifying the areas and/or spaces of observation; the periods of observation and users and practices observed.
- Photos and/or videos taken in different periods of observation; featuring types of users, practices and places.
- Drawings, diagrams and sketches of the local and practices observed, location of observed users; behaviour maps.

TABLE 2: SUMMARY OF THE RELATIONSHIP BETWEEN SPATIAL ORGANIZATION AND SOCIAL ORGANIZATION

ELEMENTS	CHARACTERISTICS
Users	Socio-demographic profile – e.g.: age, gender, place of work and home address, educational level, marital status. Relational – e.g.: family relationship, friendship. Socio-cultural attributes.
Times and Temporalities	Moments and periods of linear time – e.g.: morning, afternoon, night / weekdays, weekends. Frequencies of use and regularity of use – e.g.: daily, several times a week, sporadic. Sporadic use – e.g.: festivals and rituals, holidays, vacation. Background / life paths (person's life and spatial practices – e.g.: frequency of use of public spaces, preferred places, time someone started to use a specific space). Memories and life projects (prospects of life and their relations to spaces, preferences, needs and expectations on a space). Historical time: past, present and future.
Spaces and Spatialities	Identification of the space and its main physic-architectural, social, urbanistic, and environmental characteristics. Forms and modes of use and appropriation – e.g.: behaviours and socio-spatial practices; driven socio-cultural resources and the intensity of space appropriation, establishment of territories and delimitation; routes, identification, guidance. Features of the physical environment – e.g.: equipment, facilities, services, space layout, landscaping and design. Types, characteristics and composition of space – e.g.: shady and sunny places, water features. Functions – e.g.: areas for contemplation and for active sports, restaurants, cafés, buildings, etc. Accessibility, location within the urban fabric. Perceptions of security and safety. Perceptions of environmental hygiene – e.g.: noise, air quality, odours, etc.
Artefacts and objects	The artefacts and objects are being used. How and by whom are they being used. Their use in different times and temporalities.

By Menezes and Smaniotto Costa, 2017

Digital technology is developing quickly, in many directions, and it is becoming an inevitable part of contemporary life. Locative media and the penetration of digital technology into the actual urban space are increasing. The growing use of ICT in social life significantly influences practices, and changes the relationship between people and spaces, as well as their needs and interests. ICTs influence the ways of doing research and “making” a city too. In this sense, the new digital features are also interesting tools to support the process of gathering information when walking, and they are used to produce knowledge which is fundament to planning. Within the CyberParks Project, two applications have been developed, and they may be important in a study on walking (<http://cyberparks-project.eu/app>). These applications can be used as resources for recording, given the possibility of saving images, sounds, videos, interviews. Developed by DEUSTO University – Bilbao, Spain, these apps are:

- **EthnoAlly** (only for iOS): this is a tool that allows the user to keep a record of a known path and collect information in four ways: video recording, audio recording,

photography, and note taking. By obtaining the position (GPS) and marking on the map the place where these recordings were done, this tool is very useful for planners because, in an organised and centralised place, all notes and information gathered during 'walking' can be found and processed later. It is like a journey diary in a digital era.

- **WAY CyberParks** (iOS and Android): this is a tool to be utilized by space users and it enables a record (by GPS) to be kept of the path (time, weather conditions, velocity, altimetry) taken by the user. It allows the user to send geolocated information such as a comment, photo, video or audio files. The app allows researchers (planners) to launch surveys and pose questions concerning a specific topic, or send alerts when a user draws near a certain space. Via the augmented reality tool, a user can access contextualised information when a point of interest is reached (e.g. name and description of a statue, tree name and characteristics, etc.). The app also provides a vision of the future (building, road, etc.), by pointing the device at a specific place showing plans (3D). For a planner (and decision maker) this tool is useful because it collects data from all users, highlighting favourite routes, places of stay or, conversely, avoided areas, as well as comments and responses to surveys.

Thus, through walking as a planning support method, one can guarantee a closeness to the reality of sites and users. Here, ICTs are important tools to support the process of knowledge production to do better urban planning, but they do not preclude approaching the real-time city *close and from inside*.

FINAL NOTES: WALKING BEFORE PLANNING

"(...) there is always a new world to be unravelled from the submission of spaces to the proof of the body passage; of the body scanning through space. The observer's method, in his ambition to describe the spatial quality of places, seems to be a safe north where to anchor the understanding of what would be an architecture appropriate to people and to our time." (Aguar, 2015: 114)

The analytic process is essential in walking, and it provides the planner with a dimension that is not covered by technologies, as it enables the perception of cultures and realities that are hidden but actually 'make' the urban spaces. Walking allows one to give back to the urban and suburban space a human dimension that was lost. As an easy approach, close to the contexts, walking is a starting condition to grasp the socio-spatial and cultural sense of the contexts. Walking is an essential tool for the analysis, design and management of space, facilitating the motivation of citizens to participate with ideas, to exercise their duty, which is also their right.

From this perspective, ICTs are facilitators of data collection and recording tasks. They allow an immediate and simultaneous recording of multiple activities (i.e. the complexity of the place). Furthermore, ICTs allow for a direct use of the information,

as well as its sharing. They also help users, planners and managers of urban space, namely the urban public space, to foster their interaction, and together, through walking, register and disseminate information to provide the territory with greater urbanity.

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Creative landscapes: co-creating inclusive, mediated cultural and creative spaces.

The Marche Region case study

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Abstract - This contribution intends to strengthen the wide potential of co-created and mediated public spaces, both in urban and in rural environments. Landscapes should become an opportunity to reinforce the networks of public spaces to foster the relationship between cultural heritage and creativity. We believe that the future of Italy and of the Marche Region in particular, depends largely on the promotion of cultural heritage and this with the innovative and creative bonds that culture should have with landscapes. Doing it means pointing out the fundamental role of planning as a challenge for coordinating different territorial approaches, the inefficiency or failure of which often results in setbacks and missed targets. The Marche Advanced Cultural Districts represent a new strategic approach to strengthen culture and creativity and local communities. The economic recovery represents a challenge for the future, especially after the 2016 earthquakes, which destroyed the greatest part of the region's cultural heritage.

Keywords - Landscapes, culture, creativity, cultural districts, public space, ICT, Marche

CULTURAL LANDSCAPES

This chapter explores the contribution of co-creation and ICT on a territorial scale, combining urban and rural participative approaches. The main goal is to highlight the key role of culture and creativity in urban contexts, as well as in small rural communities. It is worth pointing out that culture should be understood as the way to find new solutions to problems that seem insurmountable, to let us shift viewpoints on situations, to make connections between events and ideas, and articulate multiple levels of interpretation (Caliandro, Federici, 2013). Hence, the main task of culture is to imagine, articulate and build the future. Culture is the frame, the basic structure of the design of the present and the future (Caliandro, Federici, 2013).

Conversely, then, a cultural divide consists in the inability or impossibility for individuals or entire communities to support cultural contexts, access knowledge and information sources. The greatest limitation for these groups or individuals is to draw, to express creativity, and to build up an autonomous culture and their own vision of the world and social relations. The inhibition or limitation of their contribution to the debate

on cultural processing raises a serious barrier to the multi-ethnic and democratic growth of local communities. Digital apartheid endures. This means the digital have-nots will be poorer, more resentful of progress than ever, and will not be able to become the skilled workers or potential customers that are needed to sustain the growth of the Internet economy. The private sector is eager to tear down the wall between the digital haves and have-nots (Powell, 2000). Co-developing creative landscapes needs the support of broadband and ICT to turn public spaces into more inclusive and mediated places. Culture and creativity should be supported by new technologies, to produce actions based on the communities' contribution to the valorisation of the material and immaterial cultural heritage. The European Union fosters accessible and sustainable tourism, but accessibility means extending inclusiveness also to residents (European Union, 2012).

Culture is an undeniable factor determining social inclusion; participation in culture and co-creation processes, in fact, may promote acceptance, identity, respect and mutual appreciation of different people and groups, and therefore, it should support the co-creation and development of more inclusive communities (Florida, 2005). Nevertheless, demands for participation in cultural processes remain unfulfilled. The educational system shows increasing difficulties in promoting equal access to culture. Unfortunately, people's cultural habits depend largely, even today, on the family environment, and not all public institutions are active in engaging and stimulating the young generation.

The use of the term landscape draws on the definition of the European Landscape Convention (2000), which refers mainly to the fundamental task of planning all landscapes, not only beautiful landscapes, but also neglected ones. The Convention marks a fundamental concept: all landscapes are cultural landscapes, because of the human presence throughout the centuries. Planning all landscapes is therefore crucial. It is necessary to reaffirm the central role of planning as a key discipline in coordinating and defining environmental, social and economic targets. Planning has become the synthesis of different local strategies, programmes, sectoral initiatives. Otherwise, as has been happening in recent decades, cultural landscapes will continue to be spoiled, in Italy and, without exception, in the Marche Region, with new residential and industrial settlements which bear no relation with the territorial context and its historical heritage. Public spaces have been affected, losing their primary function: that of being inclusive places.

This is because there is no cultural relationship with the past and the rich cultural heritage. Industrial development spread fast after the Second World War, changing land uses and landscapes. Culture represents the connection between past and future, especially in Italy, where the past is made up of a widespread heritage. Thus, on the one hand, actions should not address only conservation, while, on the other, strategies need to be more strongly related to co-created processes, also involving participation in policymaking.



Fig. 1: The Marche Region in Italy.

Creativity is an input for cultural enterprises, which are used to providing goods and services. Co-creative processes strongly qualify culture, as an expression of cultural landscapes and their inclusive communities. Walter Santagata (2005) argued that cultural districts directly result from Alfred Marshall's industrial districts. Hence, imposing the creation of cultural districts in inadequate socio-economic environments (without involving local communities) inevitably leads to failure (Santagata, 2001). This is because cultural networks strongly relate to the idiosyncratic knowledge associated with small segments of production, specialized outputs, based on skilled know-how, which combine tradition and expertise, fed by innovation and technologies (Santagata, 2001). This phenomenon corresponds to the manufacturing industry district background of the Marche economy in the past decades.

Investing in culture means enhancing the possibility of driving cultural landscapes also into co-created and inclusive public spaces.

MARCHE'S CREATIVE LANDSCAPES: ADVANCED CULTURAL DISTRICTS CASE STUDY

The report *Io sono Cultura* on the Italian culture and creativity sectors is carried out annually by Unioncamere and Symbola Foundation (2016) in collaboration with the Marche Region. The report reinforces that culture is one of the primary engines of the Italian economy. In 2015 in Italy the entire cultural and creative cluster (cultural and creative enterprises, cultural heritage, performing and visual arts, and creativity-driven productions) was responsible for 6.1% of the national budget (89.7 billion euro). Actually, culture produces a multiplier value of 1.8 on the rest of the economy:

every euro spent in culture engenders 1.8 in other sectors (mainly tourism), or, to be clearer, 89.7 billion euros generated 160.1 billion euros, 17% of the Italian national budget (2011-2015), mostly due to the tourism sector (37.5%). Culture in the Marche Region generates increasing tourist flows; in 2013, the cultural revenue was 28.8%; in 2012, 27.70%; and in 2011, 27%. Tourism in Italy also includes the excellent Italian food and wine production.



Fig. 2: Views of a typical landscape in the Marche region and of the historical village Corinaldo-AN.

Between the years 2011 and 2015, the economic segments of design added value by 10.8% and were responsible for 13.8% increase in employment: creative enterprises (5.4% added value and 1.4% employment), the videogame industry (3.7% added value and 1% employment), and music (3.0% added value). These are some of the most important figures in the new cultural and creative economy.

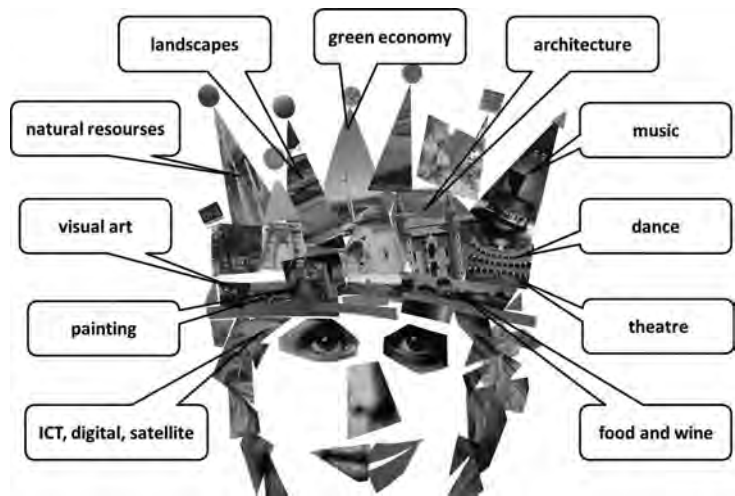


Fig. 3: Creative Landscapes combine many cultural and creative issues.

The Marche Region represents an interesting case study. For decades, this region of Central Italy was characterized by manufacturing, in many cases by the famous brand “Made in Italy” known all over the world (Tods’, Vic Matìè, OXS, Janet and Janet, Frau,

Arena, Scavolini, and many other excellent food and wine products, etc.). In the current economic crisis, the cultural and creative economy, by driving multiple cultural identities, widespread in inland areas, should contrast the settlement density of the coastal areas where infrastructures (railways, airport, port, etc.) as well as public and private services are mainly located. In 2013, the Marche Region invested regional funds (4.5M euros) in the culture and tourism economy. It has not yet been possible to say whether these investments will sustain a regional strategy, which fosters cultural landscapes and the traditional manufacturing, supporting a new challenge for the regional economy. However, the promotion and management of the cultural heritage has attracted the ever-increasing presence of private investors to a sector, which, in the past, was managed mainly by public institutions.

In 2015, according to the Symbola-Unioncamere report, the Marche Region received 0.45% of added value from the culture and creativity budget in the regional economy (second region in Italy, after Valle d'Aosta, with 0.89%). Between 2011 and 2015, the cultural and creative Marche industries grew by 0.34%, again after the Valle d'Aosta region (0.89%). In the years 2011-2015, the Marche cultural and creative budget rose to 6.1% (2.2 M euros) of the total regional budget, employing 6.6% (42,200 people) of the entire regional workforce. Behind these figures, the crucial issue is the role of culture and creativity as the cornerstone of a new Marche economy based on the diversification of the development thrusts. This means that the cultural regional funds for 2014-2020 are aimed at crosscutting actions in different sectors to respond to twofold goals: the first aims to strengthen the cultural sector by targeting the creative and cultural industries, supporting new entrepreneurs and their aggregation processes, as well as promoting innovation. The second goal is to protect the cultural heritage, fostering cultural activities with the support of new technologies and ICT to respond to a regional, national and international demand for cultural tourism.

A REGIONAL CULTURAL AND CREATIVE ECONOMY

Richard Florida in the famous essay «The rise of the creative class» (2005) takes into account three Ts (Talent, Technology, Tolerance). A fourth T should be added, Territory, namely cultural landscapes, which in Italy, represent a key factor for building a creative economy. More specifically, this involves the ability to produce new ideas, new technologies, new business models, new cultural forms and even new enterprises, what Florida defined as “creative capital” (Florida, 2005). The economic value of cultural/creative projects lies in some factors. One is the issue of attracting talent and creating added value: these are creative landscapes. Then, another factor is that the conservation and enhancement of the cultural heritage, in rural sprawl environments, need active networks on a large territorial scale. In this framework, co-creating inclusive and mediated public spaces means combining a set of different issues to reinforce local communities and to strengthen landscape and heritage valorisation.

Public spaces are museum and libraries, historic buildings, churches, theatres, open spaces (squares, boulevards, parks, gardens, etc.). Blending different cultural and creative issues into a regional network should provide a sturdy approach to the economic crisis, involving young people in developing a co-creating local strategy. It is worth clarifying what an Advanced Cultural District (ACD) is. First, it is based on the existence of complementary issues between different cultural sectors. Second, cultural districts are also related to networks, drawing from different organizational models, useful to guiding specific targets and involving public intervention. It is possible to distinguish three most common types of networks (Barbetta et al., 2013):

- *Strategic networks*: these are groups of similar entities (i.e. museums, libraries) connected by horizontal interdependencies. Their function is mainly to achieve common goals, otherwise unreachable individually;
- *Industrial networks*: these networks identify relational links between enterprises, supporting a specific production. Industrial networks should be further distinguished into: a) supply chains, if the interdependencies between enterprises are of exchange; b) districts, if there are also horizontal interdependencies, mainly voluntary; c) business networks, if the interdependences of trade and associations are identified by a single body, but still voluntary;
- *Policy networks*: these are organized around specific public strategies and policies, gathering subjects dealing with the same policy targets. That is the case of the Marche regional advanced cultural districts.

In 2010, the Marche Regional Advanced Cultural Districts were the regional initiative fostering local development through:

- support for cultural and creative enterprises for the development of new cultural and creative outputs and services;
- a network aiming to integrate traditional manufacturing (furniture, shoes, food and wine, etc.) with culture and creativity through ICT implementation;
- creation of new job opportunities for young graduates and skilled workers.

Seventeen Advanced Cultural Districts (ACD) partnerships were established which involved 400 partners, including:

- Municipalities: 89
- Enterprises: 129
- Associations: 90
- Province and Mountain Unions: 25
- Regional Parks, Natural Reserves: 15
- Chambers of Commerce: 7
- Universities and Secondary Schools: 20

The regional Advanced Cultural District initiative was established by a regional fund for priority actions, with a budget of 4.2 M Euros. Afterwards, a regional call was opened (May-June 2013), co-financing 40% from regional funds, while the remaining

60% had to be supported by – public and private – stakeholders. Thirteen local ACD proposals were financed, for a regional budget of 2.5 M euros with a co-financial commitment of 9 M euros.

In addition, four further regional AC Districts were approved (financed with a regional fund of 1.750 million euro).

AC Districts present great complexity, especially when they include and coordinate several public and private stakeholders. Expectations should be directed towards achieving concrete results, enhancing capacity building and stimulating innovation processes, but they need time to deliver outputs and outcomes. With their most innovative aspect, that of acting as incubators for new businesses (spin-offs) as well as future partnerships between enterprises, ACDs reinforce the collaboration not only within each district, but also involving all regional ACD networks (Teoldi, 2014). The ACD initiative should prove effective when the districts succeed in articulating cultural and creative outputs with innovation, broadband and ICT, and green economy (reducing soil sealing, waste production, environment impacts, boosting land preservation, recycling, fostering soft mobility, etc.).



Fig. 4: AC Districts budget (left) and three examples of local AC Districts activities (right).

CONCLUSIONS

AC Districts will be successful if they are able to support the valorisation of the cultural heritage through creative issues all over the Marche Region. This means investing in balancing the development of coastal and inland areas, in accordance with the Europe 2020 Strategy (European Union, 2011). In the past years, politicians, economists, planners, sociologists, entrepreneurs and other stakeholders have been

debating if the Apennines mountains are a problem area in the context of public policy, an area in urgent need of designing a sustainable development strategy linked to the use of the extraordinary cultural and natural capital it hosts (Calafati & Sori, 2004). On this concern, maybe the Apennines cultural landscapes should be the key to a revival of this “extraordinary cultural and natural capital”. It is time, in Italy, to implement a national strategy for the development of inland areas: the revitalization of these areas has been started, showing encouragement but patchy results. For Fabrizio Barca (former Minister of Territorial Cohesion), the National Inland Strategy enables to achieve three distinct, albeit related general goals: to preserve land use, to promote natural and cultural diversity, and to contribute to local development (Barca, 2013). The European Union strengthens the territorial rebalancing strategies between urban areas and inland and mountain areas, dealing with an increasing loss of employment, of public services (education, health, transport) and, consequently, of population. Giving them the possibility to reinforce cultural heritage represents the real chance for local mountain communities to overcome the economic and social crisis.

Not only in urban environments is it possible to apply co-creation approaches to public spaces; the challenge is to support rural areas in becoming more inclusive and mediated, involving different public spaces (green areas, museums, libraries, theatres, historic buildings, etc.) and local creative enterprises (design, visual art, performing arts, publishing, new media, etc.). Here, it is not possible to consider any co-creating process without the provision of broadband and ICT. Supporting new technologies is crucial for residents and tourists to experience creative landscapes (Pine & Gilmore, 2000).

Unexpected events have been changing the Marche territorial framework. The Marche Region is facing a considerable challenge: reconstruction after the 2016 earthquakes. Past earthquakes (i.e. Umbria-Marche in 1997) engaged local communities in a process of renewal that could successfully count on strong public, national, regional and European investments, representing a sort of new deal for cultural heritage inland areas (Salvi, 2014). However, in such a difficult economic situation as the present one, local communities need to be involved in a cultural co-creating process to recover their houses, jobs and public spaces as soon as possible. This is a fundamental step in the reconstruction of inclusive communities. In this respect, AC Districts can present two interesting issues. One is the territorial impact, the ability to combine cultural and creative initiatives involving local communities and young people to ensure important economic and social outcomes. The second is the public-private partnership: extensive research and innovation can facilitate the development of partnerships between public and private investors. Politicians, entrepreneurs and citizens face a very challenging question: After the earthquakes, what will be the Marche Region's cultural and creative perspectives in the near future? At this time, no one knows exactly. Certainly, it will open up an opportunity to increase the co-creation of more inclusive landscapes.

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Inclusive design and digital experiences in public spaces

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Abstract - This essay provides an opinion on the inclusive design of public spaces and the contribution of digital technologies to improve their inclusiveness. An overview is presented with opinions on inclusive design of public spaces, focusing on its spatial and social aspects and the role of digital tools to support both of these aspects. Respecting the different preferences of end users is at the heart of the inclusive design process. This creates a requirement to improve their physical and virtual connectivity. Therefore digital technologies becomes a useful a communication tools to engage people with the places, provide people with inclusive experiences and create a sense of community and ownership of the public places. This essay provides an overview of social aspects of digital experiences and discusses their value for improving the social qualities of the public spaces. A typology of digital tools and examples of successful place making practices, which opens up new ways of engaging people with everyday urban environments, are presented.

Keywords - Inclusive design, social inclusion, public spaces, digital technology, mediated experiences.

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INTRODUCTION

Current essay is based on a lecture presented at the Colloquium organised by COST Action TUD 1306 “Inclusive design is good design” in February 2017 at Universidade Lusófona (Portugal).

One of the objectives of good design is inclusion, and cohesive and vibrant communities (DCLG, 2014). These features influence a wider range of sustainability objectives connected to social issues. This essay provides an opinion on the spatial and social aspects of inclusive design of public spaces and the contribution of digital technologies to improve their inclusiveness. In the era of digitalisation, digital technologies becomes a useful a communication tools to engage people with places, provide people with inclusive experiences and create a sense of community and ownership of the public places. Therefore digital inclusive experiences contribute to improving the social qualities of the public spaces by opening up new ways of engaging people with everyday urban environments.

SPATIAL AND SOCIAL ASPECTS OF INCLUSIVE DESIGN OF PUBLIC SPACES

There are extensive reviews of the literature on public spaces, looking into its inclusive features, safety and comfort (Mehta, 2014). The social connectivity and vitality of urban spaces are discussed in Certomà et al., (2017). Definition and principles of inclusive design concept are developed in The UK Standards, UK design guidance (British Standards, 2005 & CAGE, 2006). The British Standard Institute defines inclusive design as “the design of mainstream products and/or services that are accessible to, and usable by, as many people as reasonably possible ... without the need for special adaptation or specialised design” (British Standards, 2005). “Inclusive design” and “Universal Design” (Designing Buildings, 2017) have the similar literal meanings, acknowledging a user’s diversity and difference. The UK government has defined inclusive design in the built environment as “a process that ensures that all buildings, places and spaces can be easily and comfortably accessed and used by everyone” (GOV. UK, 2010).

The definition of inclusive environments by the UK Design Council has a wider understanding of inclusive design and includes responsiveness, initiation, flexibility, choice and convenience of the built environment (Design Council. 2017). The Commission for Architecture and the Built Environment in UK (CAGE) published the principles of inclusive design as it relates to the built environment and based on the UK Design Council definition (CAGE, 2006):

- Inclusive design places people at the heart of the design process.
- Inclusive design offers choice where a single design solution cannot accommodate all users.
- Inclusive design acknowledges diversity and difference.
- Inclusive design provides for flexibility in use.
- Inclusive design provides environments that are convenient and enjoyable to use for everyone.



Fig. 1: The pyramid model of population diversity (University of Cambridge, 2017).

These principles reflect all the complexity of inclusive design of public spaces. Failure to correctly understand the diversity of people's requirements can result in public spaces that exclude some groups of users (Rob, 2004). The Pyramid model of population diversity (Fig1) used by University of Cambridge shows how inclusive design aims should "include those who are less able, while accepting that specialist solutions may be required to satisfy the needs of those at the top of the pyramid" (University of Cambridge, 2017).

There are many aspects of design in the pedestrian environment that are helpful to all or most disabled people (and many others as well) there are also some specific facilities needed by people with a particular kind of disability. Clear space on pavements and a good level of lighting provide benefit to many people. Level entry facilitates not just wheelchair users but also people with push chairs, with suitcases, people using walking or mobility aids and people with visual difficulties. Larger toilet compartments provide easier access to wheelchair users and parents with pushchairs or small children, those using walking or mobility aids and larger-sized people. Clear, well-placed signage that uses recognised symbols helps people with reading or cognitive difficulties.

More specific needs can be just as important for people with certain types of disability. For example, the rotating cone below the push button box on a controlled pedestrian crossing is essential for a deaf and blind person. Long cane users rely predominantly on tactile and audible sources of information. Guide dog users only source of tactile information is what they feel through their feet and from feeling a dog movement at level changes. Tonal contrast is the most useful source of information for residual sight users. The majority of disabled people need space to move around safely, but people who walk with two sticks occupy a greater width than a wheelchair user.

Sometimes one solution will not suit all and so a range of options should be provided; for example providing both steps and ramps where there is a change in level, providing parking ticket machines that offer paying slots at different heights. Across the UK there are outstanding examples of where good design has delivered places that work for all people. Shared-space schemes have been introduced into more than 100 areas in the UK, with the target to improve the safety of public places, by removing the divisions between people and cars. New Road in Brighton (UK) introduced England's first shared space street. Exhibition Road in London (UK) is another example of a shared space scheme which provides pedestrian priority but allowing some vehicular traffic to the area at a reduced speed. To improve access for all members of the community, the designers introduced a kerb-free single surface, no barriers, large pedestrian areas with visual and tactile lines and a 20mph speed limit for vehicles (The Royal Borough, 2017).

The study of Cambridge University suggests that inclusive design should provide "an appropriate design response to diversity in the population through developing a

family of products to provide the best possible coverage of the population, ensuring that each individual product has clear and distinct target users and reducing the level of ability required to use each product” (University of Cambridge, 2017).

A key benefit of public space is if it can be used in different ways, also referred to as tactical urbanism (Berg, 2012). For example, the place can offer day and night venues where, during the day it hosts street markets and at night it provides space for a street theatre. Temporary pop up installations are a good solution to adapt a place to certain functions and then remove them when not required. A good example of a pop up installation is the mobile micro-green space “Parklet” that replaces two car parking spaces which was installed in Tooley Street in London in 2015. It features a zigzagging bench built using scaffolding boards. Visitors were encouraged to engage with the installation via Twitter and Instagram (Team London Bridge, 2015).

Inclusive design guidance suggests include route finding system, accessible street furniture, removing barriers, overcoming problems that can be caused by historical surfaces, offering level surface design and elimination of level changes and many other features in public places (BSI, 2013). Conflicts may arise in applying these design features all together. A key to good design is to have a case by case approach to each public place and the use of inclusive design features appropriate to the place, which can break down unnecessary physical barriers and exclusions, and provide technical access to the place together with quality of the experience of the place.

The ease of movement and access of public places is only one aspect of the inclusive design. Physical exclusion is related to social exclusion. For example public places designed for tourists and shoppers may not be attractive for people with lower income and or for ethnic minorities (Gough, Eisenschitz & McCulloch, 2006). In these situations, exclusion by design is associated with welcoming only a selected type of users (e.g. Tourist or middle-class visitor) and creating psychological and social barriers to the excluded users. There are some similarities and some distinct differences in how people from different cultures use public parks. For example people in Turkey use parks for picnicking and passive relaxing, in contrast to Western countries, where public parks are generally used for walking, dog walking, sports activities and exercise (Ozguner, 2011).

The overdesign of urban public space has prompted some scholars to predict the ‘end of public space’, when the urban realm no longer “promotes spontaneous interaction” (Langstraat & Melik, 2013). In these types of spaces there is an emphasis on public safety and helping people of all ages to feel secure, but they do not encourage integration and can exclude some people, reducing social and cultural diversity (Agyeman, 2014; Rishbeth, 2001).

Well-designed and inclusive public places are successful when they are designed to be places of imagination, play, communication and engagement (De Jong, 2017). They

present qualities that benefit people of all ages, abilities and socio-economic backgrounds. Successful public places recognise and accommodate differences in the way people use them and offer different choices for visitors. They are designed so that everybody has equal access and enjoys the place, as well as playing a major role in creating its identity and managing it.

Inclusiveness of public places cannot be measured only by its physical credentials. Public places must have social qualities, so that they can generate a sense of community, contributing to the quality of people's life. These inclusive design features should be considered at every stage of the design process, from inception to completion. This is called inclusive design in action.

DISCUSSION ON THE VALUE OF DIGITAL EXPERIENCES FOR IMPROVING THE SOCIAL QUALITIES OF THE PUBLIC SPACES

Advances in technology and data processing are aiming to change the way we design, deliver and manage public places. From the early stage of a project it should be assumed that a physical space has a digital twin with all its associated data and the information. It is important to recognise the value this approach and to make the best use of data and knowledge to improve the places that we deliver. With this approach, mediation of public places will increase the performance of new and existing public places throughout the whole lifecycle. "Layering of technology into the environment" will ensure that new technologies have a social impact on public spaces (Stott, 2013). This involves not only how we use existing technologies but also our design approach to the places that we build.

The end-user is at the heart of the inclusive design process. This condition increases the requirement to improve physical and virtual connectivity between users and spaces (Forbes, 2017). At the same time users at all points of their lives need to have the right skills to adapt to advances in technology in order to be able to use and enjoy public spaces of the new digital generation. Otherwise less advanced users will be excluded from places. Digital technologies should be simple communication tools to engage people in the design, use and management of public spaces. It is a cost-effective way of adding value to the public spaces.

A social characteristic of digital experiences was pointed out by Jenkins (Jenkins, 2007). "Augmenting" public events and experiences provides community regeneration and empowerment qualities to public spaces (Aurigi & De Cindio, 2008). Using technology as a socialising platform in a public space will limit possibilities of turning the public space into a dead space for electronic communication. Conversely, involving people in public space events, by using digital technology, can give them a sense of personal investment, ownership within the public place and create a sense of collective place and community (Holland et al., 2007).

Using digital tools in public spaces is more attractive to particular groups of people (for example disabled users and young people) as it improves access and use of places for disabled people, provides an option to be socially active but place passive and increases opportunities that a place can offer to the users. It also provides references to culture, heritage and public art in a digital format, which is very attractive to young people (Rheingold, 2002).

Digital media introduce a new digital /physical relationship, where technology is a facilitator between people, and between people and places, where places are become readable through urban media and “digital form turns into physical place” (Lughi, 2013; Gasparini, 2012; Fatah gen. Schieck, Briones & Mottram, 2008). A novel urban experience motivates users to play together with the media. This can change people’s behaviour, provide a motivation to change the way they communicate and engage with others, giving them more reasons to be there and as a result increase visibility, accessibility and publicness of public space. The quality of technology enabled approaches can be evaluated by whether or not inclusion of a public space is achieved.

DIGITAL TOOLS FOR SOCIAL INCLUSION WITH EXAMPLES OF SUCCESSFUL PRACTICES

This study proposes a typology of existing digital tools for social inclusion, which opens up new ways of engaging people with everyday urban environments. There are:

- Engage with location platforms. Place making platforms.
- Communication platforms used for community engagement, participation and joint activities.
- Monitoring platforms.
- Navigation platforms.
- Platforms for access to information.
- Sharing and checking in platforms.
- Announcing & directing platforms.
- Urban media art.
- Multimedia experiences with participatory functions.
- Animated Architecture, combining landmarks and digital platforms.
- Digital pop up urbanism.

Location-aware applications and location-aware multimedia stories offer detailed contextual information to people who are unfamiliar with a space, and extend the knowledge of others who know the place well. Some of them are more successful than others in terms of encouraging people to go outside and explore places. Foursquare, Swarm and Glympse were designed with the idea of discovery and “checking in” locations through mobile devices. These applications work by sending a link that the contacts can open in order to view a current location of a sender. Pokémon Go is a mobile gaming hit, where players explore their neighbourhood on foot, using their smartphone as map (Corpuz, 2017).

There are many applications, which support neighbourhood planning, on the market, though they are still not used to their full potential. CitySwipe (USA), StickyWorld, IMA LD (UK) applications present local residents images of potential planning scenarios and ask simple questions. They are designed to help people assess the quality of planning proposals and collect information on desired improvements to places. Some of them (StickyWorld) use Cloud to collect ideas, consult on proposals and engage different stakeholders (Stickyworld, 2017). An interactive platform, named Howard, is designed to digitise national and neighbourhood policies in UK, so that clicking on a place on a map reveals everything relevant in one go. UrbanPlanAR (USA), Adelaide (Australia) platforms allow 3D models of new developments to be projected on to their real-world sites (Wainwright, 2017).

Digital urban furniture is designed to be not only a useful tool for providing information, transfer data or provide services, but it also performs as part of a new urban aesthetics. In London (UK) a traditional red London phone was turned into a “Solar Box”, which has been equipped with solar panels on its roof, painted in green, and allows passers-by to recharge their mobile devices for free (Quinn, 2014).

NFC (Near-field communication) and QR (Quick Response) touchpoints, installed throughout cities, deliver information on local services to visitors’ and citizens’ smart-phones. A Paris-based company developed NFC tags to be located in various places in city. Eight French cities, and three in Spain, are now installing tags connected by NFC technology by the company called Connectthings (Connectthings, 2017). The Mobile World Congress, in Barcelona used NFC to help visitors to navigate the airport, exhibition hall and city (Schiller, 2013).

Concrete slabs with NFC chips were designed by French urban furniture provider (Happich, 2015). It has printed or 3D embossed logos on the surface indicating the presence of NFC-accessible services. The NFC chips are embedded in the concrete to provide information on local transport, local tourist information and emergency services. Digital pop-up intervention are a new and innovative way of attracting people for community engagement, depending on how willing people are to stop and use it (Fredericks et al., 2015). Pop-up interventions change the nature and feel of a place: they surprise people, stimulate their imagination and create public awareness amongst citizens who are not directly involved in the physical activity. For example the streets of Montreal (Canada) have come alive with a series of illuminated interactive wheels, with displays, comprising of 13 different tales with 24 images (DiStasio, 2017).

The temporary outdoor public art Exhale Pavilion in Miami Beach was created from seven miles of hanging illuminated and wind- sensing ropes, swaying in the wind (Buster, 2010). The form of the pavilion changes with the weather, producing a dynamic environment. This promotes constant activity in the public spaces, which change as the evening winds change. 3D digital water curtains are becoming very popular features, giving vitality to public spaces (Digital Water Curtain, 2017). They

represent a new generation of digital water technology displays with three-dimensional water volumes, patterns and surprising evolutions. Playable city award winner 2016 project called “Stop, Walk, Stroll” (London, UK) present an interactive art installation that brought people, walking in the street, into the process of creating a public installation. The key driver of the installation was to allow people to be a part of the process instead of just onlookers (Hirsch & Mann, 2014).

Interactive screens are effectively used for community engagement, interactive arts and play. Back in 2009 a network of urban screens were built in public spaces of UK to encourage citizens to respond to urban planning issues using SMS and Twitter. This collaborative project between the BBC, LOCOG and UK local authorities was called “Big Screens” (Thomson, 2012). They broadcast live coverage of news and local community events. Some public urban screens use ‘vote as you go’ polling interfaces for community engagement. In the City of Bath (UK) a digital screen was used as a socialising platform, aiming to create a novel urban experience that triggers social interactions among friends, observers or strangers (Fatah gen. Schieck, Briones, & Mottram 2008).

Dropstuff.nl project offers digital platforms for interactive media art and artistic games in public places, based on a network of ‘urban screens’ in central European. In 2013 they opened a special “bridge” between two large public display screens located in Amsterdam and Venice. Participants were able to see each other, to communicate and to play. In 2016 Dropstuff.nl produced the project with LED-screens and a bike-installation located in the main European Capitals. Players, being thousand miles apart were able to mount a bike and, wearing a VR-headset, have a real-time bike-race against each other in a virtual space of European heritage sites (Dropstuff, 2016).

CONCLUSIONS

Despite different urban realities, digital experiences in the public places proved to be extremely successful because they encouraged efficient and cost effective social interactions between people, engaged people with places, provided people with inclusive experiences, created a sense of community and ownership of the public places and reinforced existing urban features. In all cases the mediation of public spaces aimed to deliver a set of urban planning objectives, which were identified applying a case by case approach to each individual public place. That way enables production of public spaces which are: “inclusive, responsive, flexible, convenient and welcoming”.

There are still questions to be answered. It is important to explore in detail what social interactions in public places mean for citizens and to identify the core things that citizens really care about in relation to public spaces.

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Understanding urban public open spaces and co-creation

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Abstract – In this chapter, some of the relevant aspects of public open spaces are discussed and related to the co-creation approach with explanations why they should be considered for planning, management and development of those places. Related to that, one focus of the discussion is set on aspects of urban green spaces and some of their particular characteristics, which distinguishes their development from other urban open spaces in terms of natural dynamics and permanent change and development. The second focus is on the aspects of being public and what does it mean for co-creation processes. To deepen the understanding of potentials for using co-creation approach for urban open space development, different dimensions and concepts of co-creation are presented and discussed how they relate to other more often used concepts of involving people into the processes of urban space development, as citizens' participation, co-design, co-management and similar.

Keywords - Co-creation, co-design, urban green space, urban development.

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INTRODUCTION

The content of this chapter is closely related to the workshop session Safety & Inclusiveness and Co-creation of Public spaces, specifically to the topic Challenges of co-creation of public spaces, presented and tutored by the author at the international Training School: Co-Creating of Inclusive and Mediated Public Spaces that was held in Lisbon in February 2017.

The main purpose of the presentation and workshop on this topic has been to foster understanding of different relevant aspects of urban open space and green areas, widening the insight into co-creation, explaining possible approaches and key challenges for co-creation of public spaces, and encourage the participants to use their own experiences and knowledge to search for new solutions and possibilities for the use of ICT for successful public space co-creation at different levels. The focus of this essay is on characteristics of urban green spaces that may impact the co-creation context as well as on co-creation approach itself and how it could be understood in relation to other more often used concepts of involving people into the processes of urban space development, as citizens' participation, co-design, co-management and other similar.

UNDERSTANDING URBAN OPEN SPACES AND GREEN AREAS

In its broadest sense, urban open space is to be understood as a term for an unbuilt space within the urban fabric, or more precisely said, a space unoccupied by buildings. I have pointed this out, because this is one of the most important aspect to be understood about open space: it is not necessarily created by humans. An open space may simply exist. Urban open space includes both, built, created and natural environment. It could be planned and designed with purpose, usually for different human needs. It could be self-developed by the use and human activities, such is the case of different cultural landscapes of agricultural cultivation but also brownfields and similar. And it could be the result of natural processes, a natural landscape caught into in urban area and preserved because of certain values or/and vulnerability, or because it was an obstacle for urban development (as for example steep slopes, flooding areas, wetlands etc.).

When discussing urban open space, we need to take into consideration a great variety and really wide range of different types and kinds of urban places, as streets, squares, plazas, market places, parks, greenways, community gardens, playgrounds, waterfronts, residential landscapes, playgrounds, urban forests, agricultural lands, parking lots, sport fields, etc. All those types of open spaces differ from each other by character, urban functions and roles, visual appearance, location, size, form, presence of natural features and aspects of publicness. Each one has its own importance and role in the city, whether for mobility, for social life, for leisure and recreation, for food growing and different other primary production and/or because their scenic value and ecological, environmental merits for nature and landscape preservation and environmental quality (GreenKeys 2008). However, in spite of their differences, they have in common certain characteristics of being “open”, “unbuilt”, forming a contrast, the “negative”, to buildings within urban tissues. Together they form recognizable urban structure, identity and image of the urban area or its part, as well as define aspects of accessibility and connectivity of the wider area.

SOME KEY ASPECTS OF URBAN GREEN SPACES

As urban green spaces, we understand types of urban open spaces that are defined by presence of vegetation and/or other natural features and consequently also by related natural processes. This particular aspect does not only form distinct spatial characteristics of green spaces which make them environmentally important as well attractive for people to use, but also strongly affect their spatial development in time, what can be just partly controlled. This leads to the need for continuous intervention, maintenance to achieve and keep the planned, designed and /or wished conditions. The ongoing strong forces of natural processes as growth, insolation, precipitation, wind, day and night and seasonal changes, among others, are inseparable features of green areas, and have an everlasting and decisive influence on their form, character

and development. Maybe we cannot call it co-creation (because creation is an activity related to humans) but the consequences are similar – the change of place as a result of (natural) processes and activities. These characteristics make “co-creation” of urban green spaces even more complex and demanding.

Urban green spaces appear in a great variety of different spatial and ecosystem characteristics, ranging from almost natural areas of great ecological value, riverbanks, urban forests and agricultural lands to historic or newly designed urban parks, plazas, allotment or community gardens and similar all of them forming together urban green infrastructure, providing urban biodiversity, different environmental and ecological benefits (nowadays called ecosystem services). Generally, we can structure the benefits and roles of urban green spaces into 4 categories (see figure 4):

BENEFITS AND ROLES OF URBAN GREEN	
Ecological and Environmental	Natural resource, supports the protection of natural resources: preserves functions of soil, water, flora and fauna, buffers climate, opportunities for enrichment, biodiversity, wildlife corridors, etc.
Economic	Positive impact on business and property values, source of additional revenues for the municipality (events, taxes on property, etc.), is the sum of values that people, both individually and collectively, attach to nature.
Social	Outdoor activities, meeting places catering to all ages, popular value of being close to nature, venue for events, fairs and concerts, fundraising, etc., nature experiences, the “outdoor classroom”, building sense of place and society.
Structural	Quality of the urban landscape, visual aspects, effect on property values, promotes the identity of a city or an area, defines urban character.

Fig. 1: A simplified structure of the benefits, functions, and values green spaces can provide, based on GreenKeys 2008: 10 (Smaniotto Costa and Šuklje Erjavec, 2015).

The extensibility and multi-functionality of urban green spaces means that a green space can bring different benefits in different ways to different users and with different results. On the other hand, it means also multifunctionality, shared uses, activities, jurisdictions and interests of very different stakeholders, thus a great challenge and opportunity for development by co-creation.

The significance and attractiveness of urban green spaces also stems from the fact that they enable the contact with the nature for inhabitants of the cities as well as different outdoor activities within urban environment. The importance of this factor for human wellbeing and health has been widely recognised (WHO, Regional office for Europe, 2016). This health enabling function makes (or should make) green spaces also places of special interest of public authorities, providing “public good” and supporting urban equality.

ASPECTS OF PUBLIC OPEN SPACES

Public open spaces and greenspaces are defined as open/green spaces accessible for all under the same conditions, regardless their private or public ownership¹. As they

¹ Adapted from UIRS, Terminološki slovar, 2015.

afford the common ground for use and reflection for all, they are an important part of urban justice and democracy and have or could have the value for enabling the share of experiences, contributing to the public life, the city's "publicness" and inclusiveness, and have the capacity of embodying multiple meanings (Smaniotto Costa and Šuklje Erjavec 2015).

Urban open space is not only a spatial but also a social construct, therefore its spatial, physical appearance, and characteristics are co-developed by activities, attitudes and perception of people and vice versa. From this standpoint, we may say that the "use or non-use of a place is part of its intentional or unintentional "co-creation". The presence or absence of people defines the character and spirit of place, influences its attractiveness - temporarily or permanently (in the case of permanent absence), co-creates its visual appearance and at the end even its spatial type (see Figures 1-3).



Fig. 2: Individual, crowd or absent occupation – every case has its own impact on space, co-creating its spirit, atmosphere and character (Photos: Ina Šuklje Erjavec).



Fig. 3: Temporary interventions, to meet the needs of use, are temporary co-creating the place, changing its type, character and image. (Photo: Ina Šuklje Erjavec).

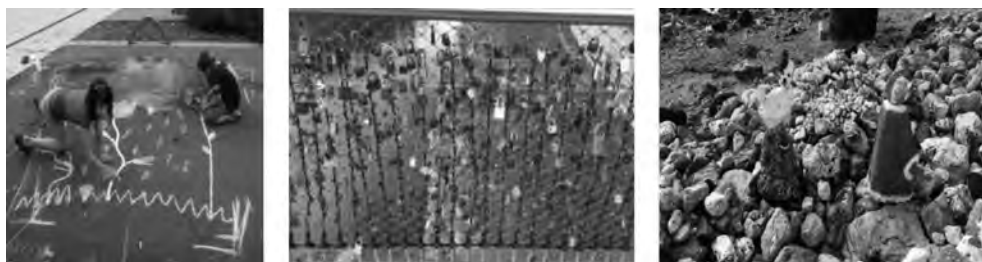


Fig. 4: The need of people to personalize and co-create the place is evident on every step.
(Photo: Ina Šuklje Erjavec).

As key attributes of public spaces we can point out: openness, accessibility, equality, diversity, possibility of choice and social interactions. The meaning of these attributes are well presented by the following thoughts:

- Regarding their social function, open spaces are social gathering places, where outdoor interactions between people and people, and people and spaces can occur. They are sites of sociability, as they afford the common ground for communication and information exchange (Thompson, 2002, Whyte, 1980).
- As social gathering places, public open spaces enable the exchange between different social groups, independent of class, race and ethnicity, gender and background, etc. They are places to express cultural diversity, for seeing and being seen or even be anonymous in a crowd (Thompson 2002).
- Social interactions are important for defining a sense of place, for contributing to our physical, cultural, and spiritual well-being, for the personal development and social learning and for the development of tolerance (Šuklje 2010).

The other, quite challenging and relevant aspects of being “public and open” are related to possibilities and limitations of co-creation of such “places for all”. Jan Gehl wrote already in 1987: »*The modern urban environment, in its complexity, is considered one of the causes of the increasing social segregation; isolation and little involvement of people together*«. To the similar conclusion came Hampton and Gupta, by observing how people use public spaces. In their study, they noticed: »...*each user or group of users “privatise” their space, creating what they call a cocoon. The space is not shared, but divided and shredded individually or collectively between different users. Although invisible and limited in time, these cocoons reduce the likelihood of serendipitous encounters, contradicting the common expectations for public behaviour*« (Hampton & Gupta 2008); or as Smaniotto (2014) wrote in his reflections on the role of urban mobility in strengthening sustainable green infrastructures: »*If on the one hand the quality of being an enabler of social interrelations confers to the public spaces a positive connotation. On the other hand, given the heterogeneous nature of the urban society with distinguishing objectives and features in its social organisation, calls for demystify the relationship between public space and social interaction, a relationship often seen with certain romanticism*«.

These issues should be taken seriously into consideration when searching for the most suitable solutions, especially if the goal is to engage future public place users. Engaging the actual, relevant public in the process is a major challenge. Not only because the time and budget necessary to apply suitable tools and methodologies but also because people are very different regarding their needs, motivations, perceptions and wishes related to the use of open space as well as in terms of readiness, opportunities, capabilities and skills to become involved in planning and development processes.

The processes of citizens' participation, involvement and collaboration also rise questions how to achieve citizens' empowerment and avoid side effects of gentrification and privatization of co-designed or co-managed public space at the same time. When applying, co-creation processes we must be aware how much would these issues affect the identity of place and sense of ownership of participants, and that this may oppose to the "open and public", to the public open space for all (not only for those involved).

For that reason, public open spaces should be also a kind of "neutral territories" as put by Thompson (2002) who wrote «*Therefore, public spaces are arenas of multiple and sometimes competing interests, occupied by people unequal in gender and social and cultural class*». For being 'open-to-all' they are neutral territories, which could be inclusive and pluralist for accepting and accommodating differences. This brings about the symbolic character public spaces can embody as representative of the collective and of sociability (rather than individuality and privacy (Thompson 2002, 2007).

But, is the co-creation of the neutral territories possible? How to approach it?

UNDERSTANDING CO-CREATION

I have always thought about co-creation in a very simple way without much need for explanation, quite self-evident from the name that it is an activity of making something new together. However, when I started to explore the topic more in deep, I have realized that many different definitions of co-creation are being used. Above all, their use put the concept of co-creation quite far away from my professional point of view. I have been quite surprised, that the term is not so much related to the "traditionally creative disciplines" as design or architecture. In fact, it is quite a hot topic and a buzz word in business and commercial theory and practice.

I see it not only interesting but is also worrying because it puts "co-creation" as a concept and approach completely outside the context we would like to discuss in relation to urban public open space development. Use of the approach within the business environment to increase the commercial competitiveness and consumption, somehow oppose its use in a domain of urban planning and design, especially public open space where it is related to better quality of life, public good, and urban justice and expand the area of collaboration to the whole spatial development and management process.



Consumer Value Creation

Source <https://consumervaluecreation.com/2017/03/05/examining-the-antecedents-and-impact-of-different-company-product-co-creation-strategies>

Fig. 5: One of the many illustrations of co-creation related to the economic strategies.

Therefore, the first questions we need to address are: How co-creation is perceived in that, so “different” environments and contexts, where is it relevant to put parallels and what should be clearly distinguished not to lose the most important aspects of co-creation for urban design theory and practice?

The co-creation as a business approach was already introduced in 2004, by Prahalad (2004) who defined it as »the joint creation of value by the company and the customer; allowing the customer to co-construct the service experience to suit their context«. Since then, co-creation become very a trendy term for product development and business strategies, marketing and brand development, and is often perceived and used as a business opportunity, for managing innovation or as an economic strategy. That is clearly visible also when googling “co-creation”. The first and most numerous hits are related to the business sector, product marketing environment and Bottom of the Pyramid (BOP) literature where we can also find most of co-creation definitions and methodologies. For example, IGI Global as one of the leading international academic publishers, offers different definitions of co-creation². Most of them are directly related to business strategies and active involvement of consumers into the product and its value development. Related to that, I would like to point out some aspects that are relevant also for urban public open space planning and design.

Definition by Sanders in 2008 »*Co-creation means any **act of collective creativity**, i.e., creativity that is shared by two or more people*« (IGI Global, 2017), is general enough to fit into any context. It points out the key aspect that differ co-creation from collaboration, cooperation and participation - the act of creativity. If the collaboration or cooperation are the actions of working with someone to do, decide or define something together, co-creation is a special case of collaboration of cooperation

² <http://www.igi-global.com/dictionary/co-creation>, accessed on March 2017.

where the intent is to **create something that is not known in advance**. So, it is not about deciding about, choosing between or giving the information and opinions, but always about creating something new.

Definition by van Wingerden, Goto and Burstein in 2017 puts co-creation as a »*Newer model of leadership which involves collaboration of members of a community towards a common goal or end*« (IGI Global, 2017). Such definition does not differ essentially from the middle part of the “Ladder of Citizen Participation” named “Tokenism” (Arnstein, 1969), which includes levels of public engagement like informing, consultation and placation (see Figure 6).

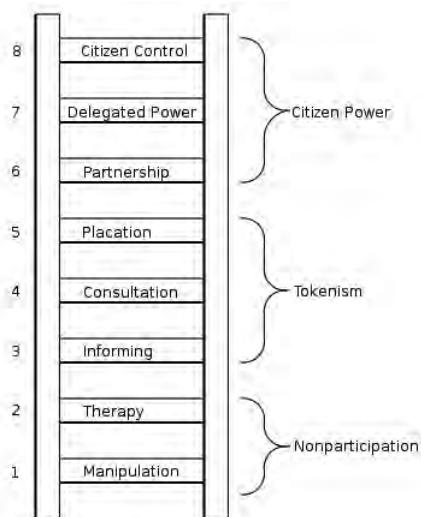


Fig. 6: A Ladder of Citizen Participation. (Arnstein. 1969).

The difference between co-creation and public participation is very well pointed out in the report of Leading Cities³ released early in 2014 in which the authors write: “Co-creation fundamentally differs from public participation in a variety of ways. Co-creation techniques possess the potential for overcoming the limitations of time and geography and may allow a significant leap in the scale and influence of public involvement.” (Leading Cities 2014). They stressed that co-creative techniques enable proactive engagement of people and support them to “form and promote their own decisions, create new stakeholder maps, build capacities for self-government, and develop open-ended civic processes” as well include “a cross-section of entire communities” (ibid).

From IGI Global definitions I have chosen also the one from 2010 by Ramaswamy and Gouillart who pointed out some additional important aspects of co-creation as engaging all relevant stakeholders not only citizens and thus makes an important shift from “citizens’ participation” which is much more focused on public versus decision

³ <https://leadingcities2014.files.wordpress.com/2014/02/co-creation-formatted-draft-6.pdf>, accessed on March 2017.

makers' collaboration. It puts: »*Co-creation is about engaging people to create more value together. It involves redesigning interactions through the experiences of individuals. Through co-creation, organizations can unleash the creative energy of people — especially employees and internal stakeholders, but also customers, suppliers, and related external stakeholders and communities — to create mutual value*« (IGI Global, 2017).

Similarly, wrote Sanders & Stappers in the article “Co-creation and the new landscape of design” (Sanders & Stappers 2008) listing types of co creation related to the parties included:

- co creation within communities
- co creation inside companies and organizations
- co creation between companies and their business partners
- co creation between companies and the people they serve, customers, consumers, users or end users

In the Leading Cities report (2014), five sectors of society are defined as participants in co-creation process: “**government, academia, business, non-profits and citizens**” (Leading Cities 2014). They call it “*Quintuple Helix*” (ibid)

Other important aspects that “business definitions” bring in the spotlight are: **mutual value** creation that opens a discussion out of design process, and interactions through the **experience of individuals** that is very relevant aspect of “direct” **co-creation of real place in real time**. Especially the latest, from my point of view lacks from co-design and participatory design concepts. I see it as a possible added value of the co-creation of public open spaces resulting in more responsive, adaptable and flexible places. In the future, new technologies may open completely new possibilities for such development.

Last but not least, I wanted to mention the possible role and benefits of ICT for enabling co-creation. From this point of view, it is interesting to mention a definition from “A Creativity and Innovation Course for Engineers” (IGI Global, 2017) that declares that co-creation is “*Collaborative generation of ideas that are original and effective, typically using ICT tools*”. This is especially interesting in relation to the COST TU 1306 CyberParks and its international Training School on Co-Creating of Inclusive and Mediated Public Spaces. Different case studies, examples and publications prepared within Cyberparks project show that different collaboration processes could be efficiently supported by different forms of communication technologies and digital devices, as internet, wireless networks, tablets, smartphones, etc. They may be used not only for data and information gathering and analysis of the territory that is needed within urban open space planning and design processes, but also for monitoring of place and its condition, collaboration with citizens, including direct feedback from (possible) users about preferences, problems and needs for the real place and similar. Furthermore, new technologies can effectively support different phases of co-design processes, including scenario playing and decision making, as well enable many new

ways of development of responsive environments and direct co-creation of place through individual or collective engagement, play and other activities of the users in real time and real place.

SOME CHALLENGES FOR FURTHER WORK

Although “co-creation” is already recognized as an important process that involve stakeholders into the spatial development processes, other terms are much more popular and more often used. The most usual are: “co-design”, “participatory design”, “participation”, but also “hands on urbanism”, “collaboration”, “co-development” and similar. The question, is if and how those concepts differ from each other, and what kind of added value co-creation may bring to public open space development?

The extremely fast development of digital technologies has not only greatly changed society and the way people communicate and interact but also opened new opportunities for different collaboration processes. The new technological possibilities to engage and activate people and interact them with their environment opened completely new dimensions for co-creation processes for and within urban open public spaces. There are new possibilities to create responsive and interactive environments, adaptable to personal needs, preferences and motivations, enabling “permanent change and repetition of process” which may give the public place a new robustness and resilience to permanent change of society within permanency of the real place. The use of new technologies as well the co-creation process, demands different knowledge, skills and interdisciplinary expertise. But on the other side there are many issues of trust, credibility and safety related to the use of ICT.

There is a need of the change of the role of professionals involved as well as new learning processes to develop skills and support participants that may be part of the co-creation process itself. When launching a process of creation of public open spaces, we should understand the meaning of the pairings PUBLIC versus INDIVIDUAL, ALL versus PARTICIPANT (co-creator) and PUBLIC GOOD versus PRIVATE/INDIVIDUAL INTEREST. This raise other questions as: Who should be co-creators of PUBLIC open spaces? Who to address to co-create places FOR ALL? How to define the appropriate number and structure of participants? How to reach them? How can new technologies help and provide support?

We must be aware that the processes of co-creation (as well co-design, participation and similar) are quite time consuming and participants need to devote a lot of time and energy. Experiences shows that people differ considerably in terms of education, time, and motivation to participate. It is important to create systems and tools of co-creation that are accessible to all not only some groups of citizens. Another time related issue is how to keep a long-term interest and motivation?

It is important to take into consideration that financial support is needed not only for planning and design, but also for the management of place. With innovative ideas,

also new management issues and maintenance demands may arise with new needs of expertise, knowledge and skills. Besides public, different stakeholders, different sectors, professions, city departments, etc. need to be involved for suitable and long-term results. Concerning this other questions may open: Who is financing what? Who is paid for what? VOLUNTEER work versus EXPERTISE work, and FREE TIME versus PAID TIME can become a huge problem of future co-creation approach if not solved in advance with very clear concept of benefits and responsibilities.

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Insights on the use of public spaces: leisure behaviours of young professionals and the role of digital technologies.

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Abstract - How people use public spaces varies according to the cities and social groups, and changes over time. This change may become more intensive with the increasing pervasiveness of technology. ICTs and their devices are opening new possibilities to enjoy public spaces and interact with others and the environment. This makes the call for advancing insights on how people use urban spaces, what their needs and preferences are, and the role ICT plays in people's engagement with spaces. The workshop organised in February 2017 in Lisbon offered a good opportunity to gather meaningful data on these issues. Participants, coming from 10 different European countries, answered an online survey about their outdoors behaviours, and the values given to public spaces and digital technology. The view of young and prospective experts is therefore a valuable source to better understand the process of establishing participative strategies towards responsible public spaces, and how to approach ICTs to support co-creation and inclusiveness in different European frameworks. This chapter presents an analysis of this survey.

Keywords - use of public space, young professionals, ICT uses, free-time and leisure, trends

INTRODUCTION

In the framework of COST Action CyberParks, training schools are being organized aiming at advancing knowledge and extensively discussing with aspiring professionals the nexus of people, public spaces and technology. Bringing together further scholars and practitioners, in particular young people from different disciplines, enables the Project to expand the current discourses, and opens new horizons for budding planners and professionals to deepen their understanding in making better use of technology towards creating a more liveable urban environment. In the workshop “Co-Creating of Inclusive and Mediated Public Spaces” held in Lisbon in February 2017, the 20 selected participants were invited to explore the concept of inclusiveness and co-creation of public spaces towards maximising the response to users' needs. The participants came from 10 different European countries, representing very different urban contexts as well as local public spaces strategies and management.

THE QUESTIONNAIRE - SURVEY BACKGROUND

The questionnaire, the basic instrument for the survey described in this chapter, integrated 32 questions, both open and closed, organized in four sections. The first section consists of questions about the background, academic and professional skills of participants, and contains 5 issues. The second section, with 6 questions, refers to the preferences and recent experiences in using public spaces, while the third, with 9 questions, is centred on the attachment to digital technologies and their use in public spaces. In the last section, with 3 questions, participants were asked to briefly describe the open space situation in their cities, to research if their city adopts an open/green space strategy, and, if so, to briefly describe its goals. A similar question was posed regarding the adoption of a strategy related to Information and Communication Technologies (ICT) and public open spaces. In some questions, respondents had to provide their own opinion by rating the arguments presented.

The questionnaire was answered online and anonymously in advance of the workshop. A content analysis was conducted of the open questions, the responses categorised and reviewed in order to provide synthetic information about the obtained results.

The questionnaire survey “CyberParks - People - Places and Technology - Co-Creating of Inclusive and Digital Mediated Public Spaces Workshop” was answered by a total of 19 out of 20 invited people.

ANALYSIS OF RESULTS PARTICIPANTS' BACKGROUND

Participants (19 respondents) came from 10 different countries (Bosnia and Herzegovina, Croatia, Greece, Italy, Macedonia, Netherlands, Poland, Portugal, Spain and the United Kingdom) representing varied and different urban situations, as they are from Amsterdam, Athens, Barcelona, Lisbon, Liverpool, Madrid, Palermo, Skopje, Thessaloniki and Warsaw; the latter, with 4 participants, was the most common origin. This diversity is also reflected in a wide spectrum of backgrounds and working focuses, which is distributed as follows (the questions on the professional field and work experience allowed for more than one answer): 13 respondents work in the field of urban planning and design, 6 in landscape architecture, 5 in urban ecology, 6 in ICT and computer sciences, 5 with public participation, 4 each in social sciences and social development and inclusion. Also, regarding work experience, participants reflect a wide spectrum, as 8 of them work in private companies, 7 are engaged in associations and NGOs, while 5 are PhD students.

The analysis of professional category and thematic focus shows that most participants are involved in planning (19), an option which encompasses both urban planning and landscape architecture. The second largest group of respondents works in the social sciences (8), then come ICT experts and computer scientists (6), followed by specialists in urban ecology (5) and public participation (5).

The question pertaining to the experience in working with people - be it in projects, participatory initiatives, voluntary work or research - was positively answered by almost all of them. As this section aimed to ascertain the use of public spaces by people skilled in urban management, design, planning, social processes, and use of ICT from professional and personal points of view all participants have background experience (professional and/or academic) on urban issues and on related participative processes. The respondents, in general, proved to have already gathered deeper knowledge about participative processes, their merits and benefits. Additionally, policy making and co-creation processes are topics that are mentioned as requiring increasing attention.

PREFERENCES ON THE USE OF PUBLIC SPACES

Spending time outdoors is quite common among respondents, 4 of them are used to going to a public space more than twice a week, 6 twice a week and 4 others go once a week. The remaining 5 mention going less than once a week. The question «which type of public space participants prefer for daily use for leisure/recreational purposes», which allowed for more than one response, had the following results: squares and boulevards (12 references), urban parks (11), waterfronts (8), outdoor sport facilities (4) and public gardens (4), playground and spaces for children and young people (3), and 3 of them mentioned other green spaces (a category which includes green corridors and landscape protected areas). The public spaces they frequently use are not far from their home: 12 have an appropriate open space less than 800m away, while 7 have to go to more distant sites (Fig. 1). Reaching an open space by car is common for 10.5% of respondents, 10.5% usually use public transport, 10.5% biking, but the vast majority prefer to walk (68.4%) (Fig. 2).

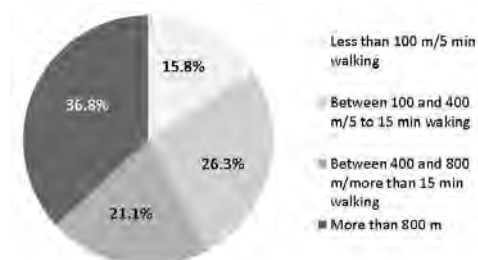


Fig. 1: How far from your home is the public space you frequently use?



Fig. 2: How do you usually reach this public space?

The decision on a public space is taken on the offered opportunities to relax or meet other people in a calm, green and “amazing” environment. Participants highlighted that these outdoor facilities are still places where people enjoy silence, get in touch with nature, and use for walking, biking, relaxing, practising sports and meeting friends. Regarding the questions on the negative aspects of public spaces, the results point to those places that are often neglected by public institutions, and as a result become

dirty, have deficient design and facilities (i.e. unattractive park area, derelict/abandoned sports facilities and playgrounds, etc), suffer from insufficient maintenance and have no public transport available close to them. Other negative aspects often mentioned are noise and places overcrowded by children. While the former issue is easily understandable, we doubt the latter is such a negative aspect. Of course, perceiving loud children as displaying anti-social behaviour depends on the situation, and this varies, but it also depends on how a public space is planned and used. However, if a large number of people share the same space, including many children, this public space is probably achieving its aim in being a sociable (Whyte, 1980) and inclusive place. The responses on this issue prove once again that when a public space is available, safe and accessible, people use it; and this use, retaining social functions, turns physical into social spaces, where differences of lifestyles and behaviour should co-exist.

THE USE OF ICT DEVICES

The answers provided in the section on “Use of ICT devices” bring to light the fact that respondents use ICT devices when they are in public spaces. This response is given by 84.2% of participants (Fig. 3). Participants take their smartphones outdoors, and sometimes other devices too, like laptops, tablets, e-watches, etc. Asked to mention the four main reasons for using portable devices in their recreational activities, participants’ responses noted mainly communication purposes - including phoning, messaging, etc. (12), taking pictures or recording videos (7), reading - including gathering news or information about current topics (6), getting information about places (6), working (2), and only one respondent referred playing games (Pokémon go). In the use of social networks or other similar applications, 9 participants mentioned adherence to Facebook, WhatsApp or Twitter. These three seem to be the most used social media sites. These responses indicate an overall increasing trend of people taking portable devices everywhere and being online all the time. Smartphones have become our primary communication devices, and are often the main means of accessing the Internet. As smartphones serve important daily-life practical functions, including entertainment and leisure, it is natural for people, especial younger groups, to feel that they are important and need to be carried constantly.



Fig. 3: When using the public space, do you usually take any digital device with you?

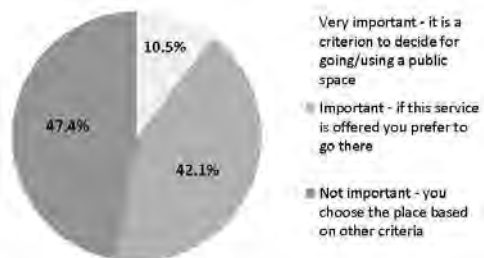


Fig. 4: How important is the provision of free Wi-Fi in a public space?

Moreover, it is interesting to point out that while all participants use mobile devices for getting information about outdoor places, 84.2% of them do not post comments or leave feedback about these places. When accessing such information, smartphones (89.5%) and computers (78.9%) are the most common devices used. Only 15.8% of respondents use mobile devices for sharing impressions, photos and opinions about the places used for outdoors recreation. Even if using ICT devices seems almost universal, participants do not openly share images, experiences and feedback. They prefer to share them only with friends or family (Messenger, WhatsApp, etc).

For 47.4% of participants, even equipped with smartphones, the availability of free Wi-Fi is not a criterion when choosing a public space. Other aspects, such as history, urban and landscape values, cultural heritage, ethnic composition, personal curiosity, facilities and equipment, distance from home, are mentioned as the main criteria when selecting a place; 42.1% claim that free Wi-Fi is important, but not decisively relevant (Fig. 4). Still, 10.5% of respondents underline that access to free Wi-Fi is an essential infrastructure they need, and therefore becomes a criterion.

The question of whether free Wi-Fi can be considered an attraction to make people use public spaces more cannot be conclusively answered yet, as there is not enough empirical evidence; still, the trend of providing free Wi-Fi as a service is certainly becoming widespread.

LOCAL STRATEGIES FOR PUBLIC OPEN SPACES AND TECHNOLOGY

This section of the questionnaire is dedicated to exploring local public space strategies in the participants' cities of origin. They were asked to research if their own town adopts an open space strategy or a technology strategy. This topic, the contents of strategies requires a deeper analysis, which cannot be accomplished in this chapter, but these results already offer some details concerning the places where participants live, and their "exposure" to issues concerning public open spaces and urban environment.

Open Space Strategies

Although this question was answered by all nineteen participants, the data obtained do not enable us to provide a detailed overview of different European urban settings. From the 10 cities listed, only 4 are mentioned as having an open/green space strategy, namely Thessaloniki/GR, Liverpool/UK, Madrid/ES and Skopje/MK. The different strategies highlight opposite approaches to public space planning and management: Skopje is considered a town where public spaces still need to be co-created after the dramatic experience of the war and the loss of open spaces; Thessaloniki has a very small number of green areas, and respondents therefore call attention to the need for implementing new spaces; while in Liverpool and Madrid there is a good network of public spaces, but urban management standards are different. Other arguments are

further presented: In Liverpool "... the provision of public parks is very good (but resources in process have been reduced). In the city centre, there is crawling gentrification, and the transformation of public spaces into hybrid private/public arrangements". In Madrid, the materials used in the design of public spaces invite people and encourage a warm atmosphere. Some spaces are very small, while others are large enough to accommodate different functions, located around the city centre. These spaces are connected by underground and bus lines, well equipped with bike lanes, bars, lawn areas where people can sit, play music, do yoga, have a picnic, etc.

Another participant's feedback points out that their home town does not have a specific strategy for green and open spaces. The development goals result from the general land use plan, which "is very old and still needs to be fully implemented". Recently, some public spaces have been renovated, with a view to making the city greener and public spaces more popular, i.e. by adding outdoor fitness equipment. Moreover, the respondent refers that: "two years ago, a mobility plan was developed and more pedestrian streets and car restriction in some areas of the city centre were created, therefore people have more outdoors opportunities available". Furthermore, "the restoration of some public buildings came with new open spaces as well, but people have not fully perceived them as widely accessible, so these public spaces are still not fully used".



Fig. 5: Smartphones are blurring the line between real and the virtual worlds. Photo: Diogo Mateus 2017.

Local open spaces strategies and ICT

As for local strategies taking into account ICTs to strengthen public spaces policies, results show that this issue is very embryonic. While 7 respondents mentioned that their cities adopt such strategies, 12 seem not to have any. Except for a few examples from Liverpool (UK), Amsterdam Smart City (NL) and Chalkida (Greece), no other

significant strategic approach to ICT was pointed out by respondents. Maybe the most complete description of what is the content of such a strategy can be exemplarily displayed in the goals of the Amsterdam Smart City concept: *“Amsterdam Smart City is being realized through a partnership among businesses, authorities, research institutions and citizens (over 70 partners, including CISCO and IBM). The aim of this partnership is the transformation of the Amsterdam metropolitan area into a smart city with the ultimate goal of reducing CO2 emissions. Amsterdam’s smart city platform connects all of the city’s stakeholders through “smart” collaborations; it brings them together with the purpose of developing and implementing shared ideas and solutions for the city. Currently the program comprises 32 projects that encompass innovative ideas and new business models across Amsterdam’s neighbourhoods. These projects fall within seven ‘areas of interest’: Smart Mobility, Smart Living, Smart Society, Smart Areas, Smart Economy, Big & Open Data and Infrastructure (water, roads, energy, ICT). They are initially tested on a small scale and the ones that prove to be effective will be extended to include other areas. All projects are built around informing citizens, entrepreneurs and the public sector about their energy consumption and educating them about how to manage it more prudently”*.

In Chalkida, the first Greek town to adopt such a strategy, two pilot projects on SmartParking and SmartLighting are mentioned as being under implementation.

AWARENESS OF PUBLIC OPEN SPACES ISSUES

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The last questions of the survey address participants’ opinions on urban policies related to public spaces in their cities. Participants were asked to assess some aspects of the local urban spaces management by rating the following issues (scores 1 = lowest to 5 = highest): 1) urban management of public spaces (design, maintenance, meeting people’s needs, etc); 2) chances and approaches for citizens’ participation/engagement in the decision-making related to urban planning and development; 3) urban managers’ interest in engaging citizens in the decision-making and co-creation processes of public spaces; 4) urban managers’ concern for using digital devices to increase the attractiveness and user friendliness of public spaces; and 5) urban managers’ concern for using digital devices to facilitate urban management and planning processes.

Regarding the first issue, on the management of public spaces, 47% selected score 3 (middle of the scale), which means that public spaces are perceived as being relatively well managed, 21% elected score 2, score 4 obtained 16%, while score 5 secured only 5% of the responses.

Concerning the chances of and approaches to co-participation and/or citizens’ engagement in decision making, evaluations raised for scores 1 and 2 were 31% each, score 3 10%, and score 4 26%, putting on evidence a deficiency of strategic approaches on public spaces in the 10 countries analysed. Correspondingly, the interest of urban managers in engaging citizens in the decision-making and co-creation processes received low rates: score 1 obtained 31%, scores 2 and 3 earned 26% each,

score 4 raised merely 10%. This means that co-creation approaches are not yet seen as relevant by decision-makers, which also reflects in poor chances for engaging citizens. Maybe this is an open market for young experts in citizens' participation.

Respondents' evaluation of urban managers using digital devices to increase the attractiveness and user friendliness of public spaces reveals an inadequate approach: low scores accounted for 73% of the sample (score 1, 26% and score 2, 47% respectively), score 3 raised 10% and score 4 obtained 16%. About urban managers' concern for using digital devices to facilitate urban management and planning processes, respondents gave low ratings, with score 1 raising 37% and score 2, 37%, score 3 obtaining 21% and score 4 raising just 5%.

These responses reveal that the respondents acknowledge that public open space strategies can contribute to enhance the quality of local environment and consequently the quality of life. Developing and managing public open space networks in an efficient and equitable manner is widely considered imperative. Communities need a sustainable strategic plan for the future provision and management of public open spaces, as it provides the strategic direction for the development of more detailed plans, policies and actions. Public open spaces, traditionally seen as nodes of social contacts between people, as well as places where people come into relation, will certainly follow this course of development and upgrading towards ICTs, but the benefits are not widely acknowledged yet. Consequently, media and social networks, which could be a leading issue in the co-creation of public spaces for the future, are being underestimated. ICTs should be shaped by and for people (residents and tourists). However, as a matter of fact, most of these issues are still insufficient in public space management strategies in most European countries.

CONCLUSIONS

This survey has shown that the new digital technologies influence how people use public spaces. It reveals that the nexus of people, places and technology has to be further researched and strengthened in most European frameworks.

On the one hand, the online questionnaire has highlighted some habits concerning people's use of their outdoors as well as their feelings towards public open space management. The survey opens up issues and suggests topics for future investigation. The results show that participants are aware of the role played by policy making in a more liveable urban environment, and of current situation in the places where they live. The responses shed light on the importance of public spaces for the community, and on the fact that having inclusive spaces available for public use is crucial. They highlight that green spaces should not be considered simply on the basis of frequency of usage; participants are aware of the importance of the quality of outdoor locations both for the benefits of local environment and for public use. How public spaces should change in the future will depend on the extent to which ICTs can support the

co-creation of urban spaces, with a view to making them no longer only mediated but rather liveable, inclusive and responsive.

When neglected, open spaces and the urban environment become less attractive. Abandoned, unsafe, badly equipped places, and spaces with poor facilities are not smart, not inclusive, and they encourage people to stay indoors. Technologies support people connecting with their outdoors, getting in touch with others, and gathering information on places and events. ICTs enable people to stay together and maybe longer outside, to connect, to learn and to enjoy. Urban management plays a key role in steering place making and co-creation towards more inclusive places. This is also knowledge gained with the survey: virtual spaces are not a substitute for physical spaces, and the quality of real spaces matters. Although the survey is exploratory for the CyberParks project, it highlights topics that require further investigation and suggest implementation for future research issues and goals relating to the co-creation of inclusive public spaces.

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APPENDIX

The main issues addressed by the questionnaire:

QUESTIONNAIRE FOR PARTICIPANTS

PART A: ABOUT YOU AND YOUR EXPERTISE

- A.1.** The Country you are currently living in
- A.2.** The city you are currently living in
- A.3.** Please indicate which profession or category you place yourself in: What is your thematic focus?
- A.4.** Please indicate in which sector/field of activity you are working. Please check as many as apply to you
- A.5.** Tell us something about your experiences working with people - be it in projects, participatory initiatives, voluntary work or research

PART B: YOUR PREFERENCES ON THE USE OF PUBLIC SPACES

- B.1.** How often do you use a public space for leisure, relaxing, meeting friends, etc.?
- B.2.** How do you classify the main characteristic of this space?
 - B.2.1.** Could you mention 4 main activities that you usually do in this public space:
- B.3.** How far is this public space from your home?
 - B.3.1.** How do you usually reach this public space?
 - B.3.2.** Could you mention two positive and two negative aspects about this public space?

C. USE OF ICT DEVICES

- C.1.** When using the public space (mentioned on section 3) do you usually bring along any digital device with you (smartphone, tablet, e-watch etc.)?
 - C.1.1.** If so, which one?
 - C.1.2.** Could you mention the 4 main reasons you use these digital devices:
- C.2.** Do you use any digital device for obtaining information about places you want to visit in your city or when travelling?
 - C.2.1.** For obtaining information about places, which digital device do you use?



Fig. 6: ICT and public spaces in Lisbon.
Photo: Monica Bocci, 2017.

C.3. Do you usually post comments or leave feedback on the places you visit?

C.3.1. If so, please mention the web / applications you usually use:

C.4. How important is for you the provision of free wi-fi in a public space?

C.4.1. Please indicate which are these criteria?

D. SITUATION IN YOUR CITY

Tell us something about your experiences working with people - be it in projects, participatory initiatives, voluntary work or research:

D.1. Tell us about the open spaces in your city - how is the general provision with suitable places for people to meet, to encounter, to enjoy being outdoors, for relaxing or practicing sports, etc.?

D.2. Does your city have an open/green space strategy?

D.2.1. Can you provide insights on the main objectives of the open/green strategy and on measures planned to achieve these? We would be very grateful if you could provide us a copy of this open/green space strategy

D.3. Does your city have an ICT strategy related to public spaces or urban development or similar - i.e. smart city concept?

D.3.1. Can you provide insights on the main objectives and measures planned to achieve such objectives? It would be great if you could provide us with a copy of the strategy

D.4. Please answer the following questions using the scores 1 to 5, where 1 is the lowest and 5 the highest value.

D.4.1. How do you rate the concern of urban management with public spaces in your city (good design, maintenance, meeting people's needs, etc)?

D.4.2. How do you rate the chances and approaches for citizens' participation/ engagement in the decision-making related to urban planning and development in your city?

D.4.3. How do you rate the interest of urban managers to engage citizens in the decision-making and co-creation processes of public spaces in your city?

D.4.4. How do you rate the concern of urban managers to use digital devices to increase the user friendliness of public spaces?

D.4.5. How do you rate the concern of urban managers regarding the use of digital devices to facilitate urban management and planning processes?

PART TWO
THE FAILED AND THE ENHANCED:
Mediated Urban Landscapes



Acknowledging immaterial things: from allographic systems to enhanced places

Konstantinos Ioannidis

POST-DIGITAL AND WAVES OF HYBRID ACTIVITY

When my participation with the research project COST Action TUI306 *CyberParks* begun back in 2014, I already had 20 years of introduction with digital technologies following, in some cases, the full pathway; from the invention of a technique or interface to its total discharge due to a new, updated format that almost (always) inevitably was following as a kind of a promising future. I have experienced several such “futures”, most of them lasting no more than 3 or 4 years. From CAD design tools to 3d visualization apps, programming languages, tools suggestive of some kind of “social” connection, others to visualize all kinds of information and platforms of augmented reality. For architects, such digital technologies and mediated tools were always yielding new modes of spatial thinking with the potential to capture tangible and intangible notations into –mostly- images and environments supposedly more innovative and interactive than their previous versions; but in a way more and more mathematically described. In this process, soon it became apparent that the preservation much of what space addresses and affects from the outside was incompatible with the mathematical modelling; critical timeless and manifold dialectical relationships between the human and its surrounding space as the analogue of everyday experience were proved antagonistic to the updated logic of the digital and, in the course of time, were somehow discarded. In other words, while traditionally the study of space was human-oriented, then it went digital and lost its obligation to intuitive and creative human mind. But which is this initial digital that was accused of limiting creative thought? Mirko Zardini offers a fresh approach to the often over-definition of the term. His description refers to that “digital” which is “*defined by experimental projects and ideas, from a specific period of time [i.e. late 80s], which engaged proactively in the creation and use of digital tools to reach otherwise inaccessible results.*”

Indeed, from the genesis and establishment of new tools for design conceptualization, visualization, and productionⁱⁱ at the end of the 1980s and the beginning of the 1990s, an immersive simulation begun enriching the traditional design tools with visual elements that were gradually year by year challenging the distinction between the real and the reflected, the immediate and the mediated. Somehow, architecture and other spatial disciplines provoked, or better *manufactured*, an enhanced visual culture embedding the digital within as a backbone, both as a term and a concept, in order to validate their progression. From the end of the decade, we witnessed a deliberate shift from the traditional conception of spatial process as an analogue handcraft-

premise to one in which its thinking could be digitally intellectualized by processing and configuring n-dimensional data, distributed and partitioned by relatively new kinds of semiotic systems. This computational ubiquity influenced not only the information-seeking behaviour of the creator by allowing the registered data to act as intermediaries between the analysis and understanding of the urban object, but also the cognitive dimension of performing such behaviour.

Parallel, the theories of space which has grown out of this ubiquity, like Hillier and Hanson's space syntax evolutionⁱⁱⁱ of the 1980's and its related approaches of the last decade, propose that architecture and the spatial disciplines studying public open spaces and the man-made environment keep participating in an ongoing computational turn by collating or juxtaposing their underlying network forms. Not surprisingly, the way in which we approach design thinking, process and practice of public open spaces is still changing, and digital technology affects once more rather dramatically the turn of that change on both material and immaterial spatial dimensions, far beyond the creator's case above and Lynn's archaeology^{iv} of the toolbox. Today, and perhaps increasingly so, the dilemma is to what extent the use of the "digital" have failed to preserve the realm: those shared principles, hierarchies, organizations and social or cultural heritage of space. At least as preserved in the canonical analogue ways of the past. The "digital" was somehow proved itself a weak and rather oxymoron term to describe something that is meant to be human: the understanding of the potential behind the emergence of hybrid forms of public spaces often downgrades not only the experiential relationship of the user with physical space but also many of the social aspects and functions within it.

In his book, *Architecture and Psychoanalysis*, John Hendrix^v offers a convincing support for this claim by using lacanian insights to illuminate how space is *always* a reflection of the psychological make-up of the human subject. He thus shares my discomfort when scholars tend to present outdoor places as simple high-tech, Wi-Fi enabled, containers relaxing the presence of the subject in relation to its interiority. In the quest for the space of the subject, the overlaying digital landscape so generously offered nowadays can thus be compared to an absence: the machine, designed on one hand as to replicate human intelligence, mathematizes this interiority by reducing its traditional opacity to numerical image representations while eliminating on the other all the intelligence not previously embedded by us in a coded form. The absence is that in the distinction between the machine and the human, between the digital and the analogue, the landscape needs constant feeding with meaning and reason. A network of conceptual signifiers seems necessary to be introduced to the "digital" in order for the subject to reside within the displaced mode of *being outdoors with others*. The psychological make-up is thus a remaining question even when the digital passes, which in the vision of Hendrix is the precondition of intelligibility.

Considering the embodiment of the interiority in the rapidly changing technological advancements and the entailments those advancements have on the conception of

public open spaces, we come to search for a post-digital terms or a neo-analogue^{vi} conception of outdoor screen-oriented experience to emphasize the enculturation of the displacement. If the absence is synonymous with the end of the digital moment, in the sense of the disclaimed subject from within, then we need to understand a post-digital condition that combines a scheme to code and embed pathways of meaning and reason circulation within new hybrid^{vii} forms of public spaces while preserving both the subject/ /physical space relation. As mentioned earlier, the digital perspective that more and more frequently furnishes our outdoor public areas involves many times the filtering of space's complexity from its traditional qualities while the limitations of technology itself to "humanize" its mediums in order to receive the individual yet dynamic semantic content of *being outdoors with others* renders the term "digital" even more problematic. Certainly, and as the chapters that follow in this book imply, the critical role of the "digital" across the decades of the technologically enhanced tradition in design thinking and process that Mario Carpo names as "*savvy digital avant-garde*"^{viii}, can hardly be disputed. However, what is argued within the following pages is that we have now gained a broad variety of innovative insights into two waves of hybrid activity: the first based on how we can acknowledge digital and immaterial things as strategies of enhancing material practice; and the second on a consequently more revolutionary approach on how the current technology of our time can potentially improve the very complex and multidimensional work of thinking, understanding and designing public spaces mediated by the signification of information-oriented outdoor interaction.

Based most times on geospatial parameters digitally available and encoded into mathematical algorithms, both waves of activity introduce different methods not only to allocate information on outdoor urban space but also to allow us understand some of the digital's effects on physical space, like the impact of ICT on place's interactive organizational cultures (how user groups changed the ways of gathering and experiencing the Commons), on behavioural and moving patterns, or the significances and cognitive effects^{ix} of sets of concepts like the mobility, connectivity, responsiveness and access/retrieval points of the flow data. The central idea behind these related waves that overcome the strictly analytic nature of traditional planning and design theory is that except from the technical sense of connecting online, storing and sharing information or virtually meeting others that are always remaining analogue actions in the sense of demanding the intention and participation of the outdoor user, the digitized chain of thinking, understanding and acting through a retina screen transforms physical space into an *allographic* system itself: a system scripted by a variety of professionals in order to be materially executed by others^x.

The operational features of the allographic digital intelligence and its mere ability to calculate the code of an image, form or diagram with protocol based techniques is not problematic. Data value^{xi} is a tangible aspect of the digital. But is also not the subject of the mediated place, at least as previously exemplified by Carlos Smaniotto

and the authors of the first session *Co-Creating Inclusive and Mediated Places*. Digitally enhanced *intellect* is the subject and digital mediation of architecture and space's interiority as a cultural, social and experiential object is the issues here, for to (re)structure the allographic in direct analogy to the physical (and thus the *intuitive*) requires an engagement with humanities which cannot be disassociated from space's traditional considerations. However, whereas a sense of uncertainty or impractical endeavour might seem anticipated in the case of encoding man/space relationships within deep data structures of aesthetic, for example, values, the field of Mediated Places points to the significance of humanistic aspects being processed in terms of, amongst other, the support of thinking and memory^{xii}. Preserving the semantic meaning of our technologically mediated outdoor activities and their displaced attributes as being visualised on screen digitalized environments can support the traditional correspondences between place and memory while enhancing the cognitive efforts needed to synthesize parts of the new enhanced spatial experience and keep it in mind. In this approach, and by reading theoretical insights from fields like these of psychology^{xiii} and neuroscience^{xiv} enabling us to understand the importance of the visualized articulation of concepts that produce meaning, the embedding of public open space in the postdigital age becomes a prime factor for its humanistic continuity as well.

Acknowledging the need to "re-humanize" the pattern-based character of the technological, the TUI306 network -to mention just one- conditioned by its several working papers, workshops and training schools ranging from studies on analytic and generative methodologies to digital and non-spatial networks, in a four-years period attempted to (re)embed the random intuitive character lost: that is the humanistic aspects within the allographic definition of open public spaces uncovering and destabilizing previous postdigital mathematical techniques that automated and mechanized its production until the early 2010's. The *Making of the Mediated Public Space*, either as the study of a locomotionally regulated construct embodying human experiences, desires, imagination and moving patterns^{xv} or as an amalgam of sociospatial, psychospacial, environmental and behavioural processes^{xvi} attempts to transcend any allographic description by discussing a variety of strategies for a better understanding of the human/space/machine trichotomies. The chapters that follow in the *Failed and the Enhanced: Mediated Urban Landscapes* argue that the shift of view from the digital to the post-digital information understanding; from the digitization of the activity tools to the current state of technology in which the human condition attempts to reside within; and from the digital overlying resource to the post-digital underlying logic within the physical place, this shift seeks to render the new media as delivery systems of dynamic notation regardless of the authors' prescribed notations in the system^{xvii} itself. Based on these considerations the book continues by exploring strategies for Making Public Space more interactive and narrative than settled.

OVERVIEW OF SESSION II

The essays collected in this PART II of the book compose an attempt to reintroduce ICT to the making of hybrid public spaces with particular relevance to post-digital approaches in the conception of the “digital”. Surely, some difficulty arises because the word “digital” is used by the authors in several different senses and to describe a variety of different things. In their chapter entitled *Building a theory on co-creating a Cyberpark*, Carlos Smaniotto et.al. employ the word to describe a “layer” considering technology as “multiplier of spaces” that adds to physical spaces a digital layer; while Simon Winds et.al. work *Gotta enhance 'em all*, writes on hybrid ecologies and use the term to describe the aspects of the contemporary content found in outdoor realities. From another perspective, in her chapter Aelita Skarzauskiene focuses on the enabling and enhancing character of the “digital” especially related to collective intelligence in cognitive, emotional and social dimensions. However, and beyond the differences in interpreting and associating the term with space and the human, we can recognize a common effort amongst the selected chapter: that this circulation of the *enhanced space* traveling inside speculative but also empirical boundaries brings about an emerging *studia humanitatis* of the digital and the information technology. A hybrid of mode of understanding technologically mediated places based on ICT and human limits and potentials. Therefore, the common element between all the selected works that follow is a will to move beyond allographic approaches, that is places “programmed” to be executed by their users.

The chapters are organised in a succession of scales, all speaking to a set of broad opportunities and challenges from acknowledging the *Failed* and exploring the *Enhanced*. First come two chapters from Eleni Oureilidou and Paschalis Arvanitidis (chapters 2.2 and 2.3) describing the rationale of the hybrid outdoor Commons and shifting practices in social reactivation of mediated environments. Using bottom-up initiatives, social-led regeneration models and user-based governance as a resource for structuring and comprehending diverse aspects of hybrid forms of Commons, they show how the increased popularity of outdoor mobile technology has the capacity for enhancing equity, democracy, and community bonding.

Next, Carlos Smaniotto Costa, Jan Bovelet, Kai Dolata and Marluci Menezes' chapter (chapter 2.4) explores the interactions between people, places and technology in creating a cyberpark, a kind of public open space mashed-up with technology. The domain of emphasis here is the case study of *Flussbad Project* in Berlin as an attempt to turn a part of the city into an inclusive and accessible public water space. As they show through the case study of Flussbad, ICTs systems can effectively enable the integration of diverse stakeholders in the development of mediated public spaces revealing hybrid forms of material and non-material practices that can effectively influence communities' life.

Then, in the following three works (chapter 2.5 contributed by Milena Vukmirovic and Aleksandra Djukic, chapter 2.6 by Simon Wind, Line Marie Bruun Jespersen, Markus Löchtefeld and Jacob Davidsen, and chapter 2.7 by Juan Luis Rivas Navarro and Belén Bravo Rodríguez) definition and exploration of the “digital” is also considered, but this time in the context of neighbourhoods’ mediated territories and the analogue and digital modes of urban gaming. Inquiring emerging, open and collaborative city-making method termed “*urban gaming*” or in other cases “*creative patterns of appropriation and affordances*”, the authors discuss technologically enhanced strategies and innovative ways for placemaking processes and designs.

Finally, the last two chapters of the second session speak of the smaller scale of the classroom and report on the outcomes of the first TUI306 International Training School in Thinking and Making Hybrid Spaces entitled “Enhancements: Mediated Urban Landscapes” held at the Aristotle University of Thessaloniki, School of Architecture, Greece between 29 March and 01 April 2016. The works come from Aelita Skarzauskiene and Kinga Kimic. Skarzauskiene (chapter 2.8) begins her chapter by familiarizing us with an interesting “*change in our behavior*” from mediated and collaborative work strategies along with co-creative engagement; a change that we have also implied in the beginning of this introduction. The study of this enhanced behaviour, grounded on Preece and Shneiderman’ “Technology-Mediated Social Participation”, opens up possibilities to think of common goals through participation and collaboration in digital environments. In this chapter, the digitally enhanced *intellect* and the concept of *collective intelligence* are presented through a discussion around her interactive and creative workshop during the Training School of Thessaloniki. In a similar way, Kimic (chapter 2.9) explored during her workshop critical key issues around interactive outdoor activities proposing the significance of the programming process in the making of mediated public spaces and public greenery. As she discusses in her chapter, all these technologies offered as tools in the hands of designers in order to enhance places and outdoor bodily engagement can also be used as creative opportunities to increase the amount of time people spend outdoors, to enhance their quality of life, and improve the relationships between users of public spaces.

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- iii The identification of the configurational and network structural properties in our environment along with its geospatial quantitative metrics are fundamental propositions in space syntax theory. See Hillier and Hanson, (1984).
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- ix Space syntax literature, for example, has long time now responded to the cognitive factors identified by the neuroscience research community and proposed strategies for integrating multidisciplinary components. Alternative pathways beyond the hermeneutic readings of the 1980's have been questioned by several researchers, including Hillier himself. See Hillier and Lida, (2005); Peponis, et al. (2008).
- x Carpo Mario, 2011, *The Alphabet and the Algorithm*, MIT Press, p.16.
- xi For more on the two fundamental forms of data, the data *value* and the data *structure*, see Bertin, Berg and Scott. (1981). *Graphics and Graphic Information Processing*: De Gruyter. Their respective attribution to *entities* and *relationships* of the digital has been introduced by Colin Ware (2004) and their conceptual focus on the terms "entity" and "relation" is very active and influential for this book and the development of its arguments.
- xii Ware. (2004). *Information Visualization: Perception for Design*: Elsevier Science.
- xiii See Carroll, 1991; Hoffman, 1992; Lachman & Lachman, 1979.
- xiv See Epstein and Kanwisher, 1998; Hugdahl and Westerhausen, 2010; Kanwisher and Wojciulik, 2000.
- xv See Johnston et al., (2000), p.332.
- xvi See Shamai, (1991). For a more detail definition of the psychospatial discourse, see Ioannidis, (2011).
- xvii The "new media" are defined by Howells and Negreiros as *new delivery* systems for traditional forms of communication and it is in this sense that the book uses the term. For more see Howells and Negreiros. (2012). *Visual Culture*: Wiley.

Planning the cultural and social reactivation of mediated urban environments: democracy and urban policies in the Greek context

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Abstract - The symbiosis of different identities in the modern city transforms the perception of public space at the level of its material countenance as a form of social space. Different subjectivities that express the racial, gendered, ethnic and class fractures of modern society establish visible and invisible borders on urban terrain, indicating a political dimension in the process of place making (Hayden D., 1997). The extensive privatization and programming in the form of gentrification of various neighborhoods, bolsters the existence of political processes that regulate issues of ownership, property, rights and activities that take place within its territories.

From early gentrifications in the central brownfields of the post-industrial city, until recent interplays of “top-down” and “bottom-up” actions for the development of the global city, the perception of public space has changed dramatically. The research focuses on the social and cultural demands for public spaces with democratic participation, presenting cases in the Greek context that are socially and culturally transformed into “storages” of an emerging urban identity. This analysis along with a deeper understanding of the recent urban history reveals connections with economic cycles of prosperity and recession, which affect urban policies, cultures and lifestyles within the emerging discourse of the Smart City and the mediated urban environments. In addition, the use of Internet as a tool for building “civic” society and monitoring demographic changes and desires, due to constant immigration flows, are parameters to be taken under consideration. The scope of the research is to focus on urban making processes and delve into the role of digital culture as a mediator for “reading” public spaces as fields of social interplay and self-organization exemplars in the sphere of materiality. The research focuses on recent “bottom-up” initiatives, which indicate the aspirations of a multicultural society, defining in parallel decision-making systems that transform the unbuilt environment in the context of the digitalized era.

Keywords - Public spaces as manifestation of democracy, digital culture, social resilience

INTRODUCTION

While the world's urban population will double from 2010 (2.6 billion) to 2050 (5.2 billion) (United Nations, 2011), urban centers in the developing world are more likely to triple in size. Nowadays cities are facing challenges that concern their growing pattern, their competitiveness and their residents' livelihoods and wellbeing (McKinsey & Company, 2013), all of which are tightly connected with urban space, urban economy and the ability of urban populations to adapt to changes. Increasingly more and more cities are investing in their profitability, applying policies that enhance their image and their "performance". Concepts such as "smart cities", "intelligent cities" and "creative cities" emerge to describe the new status quo in urban planning, where technology plays a dominant role, sparking a new wave of wealth creation (Letaifa, 2015) and defining the new framework of "IT-based innovation urban ecosystems" (Zygiaris, 2012).



Fig. 1: "Percentage urban and location of urban agglomerations with at least 500,000 inhabitants, 2014" / Source: (United Nations, 2011:13).

Considering these changes and the invasion of technology in everyday life, it becomes apparent that context awareness and network connectivity is increasingly added to physical objects around us, proved by the fact that "more "things" than people are connected to the internet" (Walravens, Mobile city applications for Brussels citizens: Smart City trends, challenges and a reality check, 2015). In the context of the Smart City, technology and corresponding urban policies are supposed to serve the inclusiveness of society, preventing social divisions. But is that the case?

According to Hall (Hall, 2000), smart city is "*a city that monitors and integrates conditions of all of its critical infrastructures, including roads, bridges, tunnels, rails, subways, airports, seaports, communications, water, power, even major buildings, can better optimize its resources, plan its preventive maintenance activities, and monitor security aspects while maximizing services to its citizens*". This definition implies a "top-down" approach, where urban activities are overviewed and optimized through technology. A "control room" exists for every city, it gathers and scans vast amounts of data, posing actual threats for

freedom and privacy (Walravens, Mobile city applications for Brussels citizens: Smart City trends, challenges and a reality check, 2015), while supporting a “set of potentials disturbingly consonant with the exercise of authoritarianism (Grienfield, 2013).

What is more, technological intrusion has affected the way urban cultural landscapes are shaped and how they catalyse urban progress and resilience. The two main policies behind the making of cultural landscapes are cultural policy and social policy, which both are expressed through two corresponding facets of urban economy, cultural or creative economy and sharing economy. If urban landscape is perceived as a battlefield of power and dominance in a condition of constant recreation (Zukin, 1991), then cultural policy brings about terms such as creative city, cultural clustering, gentrification and their by-product – city branding (Evans, 2003), placing regeneration processes in the very core of touristic development. The monoculture of recreational uses in the context of the creative city has resulted in mass evictions and “social cleansing” actions (Hough, 2012), posing new social and cultural demands. In many cases, cities have been denuded from their characteristics, while most residents have been excluded from decision making processes. This condition, along with the ubiquity of data collection in the gentrified areas have dramatically impacted the digital divide in the negative sense. In many cases, technology has imposed conditions of larger inequalities and social divisions (Graham, 2002) for the sake of the global market and touristic attraction, “a far cry from what would be labelled as “smart”” (Walravens, Mobile city applications for Brussels citizens: Smart City trends, challenges and a reality check, 2015).

A reasonable aftereffect of these processes is to rethink urban cultural landscapes on another level, reclaiming their role as “storages” of common identity and their potentials in increasing “social capacity”. Internet space could play a significant role here as well, fomenting a more experimental, bottom-up understanding of what a Smart City could be.

Driven by economic recession, many precedent urban strategic policies have been put to question. Social policy and collaborative forms of urban regenerations that engage social capital inspire the need for social beneficiary, equal participation and accessibility, as well as a more democratic perception of urban design and urban experience. What is important for a bottom-up Smart City is not the urban environment itself but its users – the Smart Citizens (Walravens, Mobile city applications for Brussels citizens: Smart City trends, challenges and a reality check, 2015). The intelligent city does not rely on top-down approaches with a focus on technology “as a sort of modern, paternalistic dictatorship” (Letaifa, 2015). As Lindsay states, “*the bias lurking behind every large-scale smart city is a belief that bottom-up complexity can be bottled and put to use for top-down ends – that a central agency, with the right computer program, could one day manage and even dictate the complex need of an actual city. The smartest cities are the ones that embrace openness, randomness and serendipity – every-*

thing that makes a city great” (Lindsay, 2011). These Smart Cities rely on community-based and private sector initiatives, living labs, and social entrepreneurship (Letaifa, 2015). For the Smart Citizen there is a plethora of tools to interact with and move around the city and emphasis lies on his/her citizenship and not technology as a primary factor (Walravens, Mobile city applications for Brussels citizens: Smart City trends, challenges and a reality check, 2015). What is at stake here is the long-term durability of the corresponding bottom-up projects, since they usually build on fleeting dynamism, lacking long-term vision (Letaifa, 2015).

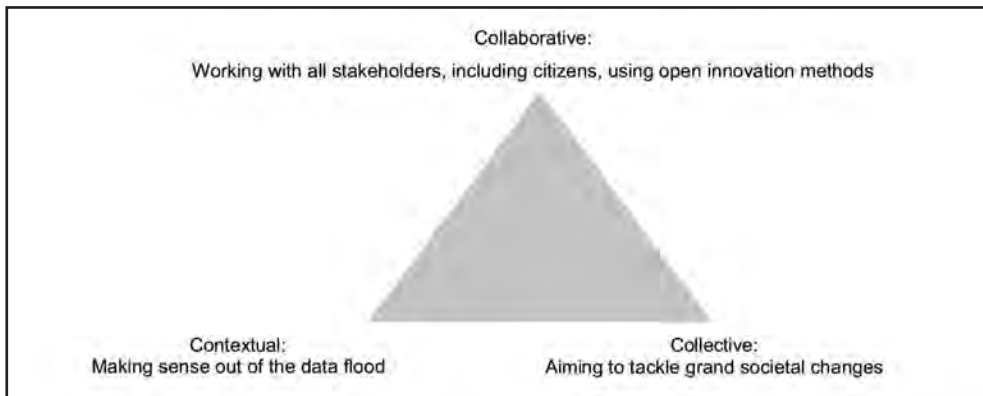


Fig. 2: “The constituting characteristics of the Smart City” / Source (Walravens, 2015).

The case study that is presented in the context of the research aims to open a dialogue on these issues. It concerns a realized bottom-up initiative in the city of Thessaloniki, suggesting the application of urban agriculture in unexploited leftovers in the city center and is called “Kipos³”. The reader gets information about the process of social activation and exploration of possible stakeholders and facilitators. What is presented here becomes an example of how the idea of a “local innovation platform” could be embraced by the Greek authorities and how top-down and bottom-up approaches are enacted in order to transform the city into a meeting place where public sector, private interest and citizens can come together and innovate together (Walravens, Mobile city applications for Brussels citizens: Smart City trends, challenges and a reality check, 2015).

THE FORM AND CHARACTER OF GREEK CITIES. THE “POLYKATOIKIA” AS AN URBAN TYPOLOGY OF MULTICULTURAL PROXIMITY

Urban sprawl as a process, is highly related with specific economic models and cultural particularities. In the Greek city, which follows the Mediterranean model, suburban areas appear as “enclaves of poverty”, instead of “gated communities” that define Anglo-American model (Leontidou, 2006). In the Greek city, a hybrid urban landscape reflects the coexistence of different eras, activities and cultures, corresponding to an informal economy, with areas of spontaneous housing and lack of design (Leontidou, 2006).

In addition, the process of intense urbanism differs from anti-urban ones belonging to Anglo-American culture. Small squares, parks and narrow promenades, emerge more as spatial “release” of intense urbanization (Leontidou, 2006) and less as green spaces for outdoor activities. Moreover, the fragmentation of urban space that takes place, breaks the space down into a “mosaic” of subsets characterized by deconstructed scales, anarchic construction and lack of prioritization, as well as an absence of the sense of neighborhood and a feeling of tightness and incompleteness between particular components (Ioannou & Serrao, 2006). Urban open spaces in the center of Greek Metropolises are scarce and scattered, defined as leftovers of precedent economic urban activities.



Fig. 3: The Greek Polykatoikia
“Typical View of Athens, 2000”
/Source: (Philippides, 2001).



Fig. 4: Arbitrary constructions
at the outskirts of Athens
(personal archive).

Although the current situation refutes that, historically, Greek cities have been studied as archetypes of urbanity, shedding light on how the first urban forms were established, while cultivating a discussion about the “plan-ability” of the city (Doevendans & Schram, 2005). More specifically, according to French architectural historian Bruno Fortier (Fortier, 1995), archaeological discoveries of ancient urban forms during the second half of the 19th century, induced three metaphorical models of urbanity encouraging symbolic images of the idea of the city. These three archetypes were “accumulation city”, “creation city” and a third in-between. All three of them described the form of Rome, Egypt and Greek cities accordingly.

What becomes special for the Greek cities, in comparison with the Roman ones (accumulation cities), in terms of urban planning, is the concept of public space. While most urban developments are less orderly formed, planned interventions in the urban fabric concern the construction of an agora or acropolis (Doevendans & Schram, 2005). Contrary to the accumulation cities, exists the creation city (e.g. Egypt), which corresponds to an entirely planned urbanity. In the case of accumulated urbanity, according to Fortier (Fortier, 1995) the city lacks “a genuinely planned development”, “disorder acquires shape” and produces “a heterogeneous mixture, which is the exact antithesis of creation” (Doevendans & Schram, 2005).

From Antinous and Milete, who introduced the checkerboard patterns, until today's forms of planning the urban space, processes of city making are closely connected with economic models and cultural patterns. In Greece, gentrification processes in urban open spaces, in parallel with a gradually expansive vertical stratification appearing in the Greek “polykatoikia” (block of apartments) (Maloutas & Karadimitriou, 2001), explain the Greek context, as well as the existence of unattended, unplanned, “accumulative”, urban leftovers.

This transformation of the block of houses into vertical forms of spatial expression for diverse ethnic, cultural and class identities, defines mainly the character of Athens' and Thessaloniki's central districts. Due to constant waves of immigration, the lower, smaller, once abandoned apartments have been occupied by immigrants. This form of co-habitation – immigrants at the lowest and basement levels, Greeks at the upper levels-exposes a layer of social inequality and exclusion in the microscale of “polykatoikia”, interrupting the horizontality of precedent culturally and socially homogeneous spaces (Mpourlessas, 2015). The context of the global multiethnic city is developed vertically not horizontally and exhibits greater fragmentation and diffusion in comparison with developed ethnoscares in the global cities (Mitchell, 2003).



Fig. 5: Block of houses that host the lower social classes in Greece/
Source: (Kompreser, 2016).



Fig. 6: Ag. Panteleimonas Square in Athens, a district with rising percentages of immigrants and refugees / Source: (Pettas, 2015).

In parallel, urban open spaces in central districts become fields of everyday life's struggle, hosting complex forms of social public life. Since public spaces express power relationships, either in the form of urban conflicts or not, in most cases, the allocation of immigrants has changed pre-established rules and orders. Nowadays, power relationships are developed around immigrant's rights of presence and use of public space. Great demographic changes mutate human geography in the scale of neighborhood and bear an increasing intolerance towards different ethnic identities,

leading to ghetto phenomena (Pettas, 2015). This results in transforming community models of public space (Iveson, 1998) into battlefields of domination characterized by spatial exclusion. Thus, newer “bottom-up” systems of advancing the urban environment are presented as viable resolution for long term spatial pathogeneses, highlighting the need for cooperation between Greek private and public mechanisms, as well as between the Greek citizens and the state.

PLANNING THE CULTURAL AND SOCIAL REACTIVATION OF URBAN OPEN SPACES FOR A MORE RESILIENT CIVIC SOCIETY

In the past, cultural politics and gentrification processes, shaped districts for touristic or recreational monoculture of uses, conformed to the taste of the “outsider”. In many cases, part of the population has been forced to move out of city’s “gentrified” zones, a process known as social cleansing (Hough, 2012). Furthermore, green infrastructures, protection and designation of cultural heritage, environmental protection and landscape architecture have become leverage of economic growth. Postindustrial urban economies are governing contemporary cities, denuding them from their characteristics and excluding local residents from decision making processes.



Fig. 7: Infrastructures for Olympic Games, Athens 2004 // Source: Official Report of the XXVIII Olympiad, vol. I, Athens 2004 Organizing Committee.



Fig. 8: OAKA Stadium in Athens.
Photo by Yannis Prappas

In Greek cities, gentrification processes defined the development of some central districts in Athens and Thessaloniki. The regeneration of cultural infrastructures during 2004 in Athens due to the *Olympic Games* and 1996 in Thessaloniki due to *Cultural Capital* have defined an important cultural “stock” of the two major Greek cities.

Today, cultural-led regenerations, smaller in scale, including the most recent “Stavros Niarchos Foundation Cultural Center (CNFCC)”, have placed city’s cultural agenda in higher priority, envisioning antecedent days of economic welfare. In the case of SNFCC, cultural policy dictated a large-scale investment in urban space, creating an entire urban area for cultural production and creativity.



Fig. 9: Stavros Niarchos Foundation Cultural Center by Renzo Piano / Source: (Marzullo, 2015).

Nevertheless, since 2004 Athens Olympics and the gradual degradation of expensive cultural infrastructures, due to governmental corruption and misuse of economic funds, Greek citizens have become indifferent towards similar iconic projects. On top of that, a general disappointment towards state’s inability to propose a viable reallocation program for the immigrants, has resulted in a constant fall in land values (Hardt & Negri, 2000, p. 105), which breeds racism and hatred between different ethnicities within the microscale of neighborhood. Recently, due to the indisputable break down of the state power, people have begun to seek for social self-organization and forms of democratic participation and try to solve their problems through bottom-up processes (Makridimitris, 2004).

All these conditions demand the redefinition of former urban strategic policies and the acquirement of a character of social inclusion. Over the last year’s urban regenerations have been engaged with social capital, inspiring the need for equal participation and accessibility, for a more democratic perception of urban design and experience. The demographic changes, due to global immigration, dictate innovative approaches, which create spaces of looser programmatic determination and equal participation. Above all, they transform urban open spaces from a mere tool of investment into a field for social reconciliation and self-expression, where local demands are better resolved (Taylor, 2008).

SOCIAL CAPITAL AS A LEVERAGE FOR ECONOMIC DEVELOPMENT IN URBAN REGENERATIONS

Economic development in contemporary cities cannot be solely produced by city-branding and gentrification. Sense of mutual trust, cooperation and mutual understanding between social groups and social networks are also necessary for economic resilience and growth. Social capital is crucial in understanding social cohesion and cultural continuation in a state of crisis and urban heterogeneity.

Since the 1990s, communities started to get involved in regeneration processes. It became increasingly accepted that within their involvement, activities would correspond better to the local needs and therefore succeed (Clark & Southern, 2006). In general, social capital becomes an important parameter in urban regenerations, as long as it is involved in consultation and decision-making processes, grounding cultural regenerations on the synergy of all local stakeholders and mechanisms that act within the society.

Today, with the use of information technology, participation, democracy, transparency and efficiency are within society's reach. By opening data collected from sensors installed in key points around the city to the public, urban open spaces could become more collaborative, collective and contextual, enhancing the "smartness" of the city. This condition becomes an important catalyst in redefining the role of government as that of an "innovative platform" (Walravens, Breuer, & Ballon, 2014), where a piece of data or content is open and anyone is "free to use, reuse, and redistribute it" (OKFN, 2012). Social capital and their data production through "using, reusing and redistributing" becomes a new parameter for urban development and economic growth. New insights into the urban context could be gained, while new value could be created through the optimal understanding of local government, the context and the surrounding actors that are operating in it (Walravens, Breuer, & Ballon, 2014).

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REACTIVATING THE SOCIAL CAPITAL IN GREEK CITIES OF CRISIS

I. The Occupational Movement in "Sintagma Square"

The Occupational Movement emerged in United States in 2010 and marked the need of social intervention in public spaces in the form of political protest. Since most of urban regenerations were oriented towards an urban "face-lifting" for touristic consumption, most of open spaces were detached from traditional uses, like people coming together, talking and sharing ideas. Thus, during the occupational movement in New York, campers all over McPherson Square were stating: "Excuse our mess, Democracy Lab in Progress" (Depillis, 2012), a clear message to the need of reviving public spaces and re-using them for collective activities and social osmosis.

For all the attempts of the occupational movement to change the way public space was perceived, many people disapproved protester's anger. Local authorities were forced to legislate for stricter laws on the way public open spaces could be used from now on, which was never a point of the Occupational Movement to fight against (Depillis, 2012). Instead, protesting in public space was a tangible action, a spatial expression of an anticapitalistic movement and a field of negotiation, where all difficulties could be discussed along with the creation of a self-governed community in urban space.

In Greece, the Occupational Movement expanded rapidly, with people occupying "Sintagma Square" in Athens and "Lefkou Pirgou Square" in Thessaloniki. "Sintagma Square", which exhibits minimum social interaction and spatial appropriation in everyday life, during the Occupational Movement, it resembled to a public "arena" (Pettas, 2015) and not to a space for community building. During the period of protest, the diverse subjectivities preserved their individual characteristics and aspirations, in the context of spontaneous symbiosis. Their inefficiency to restrict state surveillance within the square and to achieve a more integrated social life in the public realm, led to its gradual degradation.



Fig. 10: Occupy London / Source: (Fraser, 2015).



Fig. 11: Occupy "Sintagma" Square / Source: (Pettas, 2015).

II. Bottom-up initiatives and Social-led regenerations. Examples in the Greek context

At the beginning of 19th century, in most American cities, parks and public spaces were created by people donating their land. For Whilst Fairhead and Leach, these initiatives were early forms of participatory design and reflected power interdependence within urban landscape (Hinchliffe, 2003). In line with that, Landry introduced the need of bottom-up procedures in urban design and supported the importance of equal accessibility and cooperation of all social institutions, in order to: enhance social cohesion, improve local image, reduce offending behaviors, promote interest in the local environment, develop self-confidence, build public/private sector partnership, explore identities and visions of the future, enhance organizational capacity and support independence (Landry, 2000).

Today a revised form of social participation in urban landscape design appears in the concept of tactical urbanism. This is based on participation, it involves the dynamic of knowledge in practice (Ingold & Kurttila, 2000) and encourages citizen's creativity and their ability to build a common cultural identity (Garcia, 2004). Tactical urbanism derives from three overlapping current trends: economic recession, demographic changes and Internet as a tool for building the civic society. Furthermore, it defines a complete methodology for the creation of current urban landscapes, placing productivity and experimentation in the core of urban strategic planning.

In Greece, bottom-up initiatives are emerging in the cities of Athens and Thessaloniki, as unofficial community actions that reclaim public spaces. "Parko Navarino" is located in the edgy Exarcheia district of Athens. This bottom-up initiative appears more as a political manifestation against the gradual degradation of public spaces and the governmental failures to preserve sustainability of urban environment (Smith, 2016). In Athens, where the effects of austerity become more apparent, people need to incorporate the new culture of social-led regenerations and create solidarity groups, which will ameliorate urban pathogeneses. An example towards reclaiming democratic processes in urban making is the platform "SynAthina", where citizens exchange information, find partners, and communicate with the city hall in the search for potential sponsors (Smith, 2016).



Fig. 12: Parking Parko in Exarcheia
/ Source: (inExarchia, 2015).



Fig. 13: SynAthina stationary at the city center.

III. Case studies of tactical urbanism: streetscapes-parklets-urban agriculture

"Streetscape" is an American term that relates with the Dutch word "woonerf" or the European "family street" (Whiston, 1984). Historically, in early '60s, Jane Jacobs mentioned important parameters in streetscape design, like proper orientation of the windows facing the street, and the need for a good design to have a positive impact on people (LeGates & Stout, 2011). Today, streetscapes concern the transformation

of a conventional street into an alive urban space that fosters equal accessibility and the coexistence of both humans and cars. It is a bottom-up initiative that involves residents working together to “re-green” their streets (Viani, 2010).

“Parklets” belong, according to many urban theorists, to “the latest trend in urban place-making” (Kling, 2012). Parklets do not necessarily transform a neighborhood radically, though they contribute to its image advancement. These depend usually on private initiatives, mostly by city residents, who economically support the creation and maintenance of a small park.



Fig. 14: Green Streets movement in Seattle.
Storm water planters on Maynard
green street by SvR Design Co.



Fig. 15: Parklet “Fabric8”
by Eric Otto in San Francisco (Boyer, 2011).

“Urban Agriculture” originates in Europe in the medieval times, when most of the cities configured common orchards and kitchen gardens inside city’s wall. In United States, at the end of 19th century, urban agriculture took a form of governmental support, as allotment gardens were provided to poor families for the cultivation of their food (Whiston, 1984). During 20th century, crisis forced middle class to participate in management and maintenance of parks and green spaces. Urban open spaces along train lines or streams were divided into small parcels, like the allotment gardens in Berlin. Consequently, urban agriculture became a common feature in most European capitals despite their differences and changes (Warnecke, 2001). Today, collective initiatives, like Boston Urban Gardeners and New York City’s Green Guerillas, distribute the idea of cultivating urban land, while agricultural projects emerge, reactivating lost social bonds, like Lafayette Greens in Detroit, USA (Mcintyre, 2013).



Fig. 16: Lafayette Greens in Detroit. Project of Urban Agriculture / Source: Pinterest.

IV. Bottom-up initiatives. Goals and parameters of planning for landscape democracy in urban open spaces

All types of social-led regenerations mentioned above, either in the form of occupancy or in the form of revitalizing a streetscape, cultivating an abandoned open space, and creating parklets for the neighborhood have become recently processes of cultural city “remodeling”, reinvigorating democratic processes in urban making.

Contemporary urban regenerations, in the form of tactical urbanism demand a deeper understanding of complex social fabrics. The devastating impacts of gentrification, along with inadequate policies that would encourage a more cohesive social network has put to the question precedent methodologies that invested in aesthetic values depriving projects from an internal capability to last in time.

In unofficial urban tactics, regenerations cover the needs and desires of the “insiders”, the local actors of urban landscape. More democratic tools and techniques turn urban landscape into a “soft” strategy that arranges interpersonal relations and reflects economic, cultural values and the interests of all people alike. Since urban open spaces reflect society and social life, a “shared” place, in the form of an urban garden, a livable streetscape or a parklet, supports common identity and “encompasses shared time in the form of shared territory” (Hayden, 1997).

Except for evaluation and consultation, which establish more democratic decision making processes through the redefinition of the organizational patterns of urban landscape and the way they affect the local actors (Clemmensen, Daugaard, & Nielsen, 2010), there are other equally important objectives in social-led regenerations.

In the framework of these demands, streetscapes embody “zones of negation” and contain different aspects of urban life. They reduce barriers via “porosity” and flexible

uses, turning existing urban structures into potential enclaves of free movement and change (Clemmensen, Daugaard, & Nielsen, 2010). Bottom-up initiatives in the form of streetscapes could add up and create a network of “glue” spaces that serve for connectivity (Clemmensen, Daugaard, & Nielsen, 2010), bringing together independent urban spatial fragments in a cohesive urban unity.

Parklets become also livable spaces for balancing mix uses and democratically represent the aesthetic and social aspirations of the neighborhood. In the form of “pockets” in the city, parklets arise as spatial manifestation of emerging “urban tribes” (Maffesoli, 1996), who seek for urban open spaces with a variety of experiences for different users. The low cost of construction, along with a more participatory approach in the design process, render parklets a version of *mutli-public model* of public space, which accommodates a variety of subcultures and groups of different users (Iveson, 1998). These new proposed forms of “loose spaces” (Clemmensen, Daugaard, & Nielsen, 2010), attract individuals and enable them to imagine different versions of a shared landscape (Iveson, 1998).

Along with parklets, urban vegetable gardens, turn limbic spaces or edge sites in the fringe of the city, into productive public spaces. They enable a flexible system of cohabitation based on the common desire of users to cultivate the earth and produce food, exchange ideas and come closer. In this case, individuals are organized according to the circles of food production. Coupled with the other two cases, models of self-organization reflect the need for challenging the status quo in place making and propose ways of turning urban landscape into an *archipelago of enclaves* (Hager & Reijndorp, 2001) grounded upon spatial justice in the city.

In the end, this new approach of planning, abandons former approaches, which transformed urban open spaces into “dead events”. In the wake of shaking economic and political challenges, urban open spaces offer new perspectives, opposing to their former use as touristic attractions dictated by an “experience economy” and proposing a public space that reflects the democratic values of modern societies instead.

Kipos³-City as a resource

Under the condition of crisis, people start to rethink “public green” as an incubator of social activities. Many Greek cities have embodied the concept of urban agriculture, investing on low cost interventions that affect public realm, instead of high-cost decisions for urban gentrification. Among others are the cities of Alexandroupoli, Volos and Larissa, located in northern and central Greece, have introduced allotment gardens for cultivation in the peri-urban areas. In addition, over the last years, bottom-up initiatives have emerged in Athens, forming city’s more collective landscape agenda.

In 2014, “Kipos³-City as a resource” became a commitment to action: transform Thessaloniki’s leftovers into urban agricultural spots in dense neighborhoods.

Thessaloniki is the second biggest city in Greece after Athens, located in the northern part, with a population of 859.431 residents and an urban extent of 16.447 hectares. As a city, is relatively dense, with 52 persons/hectare¹. The project of “Kipos³” was sponsored by Angelopoulos Fellowship program, in collaboration with Clinton Global Initiative that supports start-up projects related to environmental, social and public health issues. The team was constituted by Eleni Oureilidou, Eleftheria Gavrilidou and Maria Ritou, who envisioned the social reclamation of residual open spaces and their transformation into productive community gardens.

I. Building-up a start-up

At first, the team learned how to build up a start-up, via participating in “Clinton Global Initiative University Annual Meeting 2014” that was held in Arizona State University, Phoenix. There, the team took part in the transformation of an urban open space into a big scale community garden, and faced with the following challenge: USA knows how, why doesn't Greece?

Consequently, the team organized a research on possible sites called “mapping the city” were more than ten urban open spaces in the city center were examined according to ownership parameters, accessibility, size, sense of neighborhood and appropriate conditions for plants' growth. The team established an open dialogue and invited local institutions and stakeholders to participate, with the aim to build a broader synergy and to establish a successful interplay between “top-down” and “bottom-up” processes in landscape design. The team's visions and actions inspired local and national news media, while main concepts were promoted through social media on the Internet and an online portfolio, called “City as a Resource”, dispersing the idea of urban gardens in Thessaloniki.

Furthermore, the team organized a series of actions, in order to inform various neighborhoods and evaluate their demands. Among them was hanging up posters in the form of ballot boxes and handing out flyers with team's commitment and contact details.

II. Reactivating the neighborhood. Experiences, obstacles and difficulties.

Contacting institutions that are oriented towards environmental and societal issues, as well as employees of Municipality, clubs of architects and engineers, groups of volunteers and religious foundations, enriched team's experience on vision sharing. Main challenge was to reverse people's suspicion and to build a broader coalition between them and the local authorities. Ten years of crisis that preceded resulted in people's deep skepticism and mistrust on Greek state and its representatives, as well as a lack of confidence on working together and becoming the future change-makers.

¹ Data retrieved from atlas of urban expansion: <http://www.atlasofurbanexpansion.org/cities/view/Thessaloniki>.

Occasionally, the team faced challenges and developed an extensive argumentation to turn negative reactions into a more positive stance. Municipality appeared willing to help but was absent in most of decision making processes. Environmental and societal institutions seemed enthusiastic, but they never provided any assistance on the project's realization. Above all, despite the fact that the concept of urban gardening encompasses social contribution, church authorized representatives reacted negatively to a broader collaboration with other social institutions and neighborhoods.



Fig. 17: Image collage: Mapping the city, promoting our visions with stickers, banners, posters with the aim to generate the need for social participation.

Extrapolations and valuable remarks

The need for a multi-level approach in urban regenerations is indisputable. New discourses should correspond to the context of the wider economy and cover the needs of local actors within their neighborhoods (Hildreth, 2007). From one point, top-down processes have already failed, proving that urban space is not a subject of a central government to decide and design. Nevertheless, it is the space of everyday social life and a manifestation of democratic decision-making processes that are valuable for its long term sustainability.

All social-led regenerations that were described above, provide a framework of participation in the small scale, where locals appropriate urban open spaces for self-expression and interpersonal communications. All these small-scale projects

could add up in urban landscape and change the way urbanism is being perceived, supporting a livable network of spaces that “*mold and mirror*” (Meinig, 1979) a resilient economy, an embracing culture and a democratic society. Especially in Greek Metropolises, people have already started to rethink their social dynamism and develop ways for active participation in commons, opposing themselves to political decisions that affect their social life from the top-down. Due to the devastating results of gentrification on one hand and the strong presence of immigrants on the other, cities trust in social-led regenerations to fortify locals and gradually replace central government in a more democratic management of urban open spaces. Besides, main goal of future social-led regenerations is to better include immigrants and minimize their being ghettoized.

What could be the biggest challenge for Greek cities in the long run is to correspond to social changes caused by economic recession, immigration and identity fragmentation. Bottom-up initiatives in Greece should take into consideration the complexities of multi-ethnic neighborhoods and embrace urban open spaces as intelligent incubators of cultural co-habitation. With the belief that “it is our duty to change the city” (LeGates & Stout, 2011), citizens should condemn apathy and reclaim social cohesion and cultural tolerance. Greek cities of tomorrow are in need of active communities, which participate in urban regenerations, accept multi-cultural identities and re-invent the productive side of public spaces, with the aim to change their environment through community building.

The case study of “Kipos³”, provides an example of how a neighborhood is reactivated through food cultivation. Future objectives of the project could be to expand cultural activities beyond urban agriculture, to cooperate with other teams and develop a network of knowledge sharing and communication with other neighborhoods. Similar projects could invest in spontaneity, as a manifestation for autonomy and disengagement from municipality’s severe bureaucracy, expanding visions and methodologies of acting in the city.

In the end, similar bottom-up initiatives could take advantage of the potentials that digital culture has to offer and become material nodes, or platforms of the emergent mediated environments. The integration of digital culture in the administration of small-scale urban interventions could catalyze resolutions for urban pathogeneses occurred by the marketization of urban places and the perception of cities as fields of exerting power and experiencing conflict. What is more, the use of digital could enhance more dynamic horizontal structures, consolidating self-organization, communication and transparency from the ground-up. New methodologies could correlate structural patterns detected in the Internet space with corresponding features in the public space and provide a new framework of government, decision-making processes and social capacity.

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From 'failure' to commons? Teenagers in collective management of urban green

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Abstract - Public green space is a common pool resource that runs into problems of mismanagement, degradation and destruction. Of the three solutions offered, the user-based governance gains increased popularity due to its capacity for enhancing equity, democracy, local empowerment and community bonding. Teenagers, and young people generally, are among the most frequent, active and innovative users of green space. Yet, their views, perceptions and potential to form, or team up with others towards the development of, user-based governance schemes have not been explored in the literature. The current chapter comes to contribute to this area examining how teenagers in Greece understand and appropriate urban green, and whether they are willing to get involved in schemes of its collective governance. It finds that adolescents use and value urban green considerably and, despite trust deficiencies, they are willing to join forces with friends and organized users towards its improvement and upgrade.

Keywords - Urban green, commons, governance institutions, trust, youth, teenagers

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INTRODUCTION

Good quality urban green is an asset to a city. Trees, shrubs and turf filter pollutants from the air, prevent soil erosion and regulate urban temperatures and humidity, supporting the development of a healthy urban environment [7], [39]. In addition, parks, gardens and squares provide opportunities, for exercise, play, relaxation and recreation, contributing to the physical, psychological and mental health of the urban dwellers [43,44], as well as for outdoor association and social interaction, helping communities to shape their identity and to strengthen their social fabric [9], [25].

The provision and efficient management of urban green space (UGS), therefore, becomes paramount [9] especially in countries like Greece which exhibit one of the lowest level of public green per inhabitant in Europe [19], [31]. To make things worse, recent years have seen local authorities substantially reducing the funds available for urban green (partly as a result of the austerity measures that followed the economic crisis), make it necessary to explore new and innovative ways for its provision and management [2], [10]. Towards this end a number of scholars have place emphasis on bottom-up approaches, arguing that UGS constitutes a common pool resource (or commons) and, as such, users could collectively develop arrangements for its sustainable use and appropriation.

The current chapter comes to contribute to this literature, focusing on urban youth, and on teenagers in particular, which although constitute a leading group of urban green users, have been largely ignored from relevant research [18], [42]. More specifically the study analyze teenagers' uses of, and attitudes towards UGS and explores the scope and potential of their engagement in some kind of collective management of the resource. The chapter is structured as follows. The next section discusses aspects of teenagers' appropriation of UGS and the following one defines UGS as a commons. Section four moves to the case study presenting some basic characteristics of urban green in Volos city, whereas the fifth and sixth sections outline the research methodology and the results of the analysis conducted, respectively. Finally, section seven concludes.

TEENAGERS, PUBLIC SPACE AND URBAN GREEN

It is generally acknowledged that young people are among the most frequent users of public space [18], [41]. This is because they are quite intense public beings, but have no formal (legal) rights to spaces of their own [11]. This relative lack of private space makes them to depend at a great extent on public space both for their isolation and social interactions [24]. Parks, squares, sidewalks, alleyways, and the like, therefore, become places whereby teenagers resort to "hide" themselves, as well as to meet and to interact with each other, and as such to develop their own identities [14], [29]. As a result, these places are imbued with youth cultural values and meanings. This suggests the need, at least, to examine public space in the way young people understand and utilize it [15], [29], [50].

Although public space plays a substantial role for young people's social, mental, emotional and physical health and development [37], [49], youngsters' appropriation of public space is usually seen in particularly charged ways, attributing these public spaces a sense of "difference" or "otherness" in relation to adults' space [21]. Thus, young people are seemingly invisible in the urban landscape [41]; they are excluded from the dominant "adult" public space through controls and rules that limit how the latter may be used [17], provided only with "community leftovers" [11] and "token spaces" [29], which are often inappropriate to their needs and aspirations.

In their attempts to contest adults' spatial hegemony and to assert their independence, youngsters create their own "microgeographies" within their local environment [28]. That is, they develop their own and alternative patterns of land use and leave their own territorial markers (e.g. graffiti) as symbolic gestures of resistance to adult power [5], [46]. These actions are sometimes read as a threat to the personal safety of other user groups, giving rise to clashes and generating stricter controls on the part of the adults [5], [42]. At least partly due to these restrictions¹, young people's spatial autonomy and public space usage appears to be decreasing, and teenagers resort to

¹ Also due to lack of time and concerns about safety on the part of their parents [26], [49].

electronic and virtual space (through mobile phones and the internet) as a new rhetorical and experiential landscape [11], [38].

As regards youth perspectives on green space in particular, research has been quite limited [15], [27], [42]. Scholars widely acknowledge the important role that the urban natural environment plays in youth physical, mental and social development and well-being, since it offers opportunities for unstructured play and physical exercise, as well as for contact with peers and with nature (plants and animals) [5], [48]. The teenagers often like to explore the natural environment and to find a territory of their own, and they may avoid the adult spaces, where they may feel themselves controlled, criticized or even excluded [5], [38]. On these grounds teenagers contest the conventional uses of urban green spaces and introduce new activities and innovative practices and approaches that generate pioneering forms of collective action and interaction which could be seen as “empowering” [18], [27].

URBAN GREEN SPACE AS A COMMONS

The commons is a category of resources characterized by non-excludability, meaning that it is too difficult (i.e. costly) to exclude someone from using them, and rivalry, meaning that use by someone reduces availability to other people. Urban green space constitutes a special type of a commons [3], [8], [12,13]. Since it constitutes an open public space, nobody can be excluded from using it (non-excludability), whereas use by a certain number of people will reduce the quantity/quality available to others (rivalry).

The above qualities enable (economic-rational) individuals to misuse and exploit the resource, bringing it gradually to depletion, degradation and eventually to destruction; a situation known as the “tragedy of the commons” [20]. Suggested solutions highlight the need to infuse stewardship ethics among users [4], [51], or, as Hardin [20] and others [23] have argued, to attribute clearly defined property rights, either to individuals (“privatization”) or to the state (“nationalization”), giving them incentives and the authority to sustain the resource.

However, a third perspective has been recently provided by the 2009 Nobel laureate in Economics, Elinor Ostrom (*inter alia*: [33,34,35,36]). Drawing on numerous empirical studies across the world, she found local users to overcome problems of collective action and to develop informal arrangements and institutions that enable them to successfully manage the commons even in the absence of private property rights and a central regulatory authority.

This literature (*inter alia*: [1,2,3], [6], [32,33], [40], [47]) has also identified a number of characteristics that are common to all such management regimes. Three of them are of particular importance to the case examined in this chapter. The first is about the resource itself; resources of small size with definable boundaries can be preserved

more easily. A second concerns the users; small and homogeneous groups with close, trust-based social relations, do better. The third set of conditions concentrates on the relationship between users and the resource; there must be a perceptible threat of resource depletion, the users should highly value the resource, and they should locate relatively close to it.

URBAN GREEN IN VOLOS CITY

Volos is one of the five largest Greek cities with over 140000 inhabitants and a population growth rate in the last decade of 15% [16]. It is a major industrial city accommodating a number of secondary as well as tertiary economic activities, including tourism and higher education (it houses the University of Thessaly).

The public green space of the city is just 5% of its total area [22], which corresponds to 6.4m² of green space per capita, a figure that is much lower to those of other European cities of similar size [19], as well as to the international minimum standards [45]. Most of the UGS lie along the coast, whereas the rest of the city suffers from lack of adequate such spaces [22], [30]. Although there are small parks, squares, vacant plots, etc. scattered all over the city, these do not meet the standards that modern cities should follow [19].

The quality of city's green is quite low too [19], [22]. Acts of vandalism and littering are highly visible, whereas the limited and now shrinking resources of the local authorities, and the absence of a long-term UGS strategy on the part of the municipality, enable only the most essential works to be carried out. Overall, UGS in Volos are low in quantity and quality, are concentrated and with no cohesion, and enjoy medium levels of maintenance and care.

RESEARCH OBJECTIVES AND METHODOLOGY

The research explored how young people, and in particular teenagers (aged between 14 and 15 years), perceive urban green and whether they are willing to get involved in some kind of collective management of the resource. This is done through structured interviews (in a form of a questionnaire) with 169 last-year students from six middle-schools (*Gymnasiums*) located in Volos city. The research explored their views, attitudes and stances towards public green, examining a number of relevant issues, such as: the condition and qualities of the resource, the intensity of teenagers' use and the degree of adolescent dependence on the resource, their willingness to contribute to its management and maintenance, the preferred allocation of rights on the resource to various stakeholders (authorities, organizations, community and individuals), the social capital (trust) of teenagers and their willingness to be engaged in some form of bottom-up, user-based initiatives toward the collective management of UGS.

The questionnaire used consists of five parts containing 22 questions of all types: measurement, dichotomous, ordinal, as well as Likert-scale and semantic-differential ones scaled from 0 (denoting strong disagreement, negative opinion, etc.) to 10 (denoting strong agreement, positive opinion, etc.). The first part informs the teenagers on the purpose of the research and ensures the anonymity of participation. The second part records views regarding the condition of UGS (adequacy, quality, accessibility, etc.) and teenagers' dependence on the resource. The third part records views regarding: their willingness to contribute financially to the maintenance of UGS, the capability of various stakeholders to efficiently manage the UGS, and possible reconfiguration of property rights on the resource. The fourth part examines adolescents' social capital, as well as their attitudes towards cooperation for self-governance of the UGS. Finally, the last part of the questionnaire gathers socio-demographic information, such as gender, age, nationality and family income. Survey questions were pre-tested in a pilot study enabling fine-tuning of the instrument.

The research took place in January 2014. The interviews were conducted in the respective schools and questionnaires were completed on the spot by the members of the research team. From a targeted population of 180 students, 169 validated questionnaires were acquired (93.9%). The 97.6% of the respondents were Greeks and the rest of Albanian origins, all residents of Volos city. Their gender composition was about 52% male and 48% female.

ANALYSIS

Questionnaires were coded and analyzed to generate a number of statistics illustrating the respondents' views on the issues raised. Table 1, below, presents the results (distribution of responses, mean value and standard deviation) which are consequently discussed.

Firstly, teenagers were asked to evaluate the adequacy, accessibility, traffic and quality (actual care by the users and management effectiveness by the city) of the existing UGS (section 1 in Table 1). They deem that green spaces are about average in quantity (mean: 4.4), with relatively good accessibility (mean: 6.5) but medium traffic (mean: 5.4), they are not looked after well by the citizens (mean: 4.0) and they lack high quality management on the part of the city (mean: 4.2). In addition respondents were asked to assess the necessity for qualitative improvement of UGS and the contribution this would have to citizens' welfare. They replied that qualitative improvement is rather necessary (mean: 7.3, with most responses, 30.2%, in the highest value) and that this would improve people's welfare and quality of urban life in general (mean: 7.4, most responses, 23.7%, in the highest value).

A number of questions, text, explored adolescents' views regarding ways of improving the UGS (see section 2 in Table 1). First, they were asked to evaluate the following

two statements: “more funds should be allocated for the improvement of UGS”, “all citizens should contribute financially to the improvement of UGS”. The majority of teenagers (75.7%) agree that more resources should be given to UGS (mean: 7.5, most responses, 26.2%, in the highest value) but they were somewhat hesitant on whether all citizens should contribute financially toward UGS provision and improvement. More than half (55.9%) answered that positively (mean: 6.6, most responses, 22.6%, in the highest value), but 25.6% were neutral or indecisive, and 18.5% were rather negative. In turn, when teenagers asked what amount of money they would be willing to offer on a monthly basis for the improvement of UGS, only a small part of them (8.3%) refused to contribute anything (on the grounds that this is a public good and so a responsibility of the city). Of the rest who were willing to offer financial support, 11.3% were happy to contribute just a small amount of money (one or two euros), 28.4% to provide between three and five euros, 33.3% an amount up to ten euros, 13.5% opt for a contribution up to €30, while there were some teenagers (1.5%) who did not hesitate to offer over €50. On average, the monthly amount offered was €14.3 (standard deviation: 15.6).

TABLE 1. TEENAGERS' RESPONSES

	mean	s.d.	0 (%) 0: low / disagree	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	6 (%)	7 (%)	8 (%)	9 (%)	10 (%) 10: high / agree
<i>1. UGS qualities</i>													
Adequacy	4.4	2.3	1.8	6.5	13.6	17.8	13.6	22.5	4.7	7.1	4.7	4.7	3.0
Accessibility	6.5	2.6	3.0	3.0	3.0	3.6	4.7	17.8	8.3	16.0	13.6	13.6	13.6
Traffic	5.4	2.3	1.2	6.5	2.4	10.1	13.0	22.5	9.5	14.2	13.0	3.0	4.7
User's care	4.0	2.3	8.3	8.3	8.3	13.6	16.0	19.5	11.2	9.5	1.8	2.4	1.2
Management quality	4.2	2.2	6.5	8.9	6.5	12.4	13.0	27.8	8.3	8.9	4.1	3.0	0.6
Improvement is needed	7.3	2.4	1.8	0.6	0.0	3.0	7.7	15.4	8.9	11.8	9.5	11.2	30.2
Will increase welfare	7.4	2.4	1.2	1.2	1.8	2.4	5.9	15.4	4.7	8.9	17.8	17.2	23.7
<i>2. Commitment to improvement</i>													
More funds needed	7.5	2.4	2.4	0.6	1.8	3.6	3.0	7.1	6.0	19.1	16.1	14.3	26.2
Citizens' financial aid	6.5	3.1	6.5	3.0	4.8	4.2	6.0	10.7	8.9	10.1	8.9	14.3	22.6
<i>3. Property rights configuration</i>													
Entrance fee	3.7	3.5	28.0	10.1	10.7	8.3	4.8	6.6	5.4	3.6	7.1	4.8	10.7
Controlled access	6.6	2.9	6.6	1.2	4.8	3.0	6.0	12.5	5.4	14.9	16.7	7.1	22.0
Friendly profitable uses	6.1	2.9	9.5	1.8	4.2	0.0	6.6	17.3	6.0	17.9	13.7	11.3	11.9
PRs to citizens	6.6	2.6	6.0	2.4	1.2	1.8	3.0	11.9	9.5	23.2	16.7	14.3	10.1
<i>4. Management capability</i>													
Central state	4.9	3.4	16.0	4.1	9.5	8.9	6.5	11.9	6.5	10.1	5.3	4.7	16.0
Local authorities	6.8	2.9	4.1	0.6	5.9	6.5	5.9	12.4	6.5	8.3	11.2	11.8	26.0
Management bodies	6.0	3.0	8.9	2.4	4.1	4.1	5.3	16.6	9.5	13.6	9.5	10.7	14.8
Environmental groups	7.5	2.3	3.0	0.6	3.0	3.0	3.0	9.5	7.1	17.8	17.2	14.8	23.7
Organized citizens	6.7	2.6	5.3	0.6	2.4	1.8	7.1	12.4	12.4	14.2	15.4	13.0	15.4
All citizens	6.5	2.8	5.3	1.8	3.0	3.6	9.5	11.2	11.8	10.1	16.6	10.1	16.6
Specific citizens	5.6	2.6	7.7	1.2	4.1	4.7	7.7	17.2	15.4	17.8	11.2	6.5	5.9
Private investors	5.4	2.9	11.8	2.4	3.6	6.5	8.3	16.6	13.0	9.5	11.2	7.7	8.9

	mean	s.d.	0 (%) 0: low / disagree	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	6 (%)	7 (%)	8 (%)	9 (%)	10 (%) 10: high / agree
<i>5. Trust</i>													
General trust	4.4	3.0	12.5	5.4	9.5	6.0	14.9	17.3	6.0	7.7	7.7	3.0	10.1
Friends	7.7	2.3	2.4	0.6	2.4	0.0	3.6	9.5	3.0	9.5	26.8	20.2	22.0
Organized citizens	4.6	2.4	9.5	2.4	4.8	13.7	11.3	26.8	8.9	11.3	4.8	5.4	1.2
Experts	4.2	2.6	13.7	7.7	8.9	4.2	16.7	16.7	13.1	9.5	5.4	2.4	1.8
Local authorities	3.1	2.5	19.0	14.9	11.3	10.7	12.5	15.5	6.0	3.6	4.2	1.2	1.2
Central state	2.3	2.7	40.5	13.1	7.7	7.1	6.5	12.5	4.2	3.0	1.2	2.4	1.8
<i>6. Cooperation with</i>													
Friends	7.8	2.2	0.6	1.2	1.8	1.2	2.4	10.1	5.9	12.4	14.8	22.5	27.2
Organized citizens	6.7	2.4	3.6	1.2	2.4	3.6	2.4	16.0	11.8	15.4	17.8	14.2	11.2
Experts	5.8	2.8	7.7	4.1	4.7	4.7	3.0	18.9	13.6	7.7	15.4	11.2	8.3
All citizens	4.4	2.9	14.8	6.5	5.3	13.6	7.1	18.9	8.9	7.1	7.1	5.3	4.7

The research also explored adolescents' views and attitudes towards the (re-)configuration of the property rights toward provision and financing of UGS (see section 3 in Table I). In particular, we asked them whether they would be willing to accept: first, the introduction of entrance fee, if successful policing, maintenance and overall improvement of UGS is to be achieved, second, the introduction of controlled access, if prevention of vandalism and degradation of UGS is to be achieved, third, the allocation part of UGS to profitable but friendly uses (e.g. cafe, snack bar, soda fountain, etc.), if this provides necessary funding for UGS improvement, and finally, the allocation of property rights to groups of citizens (i.e. environmental organizations, elderly associations, etc.), if this contributes to successful policing, maintenance and improvement of UGS. Teenagers were particularly negative to the idea of entrance fees as a means for qualitative improvement of UGS (mean: 3.7, majority of responses, 28.0%, in the lowest value), whereas they had a rather positive stance to the proposal for controlled access in order to prevent acts of vandalism and degradation (mean: 6.6, most responses, 22.0%, in the highest value). Similar were their answers regarding assignment of property rights to organized groups of citizens for maintenance reasons (mean: 6.6). As regards the possibility of UGS financing through the assignment of property rights to profitable but friendly uses, most respondents (54.8%) were rather positive (mean: 6.1), but there have been a few who were negative (15.5%) or neutral (29.9%).

In the next question teenagers were asked to assess the competence of various stakeholders/entities to efficiently manage the resource (part 4 in Table I). These are: central state, local authorities, specialized management bodies, environmental groups/organizations, organized groups of citizens, all citizens, specific citizen groups (such as, the most frequent users or those living close by) and private investors. The respondents regard that environmental organizations are the most capable to efficiently manage the UGS (mean: 7.5), followed by local authorities (mean: 6.8) and local organized groups of citizens (mean: 6.7). Next they ranked all citizens together (mean: 6.5), specialized management bodies (mean: 6.0) and specific citizen groups

(mean: 5.6). Interestingly, last scored private investors (mean: 5.4) and the central state (mean: 4.9). Overall we see teenagers to credit alternative, bottom-up schemes of UGS management and to stand rather cautious towards the two conventional approaches to commons dilemmas (i.e. “privatization” or “nationali-zation” of the resource).

Finally, the research investigated the possibility of adolescents’ collaboration in the development of some kind of user-based initiatives toward the sustainable management of UGS. This was done through a set of questions which explored the degree of their dependence on the resource, the level of trust (that is the quality of their social capital), and, finally, the willingness to cooperate with others toward the self-governance of UGS as a commons.

The first question addressed the frequency of UGS use. As Figure 1 reveals, although there is a percentage of young people who rarely visit UGS (11.2%), more than 17% of the respondents visit UGS every day, and over 68% at least once a week. These figures illustrate that teenagers in Greece use public green at a great extent, and certainly much more intensively than adult population (see [2]).

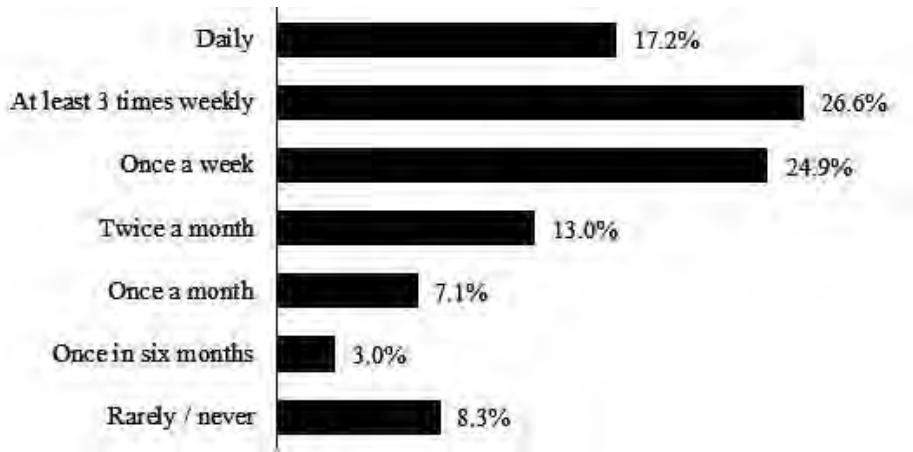


Fig. 1: Frequency of UGS use.

The next two questions (see part 5 in Table 1) addressed the quality of adolescents’ social relations and trusting behavior (which is the main dimension of social capital). As discussed, these constitute key factors for breeding cooperation in collective-action situations. First, the trusting attitude of teenagers was measured using a semantic-differential question with the following contrasting options: “I do not trust someone until there is clear evidence that (s)he can be trusted,” indicating low trusting behavior (scored 0), and “I trust someone until there is clear evidence that (s)he cannot be trusted,” indicating high trusting behavior (scored 10). The results make evident the lack of trust (and, thus, the social capital deficit) that characterizes adolescents in

Volos (as well as citizens of Volos in general, see [2]). In particular, 33.4% of respondents described themselves as rather reserved and suspicious (12.5% picked the lowest point in the scale), 38.2% placed themselves on the middle of the scale, and only 28.5% put themselves on the high end of the trusting spectrum.

Since interpersonal trust is a relative concept, depending on who it is directed at, the next question attempted to assess the degree of trust teenagers have on various people/entities: friends, organized citizen groups (such as, environmental groups, elderly associations, etc.), experts/scientists/technocrats, local authorities and central state. As expected, friends is the most trustworthy group (mean: 7.8), whereas, generally, teenagers appear rather reserved towards organized groups (mean: 4.6) and experts (mean: 4.2), and mistrustful towards the state, both at the local and central level (means 3.1 and 2.3 respectively).

Finally, we examined whether teenagers had previous experience on civic engagement and how willing they would be to cooperate with other people toward the self-governance of UGS. As regards the former, less than one third of the respondents (30.4%) reported that they participate in associations, cooperatives, clubs, etc., something which is in accordance with the previous finding of social capital deficit. As concerns their attitude toward cooperation for the self-management of UGS (see part 6 in Table 1), in general adolescents were willing to team up with friends and peers (mean: 7.8) and to lesser degree with organized citizens, such as environmental groups (mean: 6.7), experts, scientists or technocrats (mean: 5.8) and all citizens (mean: 4.4). More specifically, 76.9% of the respondents were positive to cooperate with friends and persons they know well (whereas 4.8% were reserved), 58.6% were positive to join forces with organized groups of people (whereas 10.8% were rather reserved), 42.6% were keen on to team up with experts (and 21.2% not), but only 24.2% were happy to work together with all people, in contrast to 40.2% who were unwilling, indicating, once more, the low level of trust towards adults and other people in general that teenagers exhibit.

CONCLUSIONS

UGS constitutes a kind of urban commons that runs into serious risk of mismanagement, degradation (both in terms of quality and quantity), and even destruction, the so-called “tragedy of the commons”. The solutions offered by the mainstream (economics) literature point to either privatization or nationalization of the resource. However, the framework and conditions in many countries (and in Greece to an extent) are not facilitative enough for the successful implementation of such governance structures (for instance, private property rights on the resource are not clearly defined or reliable, policing and enforcement mechanisms are deficient, state institutions are rigid and bureaucratic, local authorities have limited financial resources, etc.). On the other hand, as Elinor Ostrom and other scholars have demonstrated, the users

themselves can work up collective institutional arrangements (more socially acceptable and with lower implementation costs) which enable them to ensure efficient use and the longevity of the resource in question.

Teenagers, and young people in general, are considered to be among the most frequent users of public green space. However, recent years have seen an alarming decrease in independent use of such spaces by teenagers (with little change for the adult groups), which could cause them to miss out on the benefits associated with nature contact. A number of academics and policy-makers (e.g. [9], [41]) have suggested that in order to increase usage and facilitate the integration of youths as users into UGS, scholars need to examine more thoroughly and systematically the adolescents' views, perception and patterns of appropriation of various green space types. This becomes particularly important if one considers that teenagers constitute not only a substantial user group but also a very active one, capable of articulating new activities and practices on urban green that may give rise to pioneering forms of collective action and interaction [18]. Yet, research on such topics has been, until recently at least, very limited.

The current chapter seeks to shed light upon these issues examining how teenagers understand and appropriate urban green, and whether they are willing to get involved in its collective management, using Volos (one of the five largest Greek cities) as a case study. Aspects examined include the perceived conditions of UGS, the possibilities of funding, management and maintenance of the resource, the adolescents' dependence on it, the quality of their social capital, and their willingness to join forces toward self-governance of city's UGS. The main findings can be summarized as follows.

Despite their comparatively small quantity, UGS in Volos are considered sufficient and well accessible, but of low quality, in relatively poor condition and without efficient management and proper care. Teenagers highlight the important role urban green plays for the quality of life and citizens' welfare, necessitating more funds to be allocated for its improvement and upgrade. On these grounds, they are not only willing to accept a number of institutional changes that would ensure maintenance and the sustainability of the resource (such as, controlled access to UGS and allocation of property rights to profitable uses and to specific user groups), but also they are eager to contribute financially towards this end.

In a similar vein, youngsters value highly less conventional, bottom-up, user-based governance solutions and dispute both central state's (nationalization) and private sector's (privatization) ability to efficiently manage UGS. They are quite willing to collaborate with their friends and classmates towards the development of such schemes, as well as to participate in projects run by organized groups of users (environmental organizations, elderly people, etc.). However, they are rather reluctant to team up with experts, scientists, technocrats and with all people, something which

might be due to lack of such experience and culture in general, and/or due to lack of trust in adults.

This brings us to the last point we would like to call attention to, which is teenagers' trust deficit in the state's functions and institutions. This raises concerns regarding their political maturation and future participation in political processes, which are essential to personal development and active citizenship and a fundamental component of a free and democratic society.

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Building a theory on co-creating a Cyberpark: lessons learnt from the COST Action CyberParks and the Flussbad Project, Berlin

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Abstract - *The aim of this chapter is to discuss the production of mediated public open spaces by investigating the impact of ICTs in a participation process, and from this discussion to develop arguments to base a theory on co-creating a cyberpark. It focuses on how digital interconnectivity, through its potential for engaging potential users, gives rise to new forms of agency in the design of public spaces. The conceptual framework is backed by the COST-Action Cyberparks, and the Project Flussbad, both tackle the reflection of the proliferation of ICT-related media in public open spaces.*

Keywords - public open spaces, cyberpark, co-creation and participation, ICT, digital habitat.

INTRODUCTION

This chapter proposes to reflect on the interactions between people, places and technology in creating a cyberpark, a kind of public open space mashed-up with technology. No doubt, communication and information technologies (ICTs) have greatly changed society and the way people communicate and interact, and this trend will continue to proliferate as the digital realm is more and more pervasive in people's lives. At the same time, ICTs enable people to capture and share personal experiences in new ways that create new forms of learning, gathering and communicating across multiple contexts (Buchem & Sanagustin, 2013). This raises the question if among these contexts ICTs are changing the way people use urban spaces, and beyond that, if and how ICTs inspire the emergence of new forms of use of public spaces and even the emergence of new types of spaces.

Creswell (2009) identifies home, work, public and virtual spaces as digital places of consumption. Hence, public and virtual spaces are taken as two different places - but

we argue that this division is blurring, and with the penetration of digital technology in people's life a new kind of space is emerging: a cyberpark - where ICTs enhance the physical spaces. In the context of digitally mediated public spaces, cyberpark encompasses two different perspectives: From a spatial planning perspective, it is seen as a new type of urban landscape where nature, society, and (cyber)technologies blend together to generate hybrid experiences and enhance people's quality of life. From a technology perspective - cyberpark is the virtual meeting places in form of social media concerned with public open spaces, their uses and users. The concept of a cyberpark offers a promising line of thought as technology opens different ways to access the physical space and enhance its socio-spatial dynamics (Smaniotto et al., 2017).

There are several ways to tackle the penetration of ICTs into a cyberpark. This work focuses on the increasing the understanding on approaches for the co-creation of public open spaces through support of digital devices. In recent years, it has become increasingly clear that interventions designed to encourage citizens/community participation in policymaking and local development produces many important and more long lasting benefits. This work is aimed at providing a broad review of the main approaches for co-creating a cyberpark, considering cooperation, participation, partnerships, co-production, and other similar approaches, and at reflecting the experiences gained in the projects CyberParks and Flussbad in Berlin (Germany) to contribute to the formation of a theory on co-creating cyberparks. For this purpose, it is necessary to have a look at two current trends: the "digital mesh" and the enhanced governance, i.e. the citizens' participation in the production of urban environment. It is important to note that *production* includes all steps in the public spaces development, from its conception, to design, implementation and management. We argue that there is a call to increase the knowledge on the opportunities ICTs open up for making urban spaces more inclusive, and to do so to better understand the socio-cultural, spatial, and technological factors as well as their interactions, in order to provide arguments for decision-making processes and with this, initiate the necessary changes towards improving urban liveability and democratic processes. The focus on the relationship between the digital and physical space or the ways, in which virtual or digital technologies interact and entangle with physical spaces, opens up different perspectives to understand the arising of mediated urban spaces. For this an integrated framework could be useful, especially for aiding the development of people-friendly smart cities or the building of the communities' capacity to engage with their environment. As we noted above, new technological innovations are entering both the market and the city at a rapid pace, but they enter so fast that they have detrimental effects. For example, new 'smart' screens can be installed in public open spaces to enable people to look up local information, but if that screen is located at a height that cannot be accessed by people in a wheelchair or children, or if the screen is not user-friendly to those with limited technological literacy, then technology bears an exclusionary dimension.

Therefore, an integrated framework must be adopted, one that enables a full overview on users and their needs and preferences, and allows through ICT tools that users are actively encouraged to participate in the production of public spaces, bringing together people in people-friendly urban spaces.

CYBERPARK – A CONCEPT FOR A TECHNOLOGICALLY MEDIATED PUBLIC SPACE

This work takes up the definition of a cyberpark coined by the Project CyberParks, as the mediated physical space and the virtual meeting places in form of social media. In this context, technology can be used to give or gather information, to aid co-creation of space, to allow crowd sourcing of information and opinions, and to facilitate effective sharing or self-monitoring of activities (CyberParks, 2016).

According to the purposes the intertwining of ICTs in public spaces, as proposed by the CyberParks Project, the use of ICTs can be primarily structured in three major dimensions: (1) for *research*, i.e. as a way to produce, collect, manage, mediate and interpret data, (2) for *design*, i.e. as a range of possibilities for conceiving and/or creating public spaces, and (3) for *implementation*, i.e. by looking onto the transformations of the material production of space and and/or social interaction triggered by the continuous introduction of new hardware and software.

Research through ICTs comprises acquiring, archiving, analysing and organizing, of information, which can be qualitatively and quantitatively sourced manually (collected by researchers), interactively (automatic processes triggered by the user) and automatically (autonomous sensory data collection). An interface usually translates input into data. To get relevant outputs it is necessary to well plan how to approach the information, collecting and storing data. Data processing, analysing and interpretation enable the production and dissemination of knowledge. *Design* through ICTs can foster conceiving processes by means of conceptualisation and visualisation, and has a strong impact on creation processes in the planning phase (co-creation, auto-creation and self-creation). *Implementation* of ICTs in public spaces can be driven by software and applications, such as to improve awareness or deliver services like location guides, and/or by the building of hardware or infrastructure, i.e. wi-fi antennas, GLS satellites, internet of things (IOT) tokens, or the next smartphone generation.

These examples evidence that there is no distinctive boundary that could be drawn between software and hardware with respect to cyberpark, as well as in the matter of digitalization in general: we are at a point where the presence of digital hardware is so ubiquitous that new public spaces might be created without much spatial-material alterations by creating new relations between existing hardware through new software. The cyberpark approach, aiming at the production of public spaces that meet the communities' needs in "networked societies" (Castells et al., 2005), makes the call to rethink the interactions between people and spaces, and in our case with public

spaces and their enhancement by ICTs means. To do so, the production of public spaces has to encourage and enable the concerned community to participate actively in the process, be it the development of a concept, the implementation of a plan or the maintenance of a public space. The co-creation process requires the willingness of stakeholders to shift roles, as they all should be drivers and not merely participants or the targeted end-users. Co-creation explicitly refers to an active and comprehensive involvement of stakeholders, making use of their local knowledge as a resource for maintaining and improving public spaces quality (Molin, Fors, & Faehnle, 2012). Co-creation makes the call for clarifying how different contributions will be considered, even if the initial idea grew individual or spontaneously; following steps have to be prepared in order to make better use of local knowledge and the collective intelligence available. The challenge surely is to harness the collaborative power of networks, be it of ICTs, of people or of knowledge.

THE ONTOLOGY OF CO-CREATING A CYBERPARK

There are different terms being used to define the citizens' participation in decision-making processes, such as participatory design, public participation, co-operative design, co-design, etc. This work adopts the broad understanding of *co-creation* as a shared process of making better and more inclusive places. It is backed by the understanding that participation and sharing knowledge are key mechanisms in sustainable development, as demonstrated by several policies and white papers of EU, UN, UNEP, etc. Co-creation of public spaces is understood as an actively driven (planning, design and management) process, which enables the participation of not only professionals or officials but also people with interest in and/or users of the space. Co-creation is based on networks and flows of information, data and resources, and is largely motivated and mediated by ICTs as for example by social media used to appropriate spaces for political expression. ICTs can radically improve processes simply by the speed and vastness of data collection, and their processing, distribution and visualization accessible to all participants (Mayer-Schönberger & Cukier, 2013).

Co-creation is driven by the idea that all participants should be capable of providing theoretical and practical input as best as possible, making local knowledge the driving force of the process. It reinforces the call for citizens'/ user's empowerment, as the citizenry is increasingly seeking a more active role beyond just accepting council decisions (Molin et al., 2012). As a basis for co-creating, the participants should agree on an open process with unknown outcomes although following a common strategy. Co-creation can be 'constructed' in different ways and with different ICT support, concatenating different stakeholders - community, experts, and politicians - but the outcome should be a shared result. Co-creation is not only innovative and inventive but also always political. Its implementation requires a paradigm shift as it asks for understanding citizens as active, creative, decision-making equals rather than passive recipients of top-down design, towards developing ideas from the bottom up. Co-creation

is therefore a dynamic, adaptive and self-aware process. Producing spaces with and for new audiences - through mixed use and maximising activities potential - can make these spaces more welcoming, inclusive, safe and accessible for all. Such space, where users feel invited, encourage them to spend more time outside and foster interaction among communities (Gehl, 2008).

FLUSSBAD BERLIN PROJECT – TURNING A PART OF THE SPREE RIVER INTO AN ACCESSIBLE PUBLIC WATER SPACE

Flussbad Berlin aims at transforming a neglected 'fluvial' area around the Museumsinsel in the centre of Berlin, into a space to be regularly used by inhabitants and visitors. To mention only the World Heritage status of the area, the project is plastered with technical, administrative and also ideological challenges. Flussbad Berlin is a contemporary urban development approach initiated - not by the municipal administration, but rather by a non-governmental entity, also called 'Flussbad Berlin, e.V.' (registered association). Based on a fictional idea from 1997 it has become a broad movement steered by already 300 association members and another couple of thousand supporters, including people of all political parties and the local administration. To include these different groups of interests within the project, a process had to be set up to accommodate needs and arguments in a most transparent manner without neglecting the original idea of a small group of visionaries.

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Although the association has been funded to develop the original idea into a proper project plan, it has still no official status within the urban development department. Regardless of the wide support it lives a parallel life next to the on-going urban development projects in Berlin. This is rather disappointing, but how can such a citizen's movement be included in administrative policies and developed parallel until its implementation? This is the challenge.

The project consists of several key issues, mainly derived from the above-mentioned challenges that have to be addressed. The very complex intertwining between responsibilities has to be simplified in order to be understandable for anybody who wants to be involved in the project. The knowledge transfer needs to run between its original inventors (individuals), the citizen (anybody involved) and the public administration (bodies elected by the citizens to be formally responsible for the urban development process). This requires a change in attitude towards urban planning.

To tackle these issues, the project uses ICT to collect, structure, analyse and distribute data in order to address its broad range of collaborators with their individual qualifications in order to reach the best result possible for everyone involved in the process. The individual topics that are processed vary between very small and very large scale, like in environmental issues (i.e. creating stepping stones for migrating hydro fauna), in policy (i.e. strengthen political agenda for the project), informing and discussing (i.e. public panels or dedicated planning authority presentations), technical

issues (i.e. technical solutions for channel flooding situations, integrating planning into on-going neighbourhood projects), negotiating (discussions with conservationists, property owners etc.) water hygiene (i.e. water and sewage company, bathing water regulations), social and economic (i.e. how such interventions will affect gentrification in the neighbourhood), etc. The association is working on all those issues simultaneously but of course with very different and changing priorities.

One concrete example is the issue of creating a way of monitoring water quality in real-time. Due to the structure of the city's sewage system, the Spree River water quality has specific tipping points tied to weather, use, and maintenance patterns, resulting in sewage spillovers. Human access to the water after those spillovers is a hazardous and unhealthy risk. Flussbad Berlin currently plans a natural filter system to treat the water around those tipping points, in order to reach a permanent swimming water quality. If these tipping points could be 'filtered' out of the use pattern in the projected Flussbad area through a software, Berliners might be able to swim in the Spree without the installation and maintenance of expensive hydrological hardware such as a material filter systems. ICTs solution can also send back information to the municipal water treatment company to optimise the waste water flow within the sewage system – an effort already in progress. The benefit thus does not only lay in the direct effect for the Flussbad area but can be adopted and integrated with other existing systems as well. The success of such programme is of course not limited to its geographical location within the Flussbad area, but can be "exported" to other locations and use cases.

Realising such a ICTs solution will only be feasible if various stakeholders such as the water treatment company, the council, the public administration, federal departments, scientists, ethnologists, developers, etc. co-create in joint effort. The challenge is to bring them together with their individual knowledge, institutional and individual (ICTs) standards, and their various political, technological, legal, administrative and economic aims.

PERSPECTIVES ON CO-CREATION FOR A CYBERPARK

The analysis of *co-creation* as an alternative and experimental way in engaging stakeholders or actors in the production of cyberparks sets out an enhanced understanding of co-creation as learning space improved by opportunities opened by the proliferation of ICT devices. Both Projects (CyberParks and Flussbad Berlin) are explored as case studies with focus on ICT-based community building processes. The central challenge remains how to use ICT and technological innovation to keep the human scale and create public urban spaces that meet a peculiar community's needs instead of the mechanical multiplication of high-tech smart cities, once the concept of smart cities and its ideology are being mostly discussed around the technology to solve urban problems. We however argue that smart cities have to be people-centred. Or for whom should cities be optimized for?

Another aspect of digital technology and its ubiquity refers to the amalgamation of physical and virtual spaces. The blurring of boundaries between them does not necessarily mean we lose the sense of place; rather we might better consider technology as multiplier of spaces, than it adds to physical spaces a digital layer. The interconnection can provoke different and maybe new social practices. Needless to say, that the overlay of physical and virtual situation, does not mean the virtual spaces can be a substitute of the physical spaces. Still in the digital era people need the contact with nature and each other (Thomas, 2014)

Theoretically, a co-creation approach for public spaces is an experimental environment, where users together with researchers, local stakeholders, planners and public institutions come together to search for new solutions or development models. All parts involved become active participants in a process towards developing innovation and fostering commitment. The social networks play in the process a relevant role. According to Castells (2001), social networks based on local communities have general characteristics, although different motivation contribute to their building and development. First, social networks generate and disseminate information (from/by local authorities, residents' associations, groups of interest) and assume the role of transport of day-to-day information in the city/community; and second, they facilitate the virtual interaction and exchange of information among community members.

Further, ICTs systems enable the integration of councils and people - who, in other contexts, could hardly join such systems. Engaging with public spaces generates material and non-material practices that have influence in peoples' and communities' life. These practices encompass the routines and movement of individuals and/or groups go on with their everyday life within a society and in our case, in urban spaces. These practices evidence the role of public spaces as the connective matrix in the urban fabric, as they afford an essential human need of interaction, gathering and exchange. Public spaces support the capabilities of people to improve their prosperity, health and wellbeing, and to enrich the social relations and cultural understanding. Therefore, they need to be connected, safe, and accessible, on the one hand, and inclusive and meet the community needs, on the other. Furthermore and above all, it is in public spaces that some of the best and the worst characteristics of urban life and society are created, observed and reproduced (Šuklje-Erjavec, 2010).

In the following two aspects are selected - as they revealed as essential towards effective co-creation processes:

Rationale of Co-creation

- As a cities-driven approach, the process has to set current and potential users in the centre of the action - because it is ultimately for them that cities are built.
- The extent of citizen's participation and involvement has to be clarified in advance, in order to not spark overly expectations and requests that cannot be addressed or fulfilled.

- Social reporting is a useful way to get people involved. This means on the other hand that actions have to follow the reports, otherwise it is just another information lost that get lost in the cyberspace.
- Social and spatial changes are integral to each other - both call a rise in the adaptability in planning - as the process changes with the development in a circle under mutual influence.
- Making use of local knowledge and capacity of actions is central – i.e. conceiving co-creation in a particular way to value the comprehensive local knowledge that the citizens bear, which can support advancing situated knowledge.

The technology interface

- ICTs and their devices generate information and data - continuously in real time, which are searchable and/or editable. Information can be easily personally filtered and in this way meet interest groups.
- ICTs provide data on obtained results - the right indicators should enable transparency on the progress made. They can provide insights and values that can be shared by all.
- The importance of the technology and social media is evident since it determines the way that the message is being transmitted and perceived. They make possible to jump into the discussion of the relation between media and the environment.

CONCLUDING REMARKS

Co-creation is the new magic word in planning. It is indicating a turn in the modelling and application of collaborative environments and strategies. Co-creation transcends the mere gathering of facts and involvement of diverse stakeholders, by providing, maintaining, and nourishing a space for producing together beyond intellectual discussion, and talking together has alone a positive effect on the implementation of alternative uses/concepts of public spaces. Through co-creation, the design and use of these spaces can be more locally rooted and therefore pave the way for fostering willingness and capacities for future collaboration. The analysis of CyberParks and the Flussbad Berlin enable the drawing of the following lessons learnt:

- Technology fixes do not solve urban problems and smart cities should be cities for people. The role of technology has to be merely that of a facilitating medium.
- Co-creation of public spaces builds community ties, increases the sense of place, and fosters a shared investment in the future of a community (not only in financial terms, but in capacity building and local resources).
- Quality of public spaces remains a central issue, even in the digital era. No one will leave their home and use a public space, if it isn't safe or doesn't offer the requirements. The quality public spaces make up the richness of urban life.

It is important to recognize that the production of public spaces, with or without ICTs, is a never-ending process and that to a large extent we live in “yesterday’s cities” (Resilience Alliance, 2007), as current features, public spaces, buildings, roads, networks and other urban elements, are built on the past and reflect former decisions and processes. This raises the question what kind of city is our legacy for the forthcoming generation. And getting back to the ICTs issues, their increasing penetration in our lives raise a series of questions that need to be addressed in the future: Does co-creation processes with ICT support also mean more people can be involved in decision-making? How powerful is the “wisdom of the crowds”? Will minorities or less powerful people still or better be heard and raise their issues? Is co-creation through ICTs more democratic? At this point these questions remain unanswered but co-creation as a collective learning framework, can in the future provide better insights.

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Process of making the hearth of the neighbourhood: from analogue to digital public space design

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Abstract - We are living in a period where communities and individuals have the chance to operate more directly in the city, and present their own opinions and proposals on how the city can be developed and designed in accordance with their needs and expectations. This period is also characterised by change in the general approach to the city as self-organised system that is free from the division of bottom and top urban players. This has led to the creation of a new, open and collaborative city-making method called “urban gaming”. On the one hand, the game is a laboratory for “understanding and strategizing” and on the other it is assumed as a ‘generative’ method. This tool could also be seen as an interface for the creation of knowledge and negotiation in the abstract decision-making process and material construction of the city. The game itself can be designed depending on the specific situation and scale to achieve more sustainable plans and proposals. Due to its complexity and the specificity of urban problems, urban game may use analogue as well as digital techniques. To illustrate this contemporary tool, the present paper will use the experience of the urban gaming process that was held in Belgrade. The game was created and implemented to develop a local public space, based on the neighbourhood initiative addressed to the representatives of the local government of the City of Belgrade. In this case study, seen as an urban experiment, special attention is placed on the different phases of the process, the results that have been achieved, as well as the use of analogue and digital tools during the application of the method.

Keywords - citizen empowerment, urban gaming, local public space, Belgrade, Serbia

INTRODUCTION: EMPOWERING CITIZENS TO ACT AND CREATE COMMON SOLUTIONS

The involvement of citizens and other stakeholders in urban design has been studied for decades. As a result, different forms of collaboration and participation have been created and tested. However, there was a constant lack of understanding between various stakeholders, due to differences in thinking and language used (Steino, Bas Yildirim and Ozkar 2013, Forester 1980, Friedmann 1973). This is best illustrated in a situation whereby “non-designer professionals and non-professional stakeholders

alike typically lack the capacity to fully understand the spatial implications of planning and design decisions, unless they are demonstrated by the use of relatively detailed architectural models, whether physical or virtual” (Steino, Bas Yildirim and Ozkar 2013, 195).

The cause is seen in the complex nature of urban design problems that cannot be distributed and solved individually by different professionals, but which must be solved collaboratively (Steino, Bas Yildirim and Ozkar 2013, Achten 2002), and for which communication is the key method. Furthermore, this also requires the redefinition of the role of urban designer in relation to the process of change (Vukmirovic 2015). Involving residents in the decision-making process further empowers them to take responsibility and resolve their problems. Lefebvre’s notion of ‘right to the city’ is about empowering the users of the space (Lefebvre 1996), which calls for a paradigm shift in the way we conceive the role of an architect. The architect needs to be a facilitator who recognises the user as potential resource and involves him/her in creating an architecture that is socially and culturally responsive.

In his research on how citizens envision the benefits of smart cities, Lighting¹ has discovered that citizens want more ways to interact with their cities (The Economist Intelligence Unit 2016, 3). The results have shown that “less than one-third of citizens (32%) are currently providing feedback to their local authorities, over one-half say they would like to do so” (The Economist Intelligence Unit 2016, 3).

The European Commission, in its report on The Cities of Tomorrow, also pointed out that the new governance models should be based on citizens’ empowerment, participation of all relevant stakeholders, and innovative use of social capital. Consequently, new design and delivery models are needed, and cities also must adopt innovative approaches to major social challenges. One way of doing this “is to focus attention on public opinion about urban amenities and on adjusting priorities according to recommended changes, or to use wider participatory processes, such as participatory budgeting, foresights involving citizens, etc.” (European Commission — Directorate General for Regional Policy 2011, 94). Planning is seen as an open and flexible process, where all stakeholders and citizens have the same rights and equal significance, while new forms of real participation need to be developed. These new forms of participation demand a new collaborative method that should be able to merge urban rules and interactive negotiation.

PUBLIC SPACE

Public spaces, seen as a vital ingredient of successful cities (Gehl 2010), can help in creating a sense of community, civic identity and culture. According to the UN Habitat (2016) the liveliness and continuous use of public spaces lead to urban environments

¹ This study by The Economist Intelligence Unit (EIU), supported by Philips Lighting, investigates how citizens and businesses in 12 diverse cities around the world—Barcelona, Berlin, Buenos Aires, Chicago, London, Los Angeles, Mexico City, New York City, Rio de Janeiro, Shanghai, Singapore and Toronto—envision the benefits of smart cities.

that are well maintained, healthy and safe, making cities attractive living and working places. Because of the importance of public spaces “urban planning has to establish and organize public spaces, while urban design has to facilitate and encourage their use, in the process of enhancing a sense of identity and belonging” (UN-Habitat 2016, 4). Some paragraphs of the Charter on Public Spaces (UN Habitat 2015) indicate that:

- Paragraph 7 - Public spaces are a key element of individual and social well-being, the places of a community’s collective life, expressions of the diversity of their common natural and cultural richness and a foundation of their identity². The community recognizes itself in its public places and pursues the improvement of their spatial quality.
- Paragraph 17 - Public space is the gymnasium of democracy, an opportunity for creating and maintaining over time the sentiment of citizenship and the awareness of the roles that each of us has and can have with regard to one’s daily lifestyle and to one’s living environment.
- Paragraph 20 - Designing public spaces also means taking into account alternative and creative practices based on new techniques of communication and urban usage.

The last paragraph stresses the need to explore new tools and methodologies that will gather communities and specific groups in creating, designing and managing public space. Moreover, these tools need to “allow designers and promoters a simulation of creative practices, such as planning and designing streets and public spaces” (UN-Habitat 2016, 79). In accordance with these principles, this paper will present the concept of urban gaming as a possible solution, one that has the potential to transform urban communication and collaboration into a method for generating vibrant public spaces and neighbourhoods, and a humane city.

URBAN GAMING, AND ITS ANALOGUE AND DIGITAL MODES

Keeping in mind what was stated above, especially the aim of fostering greater involvement of citizens in the process of urban planning and design, and overcoming problems relating to the lack of understanding among stakeholders, the recent innovative trend in urban participation is gamification. Its appropriateness for this purpose is seen in its capacity to encourage engagement through adding game-like elements to otherwise non-gaming environments. More precisely, it is a method that “translates elements from the digital and analogue games to the dynamics of planning, creating engaging city-building simulations to help make better policies, to generate new design ideas and to enhance communication between different stakeholders” (Ivkovic 2015, 4).

Due to its potential, one of the oldest learning methods of human beings (Huizinga, 1938) is the language of the future (Duke, 1974), the most elevated form of investigation

² As expressed by the European Landscape Convention.

and the most effective and fun way of intervening in and fixing real problems. Observing the city as a holistic self-organizing system, run by multiple urban stakeholders, Tan (2014) used the concept of gaming in the development of a new instrument that facilitates and makes the process of urban participation efficient. The argument for that is found in three simple principles: games are systems that support self-organization; cities function as self-organizing systems³; and games can be used to organise cities. In regard to that, gaming is conceived as “a laboratory test for cities, where urban rules are adapted and shaped by negotiation, and subsequently studied and further developed through proposed method of Generative City Gaming” (Tan 2014, 56-57).

In addition, there are two more arguments in favour of the game. One deals with the game environment in which multiple players coexist, compete and learn that if they collaborate with other players they can better advance their own goals (Tan 2014, 123). The other is related to the potential of gaming seen in its hybrid nature “of visual and verbal, two way and interactive, inclusive and engaging from infants to elderly of cross cultures”) (Tan 2014, 127).

Generative City Gaming has four main components: **players, interface, process and outcomes**. The players refer to different stakeholders – “urban players commit to shared visions and define own responsibilities to implement outcomes of the City Gaming” (Tan 2014, 137). The interface⁴ is characterized by the visual and verbal representations of urban processes and formations, integrated in a simple game environment. The process is incremental, ensured by simple and dynamic rules, and open-ended, where each sub-cycle in the game can produce particular outputs within the ongoing process. The outcomes vary with regard to the character of the urban problem as well as the size of the territory the problem is related to. It can be a decision, an unexpected partnership, a design idea, a precise collaborative urban design plan, an urban scenario, a common strategy, etc.

Considering the form in which it arises, urban gaming is in analogue media supported by digital technology. Its supportive role is reflected in the need for data processing, spreading the information about the game, its phases and outcomes, 3D modelling of the development scenarios, simulation of the results, etc. In general, digital media are used to further explain the generated ideas, as well as simplify and expand communication among different actors.

By exploring and testing the gaming method in different situations, Tan has noted that it can yield positive results and can successfully serve a range of purposes:

³ Self-organization is a process where some form of global order or coordination arises out of the local interactions between the components of an initially disordered system. This process is spontaneous: it is not directed or controlled by any agent or subsystem inside or outside of the system; however, the laws followed by the process and its initial conditions may have been chosen or caused by an agent (Portugali, Self-organisation and the City 2000).

⁴ Low threshold interface, a modifiable 3D model supports the communication of various experts amongst one another and with non-experts. Simple rules are designed in such a way that an ordinary player with limited knowledge of urban terminology can comprehend the consequences of complex notions such as urban density, maximum building height, scale, etc.

‘simulating self-organizing urban mechanism’, facilitating ‘collaborative design’, ‘conflict resolution’ and ‘unlocking conversations’, ‘mapping city initiatives and ideas’, ‘testing urban plan rules’, ‘temporary city planning and programming’, etc. The cause for the above can be found in stakeholders’ differences and readiness to take a stand during the game and share ideas. Another reliance of the outcomes of the game is seen in the political and cultural background of the project or the addressed site. Still, despite this, the gaming methodology as a way of promoting urban participation, or “a form of public consultation, can be applied for a large range of planning regimes such as in polarized and opaque planning procedures, as well as in negotiative and flexible planning conditions” (Tan, Negotiation and Design for the Self-Organizing City: Gaming as a method for Urban Design (A+BE | Architecture and the Built Environment) 2014, 369).

STRATEGICAL FRAMEWORKS OF URBAN GAMING

As previously stated, depending on the need, urban gaming can be applied to areas different in scale, starting with interventions on a concrete object, an entire block, a neighbourhood, or entire cities, determining at the same time strategic levels of participation, defined by all four key elements of the game (players, interface, process and outcomes). A workshop held as part of the 50th ISOCARP Congress, in the Netherlands in 2015, is a good example for testing this method on research areas of various size. The workshop questioned the challenges posed by the concept of Knowledge Region/City, and consisted of three segments, different in size: knowledge district – university complex in Delft; knowledge city – The Hague; and knowledge region – a space of four networked cities: Rotterdam, Leiden, The Hague and Delft.

TABLE 1: STRATEGIC FRAMEWORKS OF THE URBAN GAMING IMPLEMENTATION

STRATEGICAL FRAMEWOKS		
Size of the polygon	Small territory	Large territory
Scale	Small scale	Large scale
Urban units	Building Block / Public space Quarter	City Municipality City Region
Instrument	Public/Citizen workshop Game around the table Analogue + Digital	Digital tools and apps Online/virtual game Digital
Output	Urban transformations Design proposals	Plan Development strategy Vision/Foresight

Generally, strategic levels (see Table 1) covering the smaller scale are oriented towards concrete actions in the space, i.e. urban transformations which happen in common and open municipal public spaces. Unlike these, strategic levels of a larger scale can have the joint plan, strategy or vision of spatial development as their outcome.

On the small-scale strategic level, the process is usually facilitated in the form of a workshop with citizens, as opposed to the strategic level of larger scale, which uses contemporary tools accessible to a higher number of users, focusing on mobile and web applications, as well as certain social networking platforms. However, although traditional forms of communication, such as discussions, and defining the joint solution through dialogue are used to shape the future of urban transformations, which can be characterized as analogue, digital tools are also used on this level, above all to achieve more precision and concreteness in laying out the final solution.

Considering the advantages of this contemporary method (Vukmirovi 2016), with a view to enhancing participative models, the Belgrade City Government decided to initiate its application as part of the IME Project (Foli and Vukmirovi 2016). The mobile and web application *Beograđanin* (the Belgrader, see Fig. 1) was conceived to address the strategic level or larger scale with the aim of attracting large numbers of citizens to participate in the city's developmental projects and processes. The very name of the application indicates the need for active citizen participation in improving the quality of living in their city, on topics related to organizing public spaces, traffic, environmental protection, education, introduction of innovative services, new cultural and tourist services. The application software was developed in the form of digital referendum on various subjects, whose results are to assist the city administration to make decisions. The gaming method was developed to motivate citizens' participation, by enabling a system of point collection, which can be later used to claim the determined prizes (Grad Beograd 2016).



Fig. 1: The appearance of The Belgrader mobile application. Draft 01. Source: New Image, 2015.

On the other hand, this method can be used for the implementation of sub-project "Urban Pockets". Its aim is "to organize open spaces of small scale and local squares, positioned on crossroads, which can significantly contribute to liveliness of certain parts of the city and spatial entities, strengthening the local communities and generating local identity and recognisability" (Foli and Vukmirovi 2016, 38). This sub-project addresses several dozens of mapped locations (see Fig. 2) determined

through consultations with representatives of the local administration of the city's municipalities, encompassed by the General Urban Plan, and recommended by the citizens themselves.



Fig. 2: Locations addressed by sub-project no. 13: Urban Pockets. Source: Vukmirović, 2017.

The first application of the urban game, as a type of a pilot project, was conducted in September 2015, after an initiative on the Momo Kapor St. The administration's stance was that, if this implementation proved to be a success, it would expand the use of urban gaming to other locations which are part of the "Urban Pockets" project, and furthermore to other parts of the IME Project, thus making it an established practice.

URBAN GAMING ON PUBLIC SPACE LEVEL. CASE STUDY: MOMO KAPORA STREET IN BELGRADE

After part of the open public space of Mačvanska St. had been renamed Momo Kapor St.⁵ (see Fig. 3), there was a citizen initiative to remove the existing petrol station and organise the area according to the residents' views. Bearing in mind that the initiative, directed to the Belgrade City Manager and the Director of Urban Planning, was signed by dozens of dwellers of this street and neighbouring streets⁶, the representatives of the city administration decided to fully include the citizens of this area in the definition of the project's solution. Therefore, to address this issue, the authorities opted for urban gaming, which is in accordance with the strategic level of small scale.

⁵ Famous Serbian painter, writer and publisher; he lived in Nebojšina St, not far from the location which now carries his name, after an initiative launched by the daily newspaper "Politika" in April 2015. Momo Kapor St. was officially opened on 6 September 2015.

⁶ Mačvanska, Tamnavska, Mutapova, Sokolska and Stojana Protića.

The game was conceived and facilitated by Milena Ivković⁷. Following the structure of basic elements of urban gaming (players, interface, process and outcomes) the following topics present an example of urban game, prepared for this polygon.



Fig. 3: Inner location of Mome Kapora Street.

PLAYERS

As previously stated, the initiators of this project were citizens who live in the proximity of the location, who are to be its direct users. After the initiative was submitted, a round of consultations was held to prepare further steps. Those present at the consultations⁸ included representatives of the initiators, employees of the city administration, and experts in open public space design. The initiators, the citizens who live in the immediate proximity, and the representatives of the Momo Kapor Endowment, presented their aims and basic ideas about the future transformation of this space. Members of the Office of the City Manager, the Office of the Director of Urban Planning, and the Public Enterprise “Belgrade Roads”, familiarized the citizens with possibilities of what can be achieved and in what ways, led by the elements of the existing plan for the location, and the resources available for financing it. Urban game and public space experts determined and presented the urban game method as adequate for the specified situation, and explained the possibilities for its implementation to achieve the defined goals. In this way, the **roles** of the specific players were clearly defined not only in the game, but also in subsequent steps – its realization and implementation.

⁷ Ir. Milena Ivković, MArch lives and works in Rotterdam. In 2011, Milena started the Rotterdam-based office Blok74. The office focuses on developing new planning formats, such as urban gaming - a tool that uses gaming principles to understand and change the built environment.

⁸ Consultations were held in late August 2015.

INTERFACE

To conduct the urban game with the aim of redesigning the Momo Kapor St, a neighbourhood workshop was developed. The workshop was facilitated by Milena Ivković, who defined the rules and the appearance of the game. The rules were drawn based on the conclusions of the consultations, which included elements of urban planning for the specified location, and various ideas that were put forward by representatives of the local community. The plan determined the surface area of the intervention and some basic directives regarding the distribution of content, i.e. the ways the space would be used (Ivković 2015). On the other hand, the citizens who live in the neighbourhood stated that the primary character of the location should be a green oasis, while the representatives of the Momo Kapor Endowment suggested the design of a memorial to this author, which was to be adequately fitted into the character of the future space.

Considering the stated, the workshop aimed to respond to two basic assignments which dictated the method applied to communicating with the citizens. The first one was to design the future appearance of the space itself, for which the urban game method was applied. The second was to determine the character of the memorial, for which the survey method was used.

The rules of the urban game were defined to create a polygon to simulate the surface of the intervention and the elements which corresponded to various forms of urban equipment, texture and greenery (see fig. 4). The creation of a model of the future space was foreseen, using the stated elements in a way whereby citizens themselves placed the elements onto the polygon – a base for the game, printed on paper of adequate size. The base was placed on a table, which was positioned at the subject location during the workshop. The table was accessible from all sides, citizens could assemble around it, while the base itself was oriented so as to reflect the true orientation in space. This additionally helped citizens to figure out the rules, as well as the existing and future layout of the elements.

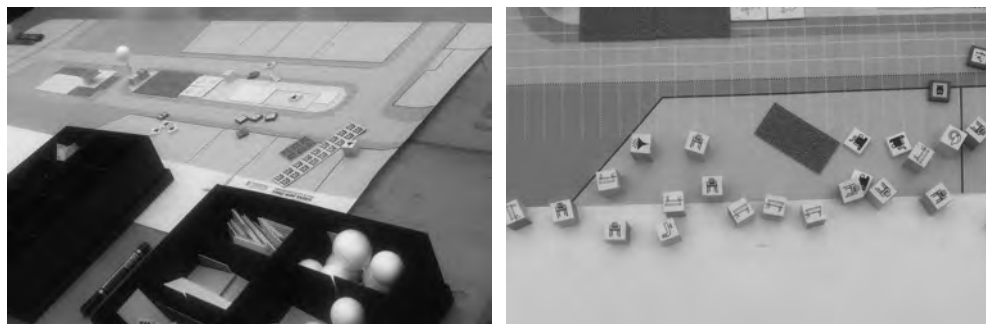


Fig. 4: Simulation polygon and elements of the game designed by Milena Ivković. Photo. M.Vukmirović.

To specify the spirit of the future memorial, the author of the game formulated two questions which were placed on the invitation, i.e. the flyer with information on the workshop. One question concerned the selection of Kapor's most relevant artistic contribution, and the other was on the future character of the memorial within the observed space.

PROCESS

Starting with the citizens' initiative, the very process of realization of the entire project consisted of several stages: consultations among the three groups of actors, determining the model, scheduling and publishing information on the workshop, neighbourhood workshop – urban game, summing up the results of the urban game and interviewing citizens, presenting solutions, consultations regarding further build-up and presentation of the project solution, constructing the 3D model, insight and consultations on the proposed solution, production of the project study for construction purposes, construction and follow-up of post-intervention ways of using the space.

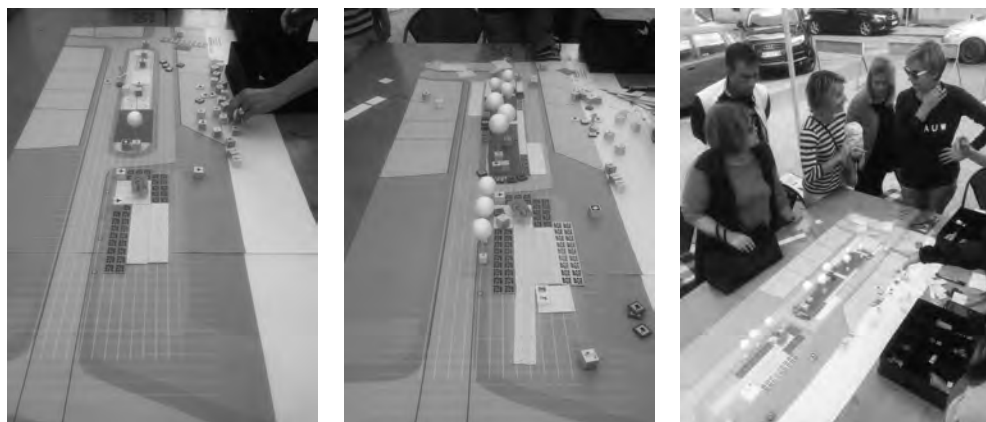


Fig. 5: Public consultations and process of delivering the design proposal. Photo: M.Vukmirović.

On the other hand, the gaming process itself had several phases. The first one was the introduction with the base and all the elements, i.e. rules of the game. The second stage consisted of placing elements onto the model polygon, with constant consultations with other players (see fig. 5). The third phase was the marking of results – recording the created model. The fourth involved summing up the results obtained through the game, and articulating them with the results from the interviews.

Since the interests of the players largely complemented one another, there were no major discussions and differences of opinion, so the players very quickly agreed on the basic determinants of the space. Basic determinants were defined as the position of the memorial, orientation of elements for seating, and the size of green spaces.

OUTCOMES

Each of the stated stages of the entire project had the expected outcomes. Consultations resulted in elements for defining the applied methods, rules of the game, base, and elements for designing the model. The workshop had its outcome in the spatial model, chosen work of art (a hopscotch drawn by Momo) and the character of the memorial (art installation that could be used). As a result of the systematization of workshop outcomes, basic determinants were formed to create the project and 3D model of the future look of the open public space (see fig. 6, 7). Based on the determinants, two proposed solutions were designed, displayed in 3D, and the one which was adopted later went through certain modifications.

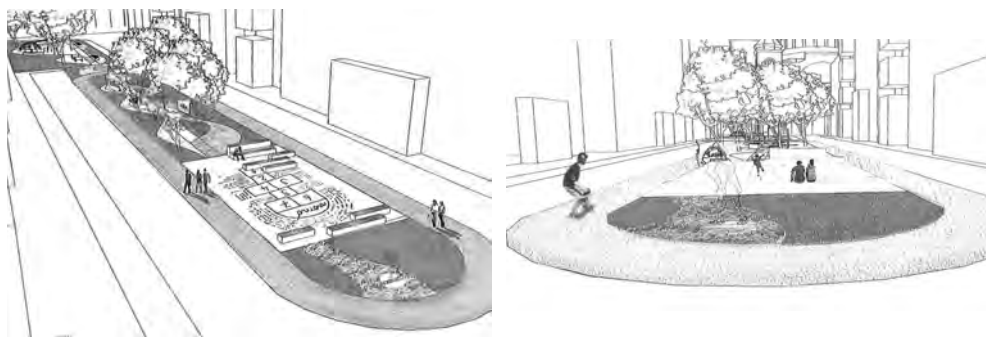


Fig. 6: 3D model and future look of the Moma's Square. Source: "Greenery Belgrade" company.



Fig. 7: Unveiling the Square. Source: www.novosti.rs.

The final design proposal was created, which enabled the first phase of the intervention in space to start. Momo Kapor Square was officially opened on 28 December 2016. The second stage of the project's solution is expected to be implemented next year, while for the time being the ways in which citizens use and maintain the space can be tracked. The success of this project is particularly indicated by the fact that it is

used as planned and expected by the members of the local community. Photographs taken by a lady who lives in the neighbourhood speak in favour of it (see fig. 8).



Fig. 8: Art installation and its use. Photo: M. Lalošević.

CONCLUSION

Since the pilot project proved to be a success, the city administration decided that the game was to be applied to other locations, i.e. to become an established practice of designing public open spaces which are important to the local community – neighbourhood, and also to the needs of larger projects where citizen participation is deemed necessary. The key objections to the application of this method are the length of time necessary for project preparation after defining determinants, the complexity of communication with a larger number of stakeholders, especially when there are conflicting interests, as well as the need to form a special division within the city administration to deal with not only the application of urban gaming, but also with planning and conducting communication with citizens in general, related to the topic of urban development.

As indicated by relevant research in this domain, urban gaming can be applied as a participative method on various strategic levels and for solving different urban problems, which makes the game both more, or less complex, and an attractive tool. Besides overcoming the challenges of meeting the determined goals, what is important is the attitude, i.e. the readiness of actors, above all of the city government, to approach participation in such an open and fully democratic way. Moreover, the volume of target groups also dictates the character of tools, i.e. determines their analogue or digital nature, where digital technologies can be of great help. Their role is reflected not only in the ease of access to a large number of interested users, but also in finding a greater number of solutions and their simulations. In this way, more precise outcomes of suggested developmental scenarios can be determined.

In line with what was mentioned above and based on the results of this case study, gaming has the potential to become “the principal medium of processing and executing city planning”, because it creates “a trans-disciplinary condition where spatial design, political governance, social and cultural structures can engage in problem-solving through an interactive dialogue that crosses scales, visions, and fields of expertise” (Tan 2014, 375-376)

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Gotta enhance'em all: a case study of two Pokemon GO enhanced urban spaces in Aalborg, Denmark

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Abstract - Observing how the Pokemon GO phenomenon that emerged in the summer of 2016 incited players to appropriate formal and informal spaces in search for Pokemon hints that this location based mobile game has had a concrete effect on the physical environment of the city. In this chapter, we explore through a study of two urban spaces in the city of Aalborg, Denmark, the spatial and transformative capacity of Pokemon GO. Drawing on empirical material from observations, questionnaire and video recordings, we illustrate how Pokemon GO has impacted these two spaces differently can catalysed new and creative patterns of appropriation and affordances, as well as contributing to the formation of new place identities. From this we speculate on the potentials for enhancing and ultimately transforming 'failed' spaces in the city through the use of dynamic digital content.

Keywords - Pokemon GO; Placemaking; Urban Design; Location Based Mobile Gaming

INTRODUCTION

With the release of Pokemon GO (PG) in July 2016 a new kind of digital phenomena pervaded urban spaces. Over 40 million players at its peak poured into urban spaces, streets and parks worldwide in search of pokemons and pokemon battlegrounds. As the nature of the game demands the user to be physically present at particular locations, PG has impacted everyday life in urban space quite dramatically. For instance, a recent study tied PG together with a significant increase in the floating population in Santiago, up to 13% more people being outside (Graells-Garrido, Ferres, Bravo, 2016). Overall, the initial reports have been mixed (Hjorth, Richardson, 2017). Some have welcomed the incentive for physical activation of people of all ages, however mostly youngsters/teenagers, benefitting health, while others have focused upon the

negative consequences and effects such as jaywalking and traffic safety, trespassing and unwanted congregations i.e. unpredictable flashmobs that bypass authorities, assaults, accidents and even deaths, data logging and unwanted commercialisation etc. While many of these reports can be ascribed to the sheer scale of the PG phenomenon, what we have been witnessing this summer, is a possible glimpse of media and location based technologies influence on how we understand and inhabit the city's public spaces in the near future.

This massive mobilisation of players, their excitement and energy converted into playful city life, occurs in the obvious places as players appropriate sidewalks, benches and historical landmarks in formal plazas and parks, but we have also seen these ludic and spatial practices popping up in the least expected and informal non-places and leftover spaces of the city. This in particular has urged us to think about PG as a quasi-physical phenomenon with concrete effects that facilitate new ways of interacting with, experiencing and understanding urban spaces. PG is, however, not the first game or application that has sought to embed digital content in the physical environment. PG itself is for instance based upon the game 'Ingress'. Also, there is already a substantial literature reporting on the effects of Location Based Mobile Gaming (LBMG, see (Hjorth, 2011) for an elaborate description of the term) such as increased social interaction, changed behaviour and (ludic) exploration of the physical environment (see i.e. Flintham, et.al., 2013, Benford, et.al., 2006, Souza, Sutko, 2009, Morrison, et.al., 2009). Yet, PG is the first example to take LBMG from a niche to a mainstream phenomenon.

In this chapter, we use PG as an exemplary case to study how LBMG might 'augment' and even 'enhance' the formation of place identities and attractiveness of public urban spaces in the future. To explore such potential transformative spatial effects emerging in the intersections of PG, its players and the physical environment, we compare to two 'PG-enhanced' public spaces in the city of Aalborg (DK). The first, here called Jernbanebroen, is an unnamed informal space situated underneath a railroad bridge with no other prior function than being a transit corridor, except some artful concrete benches. The second, is a formal park, the Utzon park, designed for recreation and stay, situated in a prominent and central area in the city. Drawing on empirical data from architectural site and spatial analysis, player questionnaires (232 respondents) and video footage of players we will in the following analyse the two sites. However, before turning to this, we will briefly outline the notion of location based mobile gaming.

LOCATION BASED MOBILE GAMING AND URBAN LIFE

Since the late 1980s and throughout the 1990s, the idea of the 'virtual' or 'cyberspace' as another dimension or layer of reality made possible by technology has gained prominence in both public and academic discourse (Manovich, 2006). Yet at the turn of the century, alongside the rapid development and proliferation of mobile technologies and with that the spread of location based and mobile media, focus has moved to "[...]

physical space filled with electronics and visual information [and] replaced by a new image: a person checking his or her email or making a phone call using PDA/cell phone combo while at the airport, on the street, in a car, or any other actually existing space” (Manovich, 2006). Manovich’s account was published in 2006, one year before the first iPhone was launched, which revolutionised and made the smart-phone mainstream technology. Since then, the speed of development of mobile and location based technologies has drastically increased. More recent research points to the boundaries between the physical and the virtual in everyday spaces and lives are being increasingly blurred (Farman, 2012, Gordon, Souza, 2011, Wilken, Goggin, 2012, Townsend, 2013, Brynskov, Halskov, Kabel, 2012, Hjorth, 2011). The physical has been endowed and embedded with the virtual: with code that co-shape our everyday practices (Kitchin, Dodge, 2011); and with location based data and information that can be accessed, retrieved and modified instantaneously and seamlessly via networked mobile devices (McCullough, 2006).

What drives this phenomenon is not only the mobile and location based technologies alone, but also the plethora of location based services and games it supports. Zooming in on LBMG, since this is our focus, we find a number of terms that denote the various types and characteristics of mobile games. Using de Souza e Silva and Sutko terminology, PG can be understood as a mix of being a “pervasive game”, as the game never stops and integrate with the player’s everyday life, and “location-based game”, as the game actively utilises geo-location technology, and finally what they call a “hybrid reality game”, since the game takes place in physical and digital realities in parallel (Souza, Sutko, 2009).

In trying to conceptualise how LBMG potentially alter and augment how we experience place, de Souza e Silva and Hjorth draw parallels to the Situationist and their subversive tactic of *derivé* (Souza, Hjorth, 2009). Challenging the commercialisation of urban space, *derivé* was invented as a counter-practice aimed at disrupting internalised meanings and experiences of place and foster new ones. If disregarding the critical approach, LBMG in similar ways offer alternative experiences and new understandings of the urban, thereby (potentially) transforming and reconfiguring everyday spaces and spatial practices. This ties into a larger agenda of re-conceptualising and adjusting the focus of the urban as more than instrumental and functional but inherently plural and on-going as well as encouraging injection of more playful and spontaneous explorative modes into everyday practices (Souza, Sutko, 2009). Here, some studies show how LBMG might be fashioned not only offer ludic experiences and increased social interaction, but also to interfere with the continuous co-construction and negotiation of place meanings and identities (De Lange, 2015, De Waal, 2015).

TWO POKEMON GO-ENHANCED SITES IN AALBORG

This paper focus primarily on two sites in the city of Aalborg, Denmark: The Utzon Park [Figure 1] and a less defined location, which the local PG players refer to as

Jernbanebroen [Figure 2]. The Utzon Park is a small urban park established in 2008, situated next to an architecture museum, the Utzon Center. The park is facing a promenade and the fjord that cuts through the city. The other site, Jernbanebroen, is quintessential of so-called *S.L.O.A.P* (space left over after planning). The railway bridge is a major functionalistic landmark in Aalborg, however, the landing area of the bridge is devoid of public programs which gives the site a "backside" feeling of the neighborhood. The area closest to the railway bridge function mostly like a transit space, where cars and pedestrians can pass on their way to the city center or towards the recreational programs such as rowing and sailing clubs west of the bridge. For that same reason, the site can also be described as a non-place, because it lacks the properties that defines a place, according to Marc Augé: as relational, historical and concerned with identity (Augé, 1995).



Fig. 1: The Utzon Park site (own picture).

Based on an initial description of the architectural - spatial properties of the two spaces, it would be most likely that the Utzon Park site would be the most popular spot of the two, due to it being an already well-established and formal urban park; its proximity and accessibility to the city centre; as well as its existing recreational design and programming. Yet, observations and talks with PG players in Aalborg since the summer of 2016 contradicts this, as we found that Jernbanebroen quickly became one of the most popular PG spots in Aalborg, far more popular than the Utzon Park. This is reflected in the number of posts in various PG enthusiast Facebook groups in Aalborg mentioning the Jernbanebroen site whereas Utzon Parken is almost never mentioned. Furthermore, our own questionnaires (of 232 informants recruited mostly online in PG groups in Facebook), 79% answered they became aware of the Jernbanebroen PG spot from friends or via Facebook. All the informants had visited

the Jernbanebroen, but only half had ever been to Utzon Parken for catching pokemon despite its more central location in the city. Also, of the ones who had been there, only 14 % said they had been there once or more per week when they visited it the most, whereas 44 % answered the same about Jernbanebroen.



Fig. 2: The Jernbanebroen site (own picture).

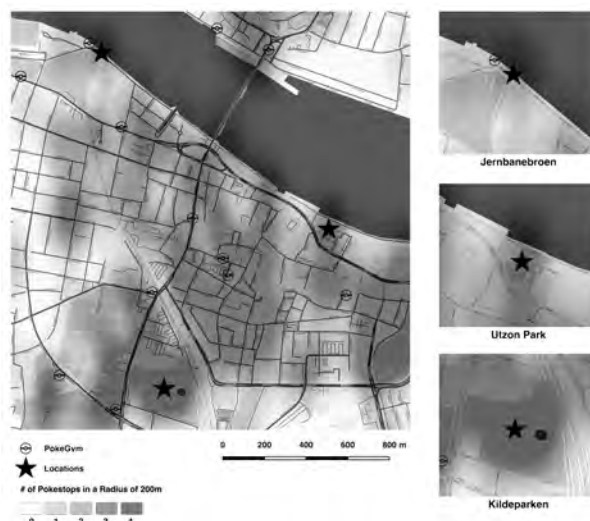


Fig. 3: Location of sites and density of Pokemon Stops.

PG, as a location-based game, offer different levels of in-game content and incentives at different geographical locations which effectively makes some PG spots more attractive than others. To investigate what specific digital content PG offers at the two

sites, we used PokemonGoMap, a third-party visualization tool, that uses a reengineered version of the PG game API. This tool allows to visualize Pokestops, Gyms, and spawned Pokemons (Pokemons that are currently possible to catch) nearby a given location. We have set up our own instance of PokemonGoMap¹ to get access to all the data that is stored in a local database for further analysis.

For our data collection, we chose to scan the area in a 200m radius around the two sites as well as an additional PG location in Aalborg, named Kildeparken. The third location was added in the overall analysis because the questionnaires that we conducted pointed to this as the most popular PG location in Aalborg. Kildeparken offers, however, a very different set of spatial affordances compared to the two main sites of our investigation, and therefore it is only added here as for comparison. We collected data on three consecutive work days in the beginning of November 2016, on which no special event was active (e.g. the Halloween Special, which resulted in a drastic increase of Pokemon). For all three locations, we captured the data for 4 hours between 11am and 3pm.

TABLE 1: ANALYSIS OF POKEMON APPEARANCES

	Utzon Park	Jernbanebroen	Kildeparken
# Pokemon / h	20,5	21,5	36,5
# unique Pokemon	27	18	37
# Common spawn	4	1	4
# Uncommon spawn	14	5	16
# Rare spawn	9	11	16
# Very Rare spawn	0	1	1

In terms of the Pokestop density, Utzon Park and Jernbanebroen are on a similar level as can be seen in [Figure 3], while Kildeparken has a slightly higher density of Pokestops. One difference between Utzon Park and Jernbanebroen is that the latter offers a Gym. With regards to spawned Pokemon in the four-hour recording periods, only a small difference between the two places was registered. On average, Utzon Park would offer only one Pokemon less per hour, while at the same time the diversity (number of unique Pokemon) was drastically higher (27 compared to 18) at Utzon Park. Still, in terms of rareness, meaning how often players will encounter them, Jernbanebroen offered Pokemon that were more uncommon, with 11 rare (compared to 9 at Utzon Park) and even one very rare Pokemon. Kildeparken, outperformed or was on level with the other two spots in these measures. Table 1 summarizes these results.

Overall the differences with respect to PG in-game content and incentives between the two sites is only marginal and does not provide evidence of why Jernbanebroen

¹ <https://github.com/PokemonGoMap/PokemonGo-Map>.

has developed into a far more popular PG spot. Therefore, to inquire further into this, we will now turn to analysing the spatial characteristics of the sites as a factor contributing to this difference.

SPATIAL CONDITIONS, URBAN LIFE AND POKEMON GO

The spatial characteristics are contributing to our emotional appreciation of a place by structuring our social conduct and spatial practices, as well as framing how space is programmed and the ways in which it might be appropriated and used. While it is the goal of urban designers and planners to create the best conditions for the desired activity in any given space, also spaces that emerge spontaneously hold affordances that lead to certain types of behaviour and activity.

In terms of spatial quality and status as an attractive public urban space Jernbanebroen has seemingly the least to offer. Yet, it is one of most popular PG spot amongst players in Aalborg. We will in the remainder of the analysis, therefore, turn to explore how PG and its digital content is interacting with the spatial and physical conditions of the sites and subsequently illustrate how this hybrid transformative effect might be “enhancing” the attractiveness of Jernbanebroen, not only as an PG spot, but also as a public urban space.

Urban theorists like Jane Jacobs (1961), William H. Whyte (1980) and urban designer Jan Gehl (2010, 2011) have approached the design of cities as fundamentally the making of places for humans. In this work, they have emphasised the social and cultural importance of a lively urban space, and defining the spatial conditions for creating these, as core principles in human-centred *placemaking*. Some of the key components of successful placemaking, according to these three scholars, are: establishment of a sense of safety/security, securing that spatial qualities relate to the human scale and invite to human interaction and activities in public space. In our analysis, we use Jan Gehl’s “12 Quality Criteria” as a structuring framework for our observations. These criteria, organized in three overall themes *Protection*, *Invitation* and *Delight*, highlight crucial spatial aspects that need to be accommodated for creating successful and attractive public spaces according to Gehl.

PROTECTION

The Utzon Park is open green lawn with paths crossing it but with no elements that create shelter [Figure 4]. The semi-porous boundaries of the park are created buildings on either side, which visual orients the space towards the fjord. The Jernbanebroen site is spatially defined by the large structure of the railway bridge that subdivides the site into smaller spaces. Its overarching structure creates cover to stand under, the supporting pillars create surfaces to lean against, provide shade or shelter from wind or rain. Beyond weather protection, Gehl points to protection from crime and violence part of a successful urban space. Jacobs argues that the presence of pedestrians at

different times of the day contribute to lively and safe public spaces. Pedestrians provide “eyes on the street” that increase the sense of safety. Indeed, as Jernbanebroen has gradually developed into a more popular spot, as more people use it. This self-reinforcing development is further propelled by social media where PG players discuss and decide which PG spots are popular and where to come. Hence, popular PG places, such as Jernbanebroen, offers more chances of meeting friends, being part of a community, and ultimately contribute to an increased sense of safety.



Fig. 4: Bench in Utzon Park (own picture).

INVITATION

Gehl's focus on invitations include: Opportunities to walk, sit, rest/stay, communication, play and physical activity and to enjoy the view. In the Utzon Park a number of meticulously designed seating arrangements are sparsely scattered on the lawn. The benches form introvert semi-circles that create intimate spaces. These semi-private spaces offer good conditions for interaction for people who are acquainted, but work less well with strangers. Besides these benches there are no other physical structures to divide the space in smaller zones or accommodate stay. At Jernbanebroen, the quay wall and the waterfront mark a clear edge of the space. The wall has perfect dimensions for sitting: its height is appropriate, relatively comfortable and give a good overview of the site. Additionally, it has room for many people as it stretches through the area. The linearity of the wall works well for affording PG players to sit, both in smaller groups, but also shoulder-to-shoulder with strangers which is less intimidating than face-to-face. There are small patches of green around the site which are sometimes appropriated by people with foldable chairs or used for laying down. In total, Jernbanebroen offers a much larger range of open invitations for stay than the Utzon

Park. Both sites are easy accessible on foot and very walkable. Jernbanebroen can also be reached more easily by car and has a lot of parking spaces (and some people simply stay in their cars while playing PG). This is collaborated by our questionnaire, where respondents point to opportunities for shelter and accessibility as primary factors for achieving a good PG spot.



Fig. 5: Life at Jernbanebroen site (own illustration from video material).

DELIGHT

In Gehl's terminology delight is associated with scale, aesthetic quality and the overall enjoyment and appreciation of the physical environment. The large open space in the Utzon Park fails in creating the physical conditions for enjoyment and appreciation. It disregards the human scale in organisation and lacks spatial and experiential quality which is also reflected in the low level of activity in the park. The Jernbanebroen site is divided into a sequence of spatially defined zones that each relate better to the human scale. This creates a sense of spatial hierarchy and makes the place appear livelier, even with few people. Also, its differentiated spatial characteristics affords opportunities for a variety of uses and modes of inhabitation, such as finding shelter under the bridge; stay on the green patches; play from the car in the parking area or sitting on the quay wall. Neither of these features at Jernbanebroen are intended to contribute to creating an attractive urban public spaces or foster stay. Rather the site is dominated by structures shaped and organised by their functionality and the in-between spaces are byproducts without programming. The overall aesthetic impression is crude and presents itself as a typical "back side" of the city. Despite this appearance, the site's physical qualities are appealing to PG players. In the questionnaire, socialising with friends and family is emphasised as an additional motivation for physically congregating and playing PG, and therefore physical conditions that support stay and sitting, as at Jernbanebroen, seem to play a central role in allowing players to perform their spatial and social practices [Figure 5].

CONCLUDING REMARKS: DO ATTRACTIVE PG SPOTS HAVE TRANSFORMATIVE CAPABILITIES?

It is obvious that PG has an effect on the urban spaces it overlays. Comparing data from the two sites, it seems that PG can enhance a space if placemaking potential and spatial qualities are present, whether they are intentional or not. Under the right circumstances, as with the Jernbanebroen site, PG has the ability to catalyse a transformation process that draws upon and activates a site's existing spatial qualities. As touched upon above, for this to occur multiple spatial conditions that engender protection, invitation and delight at the site need to be present as well as the good accessibility and relational proximity to other sites and programs is a precondition.

Going beyond the spatial and infrastructure conditions, we might allow ourselves to speculate further on how PG is able to catalyse transformation of place identity, spatial practices and even foster a sense of community, if only temporary, at sites such as Jernbanebroen and not the Utzon Park. Indeed, social media play a supportive role here as infrastructure for development of Jernbanebroen's rising reputation and identity as a prime PG site in Aalborg where players coordinate meetings, disseminate and co-develop a strong place narrative. Furthermore, the placemaking processes we have observed at Jernbanebroen might also be further supported by the distinct lack of design intention at the site. Although counter-intuitive, this could be a part of its successfulness as a PG spot. Jernbanebroen being an unprogrammed space, a "no man's land", with no clear ownership, no prior strong site-specific practices, cultural code of conduct or specific protocol for how to utilise the space. This might in fact offer a welcomed social and cultural "vacuum" for PG players to develop and perform their spatial practices. Michael Waltzer describe this type of space as an "open-minded space", a space that is inconclusive and non-discriminatory in its design and openly invites to people to negotiate uses and performances (Walzer, 1986). In comparison to many of other formal public urban spaces in the city, Jernbanebroen is a "clean slate" that PG players can appropriate without having to compete against dominating site specific conventions and practices. Our observations on the site substantiate this, as we see how the PG players over the past summer and fall of 2016 have colonised this space, reappropriate its functional structures and surfaces in unforeseen and ludic ways. This it seems has kick-started a cultural formation process both discursively, through social media, and practically, through social and spatial practices, with enough force to shift Jernbanebroen's place identity.

In urban planning and design it is common knowledge that participation and involvement processes, physical design interventions and local policy making has social and cultural transformative capacity, but still there are no straightforward and universal recipes for placemaking processes. While it might be captivating to think of PG, or any other LBMG, as a novel shortcut to enhance a place, make it more attractive, change its use or transform place identity, it is far more complex. In this chapter, we

have sought to lay to bare some of this complexity and increase our understanding of how PG inadvertently might be augmenting and enhancing Jernbanebroen. By looking at a specific (re)formation of a “failed” non-place in Aalborg, this paper has exemplified the transformative potential of physical/digital hybrid ecologies. This interrelation between place, people and digital content pose an entire new dimension in urban design to be further explored as media and networking technologies, virtual and augmented reality and location based and pervasive gaming become an increasingly ordinary part of social urban life.

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Contemporary principles for the project of the mediated space: from the virtual sphere to the spatial experience in the metro's network of Oporto's Trindade Station

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Abstract - Different methods of describing space are presented in this chapter to reflect aspects of how the virtualization of space of human collective activities has contributed to the development of behaviour and the construction of users' perception. Contemporary urban complexity has taught us to assume that technology is integrated into our domestic daily life and converted into something consubstantial. In this context, we present the hypothesis that certain types of public space, such as spaces dedicated to metropolitan transport networks, can be useful to verify an intense correlation between what is learned in the virtual space and what we have assimilated as routine in the physical space. Observation methods and analysis provided by different urban disciplines has been used here to identify and understand that kind of relationship. The purpose is to incorporate into urban projects a synthesis of those principles that contemporary urban aspects can often bring out – studying more specifically transport places that have been converted into collective receivers of communication and relations. Through these principles of action, a number of qualities from the current virtual world is proposed to be transferred to the physical world, incorporated into processes of understanding public urban projects.

Keywords - Public space, virtual network, urbanism, urban design, technology

INTRODUCTION: TOWARDS A CONTEMPORARY MEDIATED TERRITORY

In recent decades, the urban territory has extended conceptually into the regional territory. The urban mentality that Corboz (2004) defined as a means of identifying the urban has therefore become more general. For Soja (2008), this “limitless city” is moving towards a polycentric, fragmented and discontinuous model, towards a city-region still confused and with a varied and changing group of functions between the inner and outer cities.

Such a spatial model can evidently be seen as a failure of our classic perception of order. However, as Neutelings (1994) suggests in his vision of *The Patchwork Metropolis*, it can also be considered a quilt of operative elements that integrate into a coherent

and hopeful whole, providing a contemporary feel and offering a fantastic field of possibilities.

The urban landscape before us is thus presented as a sum of urban “patches” or functions that are defined by an unprecedented complexity of space. Within it we find cities of all types of ranges and sizes, non-urban territories, agrarian or natural landscapes with an infinite repertory of intermediate spaces that are also operative: highways, service areas, ex-urban growth, technological zones...

These different methods of describing space are a demonstration of how the “virtualization” of space in which human beings develop their collective activities, on a large urban scale in the “Corbozianan” sense, has been added to the definition of their behaviour and the construction of their perception from well before the dawn of the new information technologies and social networks.¹

ON COMPLEXITY

In this sense, what the transition from the 20th to the 21st century with its increasingly frequent use of technology in daily lives has taught us, is to approach the above mentioned complexity in such a way as to reveal ways of integrating it into our domestic life while converting it into something consubstantial.

Modern urbanism has also tried to approach it from the different disciplines that influence the field, passing for more or less local ideas or currents. For Kevin Lynch, for example, in the 1970s, spatial complexity was one of the most influential physical aspects in urbanism and the most decisive in the development of “urban vitality”. He also recognized that complexity not only depends on formal diversity, but also on the complex interrelations between some positions and others, and, what is more important, between some types of actions and others over a plan that is not only physical.

His concept of the “image of the environment”, as the origin of the famous architectural “mental map”, has become part of the *poststructuralist* architectural language,² as it is reflected by Manolo Verga (2006):

“Lynch [focused] his attention on the theme of orientation, gave rise to a new field of research that would be called perceptual geography. [...] So the identification of an object takes place through emotional significance of the object for the observer. Thus

¹ We are referring to the virtual as opposed to the real or physical. From the perspective of classical physics, the virtual is used to designate those processes that should not exist unconditionally, or that are not necessarily feasible. The virtual includes the implicit or tactile processes as opposed to others that are explicit or become evident. For Levy (1999), virtual is not opposed to real but rather it is a form of being that favours creativity and leaves behind some of the themes that the immediate physical presence has made us address superficially.

² In the chapter “The image of the environment”, Lynch declares: “In the process of way-finding, the strategic link is the environmental image, the generalized mental picture of the exterior physical world that is held by an individual. This image is the product both of immediate sensation and of the memory of past experience, and it is used to interpret information and to guide action.” (Lynch, 1970).

the mental that the individual constructs for himself can be defined as a means of navigation, in the city or within a thought or text.”

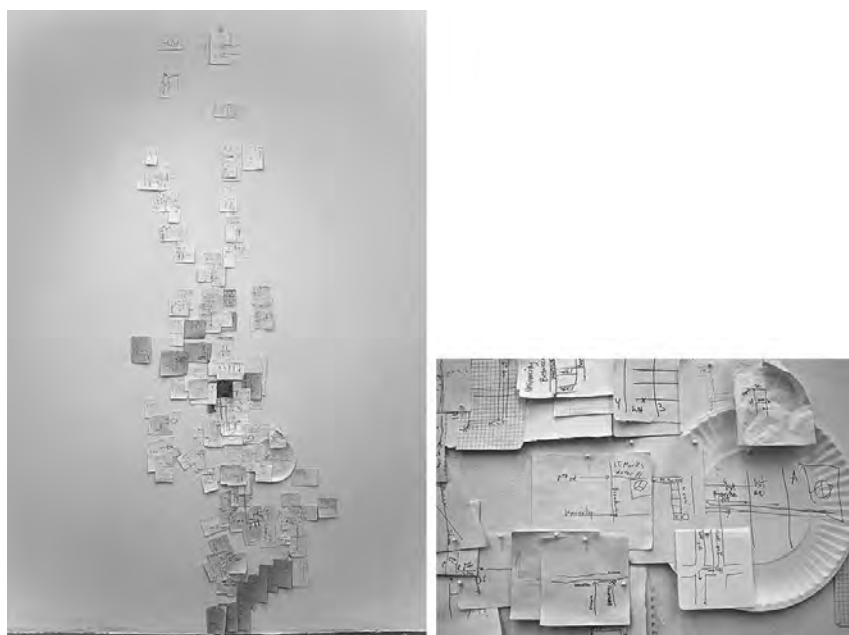


Fig. 1: Nobutaka Aosaki, a Conceptual artist from New York, explored the idea of mental maps in his work of art “from here to there” (2012)³.

OBJECTIVES: AN URBANISM THAT FIRST OBSERVES AND THEN PROPOSES, BEYOND THE PHYSICAL CITY

As stated above, it can be said that the image of the city would be a superposition of the mental maps of the citizens and visitors, in an immense “hyper-connected” web with variable ties, where the digital, as a key or entry into the virtual world, logically finds a comfortable position and almost naturally superimposes itself on the environment.

This sum must be understood as an inseparable sum-total that conserves internal differences and generates increasingly complex mechanisms of relationships, new activities and new urban, or pseudo urban, forms.

Urban design has been trying to approach territories from a compiling perspective for decades, breaking them down and putting them back together over and over again. In the beginning of the 20th century, the Scottish biologist and urban designer Patrick Geddes connected the study of cities with a “preparatory analysis”, a key

³ The artist, disguised as a tourist in Manhattan with a cap and a Century 21 bag of goods, places himself in a tourist shopping area and requests New York residents to draw him a map indicating how to get from one place to another. The result is a mental map of Manhattan comprised of small hand-drawn maps on notepad paper, napkins and even paper plates. Nobutaka Aosaki (2012). From here to there, Manhattan, New York. Source: <http://www.nobutakaosaki.com/maps.html>. Accessed on April 2017.

concept that requires two instruments: the observatory, and “civic explosions” (1915/2009; Rivas, 2015). He also promotes the intensity of the practical component, an interaction with the object studied through participation and direct contact with the medium. Geddes proposed, as a method of recognition, a new language of observation that is added to the pre-existing one, from both spatial and temporal viewpoints.

This is the hypothesis defended in this chapter: The ability to identify through observation that a type of relevant public space, such as spaces dedicated to metropolitan transport networks, can verify an intense correlation between what is learned in the virtual space and what we have assimilated as routine in the physical space: as a more than necessary instrument to tackle public space design in a truly contemporary way. In this case, the observation of the urban landscape requires studying not only the resulting space, but also its origins and project, as well as its management, and social and cultural connections. All this from an individual perspective -as mediated beings, as well as from a collective one, by virtue of the construction of superimposed collectives that originate and take refuge in a virtual world as much as or even more than the physical space.

We begin by understanding that contemporary urban design has incorporated as a necessity the fundamental characteristics of a society adapted to the progress of communication technology, assuming these values and qualities as something positive, but also as a demand or requirement of a group of rules or principles that the users of the urban space perceive as common law and as practically compulsory.

THE CASE STUDY. METROPOLITAN TRANSPORT NETWORKS, TRINDADE STATION IN OPORTO

The Oporto Metro project is unprecedented in the urban design history of Portugal, and has become a reference in Europe for constructing public space because of its size, execution times and mode of construction. In a short period of time, architects, engineers and builders were able to overcome important historical and technical obstacles. They built tunnels and bridges while recuperating pieces of urban history, introduced elements of important artistic content and demonstrated that it was possible to produce an urban renaissance through an infrastructure project such as the metro network (Fernandes and Cannatà, 2006).

This renaissance is based not only on the opportunities that an efficient network of public mobility offers. It has also served Oporto a repertory of rich new collective spaces which often transcend their principle transport function. This is the paradigm of Trindade Station. It represents a key piece or central node in a transportation system, while serving as a social and cultural magnet that successfully incorporates the city's public space into the network of stages of daily life in Oporto.



Fig. 2: Ortophotograph of Trindade Station and interchange. Oporto, -showing a confluence of urban and topographic forms, a temporal and physical limit of the urban evolution of the city. Captured on Google Earth.



Fig. 3: (left) Ephemeral installation at the station entrance (Rua de Camões), November 2012. (right) Photograph from the northern edge of the urban space of the station (Rua de Gonçalo Cristóvão).

Trindade is one of those “Central nodes of activity” that Alexander (1977) demanded, and it reflects the real existence of two systems of the network that superimpose and reveal the dual dimension of urban space: the material (physical) and the immaterial (virtual). Beyond its internal logic, the positive part of this duality is that any of its entries permits a complete tour of the duality, as long as the connections are well constructed.

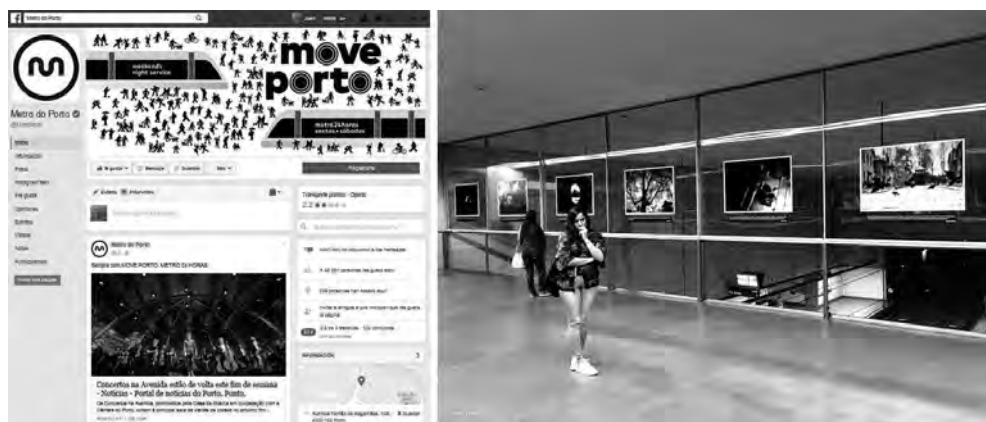


Fig. 4: (left) Facebook page of the Oporto Metro [<https://www.facebook.com/MetroPorto/>]. (right) “À espera (De Alguém, do Metro, da próxima Exposição...)”. Joao Pena Rebelo’s “Streets of Dublin” exhibition, July 2016. Source: Metro do Porto Facebook and Joao Pena Rebelo Google+ profile.

It is clear that the prominence of networks of virtual communication and the information technologies are decisively modifying space time relations, in a process which, in its origins, made some authors think of a substantial end of public space (Sorkin, 1992). However, what is changing is the centre of attention currently being demanded by public space, which does not act by substitution but rather by shifting the weight away from spatial and physical traits and towards the community sphere, fostered by new technologies. This is expressed by Zachary Neal in his book, *The Connected City* (2012), when he argues that “communities are networks, not places”. It is certain that we still think of communities in place-based terms, but whether or not a place is really a community has more to do with the residents’ relationships with one another - their social networks - than with where they happen to live or work.

To realize this leap, it is necessary to take into consideration the urban networks in all of their dimensions, including all of the actual forms of appropriation of space. In the words of Neal (2012), in contemporary society the most critical factor continues to be *distance*, but the concept of *triple distance*: spatial, social and that of the network or number of connections between people and things. This multiple conception of distance means a real innovation for projects: the iterative game that produces a balanced and dynamic consideration of these different systems of activities and functions in the urban space and, as a result, a more interesting and polysemic reflection of space in these systems.

METHODOLOGY: PRINCIPLES FOR THE PROJECT OF MEDIATED URBAN SPACE

The cultural management of spaces, the presence of activities for younger generations in entertainment platforms, structures or associations, the monitoring of cultural and/or entertainment activities of a city or region, the presence of this management

of networks of cultural, educational, political, social, etc. functions, including social networks like Facebook, Twitter, Instagram, Pinterest, etc., are added dimensions to the physical systems of space that strengthen them. They increase the interactivity of a space with society, at the same time sustaining the success of its own functionality. This “spatial success” of the spaces of the city is reflected in real time in the virtual networks, reforming the design basis of such information scenarios in the cloud.

What this text proposes is an incorporation, into urban space, of projects of a synthesis of the principles that contemporary urban facts can bring out - especially places of transport that convert into collective receivers of communication and relations. Following the suggestive model that Italo Calvino articulated at the turn of the century (1994), it is as much about emphasizing those “values, qualities or specificities” that urban design actually possesses, as it is about documenting its profound base not only in the form and geography of places but also in a reticulated social and cultural landscape.

From the definition of Alexander’s *Active Node* (1977), to Lynch’s norms of urban design (1970), Peter Calthorpe’s *Pedestrian Pockets* design proposal (1993), and the triple conception of territory by Secchi and Viganó (2001), streets, spaces and circuits... urban design in this century has converted the references of technological connections into something really ordinary. The concept of *social capital* as a tool for measuring urbanity (Putnam, 1993; Borja and Castells, 1997), the humanization of public space present in the interventions of Jan Gehl (2011), *Urban Hacking* (Monteys, 2012), the *Ant theory* (Actor-Red) and the *Non-lineal construction process* (Tietjen, 2007) or the *Mat Urbanism* developed by Stan Allen (2003), are some of the testimonies of urban design that explore the territory of participation, integration of scale, or inclusive or multi-variant urban design, typical of our times.

Currently there are many examples of processes upon which urban space is seeking reinterpretation according to new activities or new prevailing social practices. One new tendency is to incorporate technologies, or the need to articulate in urban design new demands for urban spaces: adaptation to new relationships and new urban values. In this way, experiences like that of the team made up by Chambers and Hoke, called “Citysoftwalks”, seek to increase the functionality of pedestrian spaces by adding ephemeral structures like scaffolding for seating, tables, plants, visual filters, among others. Not only is the form of the utilization of space modified in this way, but also the residual spaces are integrated through their requalification (Figures 5 and 6).

Public space, in its attempt to incorporate new technologies, has been able to, for example, delocalize the workplace, favour social encounters, friendships, purchases, etc., converting any public space into a potential centre for all these functions. In this sense, Street Charge stations have been developed in New York (AT & T, Goal Zero and PENSA Design Studio, 2013)⁴, which are solar stations with chargers adapted to

⁴ <http://www.goalzero.com/solarlife/2013/06/18/street-charge-solar-powering-new-york/>

all types of apparatus and telephones in different points in the city. The AMEBA studio anatomic bench with incorporated solar powered chargers represents another successful model of these processes that seek a “mediated urban space” in the accessibility to information technology and communication.



Fig. 5: Urban Hacking. Softwalks initiative. Howard Chambers and Bland Hoke. New York. Source: <http://citysoftwalks.com/>. This project seeks to increment the functionality of the sidewalk and the non-permanent structures of public space.



Fig. 6: Urban Hacking. Softwalks initiative. Howard Chambers and Bland Hoke. New York. Source: <http://citysoftwalks.com/>. The common necessity to be human and the daily problems that society faces are considered here: seeking places to sit, visual filters that soften contacts between temporary construction features and the urban landscape, naturalization of constructive elements, etc.

Well before these examples, and from a much broader perspective, Julio Pozueta’s work on the “walkable city” tried to respond at that moment to the increased demand for pedestrian space in the urban fabric. The study developed a multi-criteria analysis of the characteristics of urban space in the same that way we do today to

evaluate its response to the pedestrian variable. These variables generate an open and multi-contacting network of relationships, very contemporary and functioning in a way as similar to the contemporary patterns as current technologies of a virtual character.



Fig. 7: Circulation conditions and urban landscape elements that influence pedestrian mobility.

Source: Pozueta, 2009. In this scheme, the variables that interact and compose a system that influences pedestrians are: Level of dispersion – Density - Disposition of land use – The pedestrian network and its conditioning – Relationship between building and Street – Pedestrian displacement conditioners:
Attractive – public safety – Driving Safety – Microclimate – Distances.

PRELIMINARY RESULTS: CONCLUSIONS

Unravelling or dismantling the urban and territorial space supposes, on the one hand, detecting what is fundamental among what is general: the sustaining form of the urban form, but also, and especially, understanding these means of mental or operational behaviour much more contextually and connected to the use of new technologies (see Figure 8).

The proposed system that allows us to understand the influence that the virtual world exerts over the public space, and is represented through seven variables of the different considerations that should be utilized in today's multi-variant and mediatized urban space project: *interior mobility* (screen changes, multi-itinerary); *in and out connections* (entries, exits and phases connected jumping stages); *real time information* (quantification of entries and exits, communication with user, reporting of the statistical data); *working in network* (webs and interconnecting systems); *interactivity and participatory process* (dynamism, rebuild and resilience); *diversity in modes of access*; *universal accessibility* (generalized, inclusive, pedagogical, transparent); *multi-variable design*.

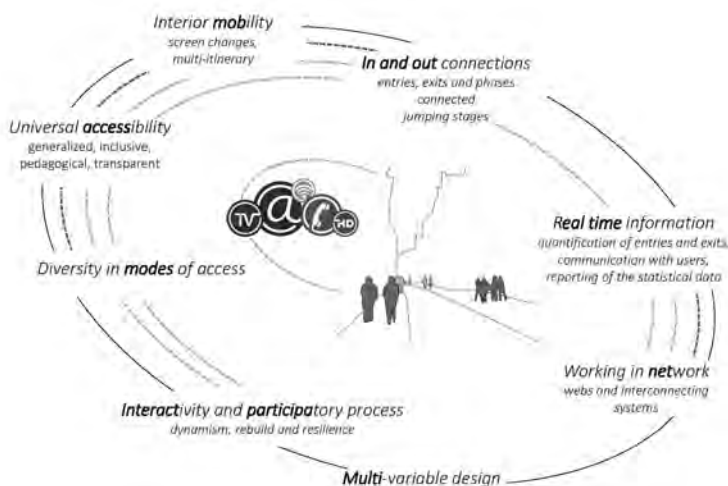


Fig. 8. Qualities of the contemporary virtual world that are transferred to the physical world, incorporated into understanding of the public spaces projects. Source: Own elaboration.

What pursues in this projective system is the agreement between both collective networks, virtual and physical, bringing about a readjustment of hierarchies in the urban space that permits the construction of an order of urban centralities, and the multiplication of the functional possibilities of the city's corners (Solá-Morales, 2004):

"The city is a network of corners: articulated space that facilitates the interaction of people and activities (...) urbanity is not a question of concentration or dispersion. It is a question of interdependence. A question of density of corners."

This is why the possibilities of the virtual networks should be taken advantage of, in the pacification of scales and in the urban form like the design of public spaces as a network, or the incorporation of new elements into the urban landscape. This is shown in the space at Trindade Station in Oporto, through the configuration of the powerful urban corner and the interrelation of its own variables, knowledge, mobility, cultural space, proximity and distance, networks, information, interaction and participation.

From there to the use of adapted urban furniture for the use of mobile phones and tablets, the locating of information points for downloading specific information about the urban context in question: main events, cultural exhibits, social manifestations, links with other spaces, etc., they all constitute the reinforcement of the interconnection between the urban landscape and the imaginary that the virtual sphere can provide, improving at the same time the capacity to self-regulate, and the efficiency of both dimensions of urban space.

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Developing collective intelligence in web mediated environments

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Abstract - The web mediated environments are the ideal environments for collective intelligence to emerge. In the networked structures not only people, but also ICT are involved in the knowledge creation. New knowledge, ideas, suggested problem solving methods and solutions, shaped up or structured opinions, developed innovations, prototypes, generated added value, etc. are considered to be collective intelligence (CI) of the web mediated environments. The aim of the conducted doctoral workshop (Thessaloniki, 2016, www.enhancements.arch.auth.gr) was to develop the students' competencies in order to evaluate the different mediated environments (spaces, communities, networks, platforms, etc.) using a Collective Intelligence Potential Index (CIPI) methodology, created by the researchers team at MRU [18]. In order to answer the question how social technologies affect the performance of collective intelligence system (in this case web mediated environments), the research group identified and validated empirically the set of indicators to evaluate the socio-technological readiness of the CI system to generate collective intelligence. This chapter focuses on sharing the experience of applying the new developed innovative assessment tool by designing more attractive, inclusive and responsive public spaces.

Keywords - Co-creation, Collective intelligence, Collaboration platforms, Collective decision making, Knowledge creation, Inclusive society

INTRODUCTION

The scientific society argues that in general a human group demonstrates higher intellectual capabilities than an individual. Collective Intelligence (CI) can be defined “as the general ability of a group to perform a wide variety of tasks” [25] or “the engagement of the community in building a new collective solution” [1]. The essential difference between the collective and individual intelligence is that a social interaction is crucial for the formation of collective intelligence. With the growth and expansion of the Internet, collective intelligence has been newly strengthened. The success stories of Google, Wikipedia or InnoCentive prove that the groups of people can create the valuable intellectual products by using modern technologies. The information and communication technologies (ICT) are expected to change the role and usage of the public spaces in the future [9]. The web mediated environments are the ideal environments for collective intelligence to emerge. The relationship between the ICT and public open spaces is not new but is growing at a rapid pace, becoming a challenge for the ICT experts, spatial planners, social scientists and decision-makers. In digitally

enabled spaces not only people, but also the ICT are involved in the knowledge creation. The social media tools have made it possible to develop the new knowledge aggregation methods, such as information aggregation or prediction markets [2], social tagging or folksonomies [7], data visualization [3], etc. The innovative gamification, competition, collaborative work strategies promote the co-creative engagement and “consequently bring a change in behavior” [14].

This behavior, which Preece and Shneiderman [16] called the “Technology-Mediated Social Participation”, opens up the possibilities for the masses to achieve the common goals through the participation and collaboration on the Web – “the goals that no single individual or organization could achieve alone” [10]. The concept of collective intelligence is closely related with many other existing conceptualizations, i.e.: open innovation [4]; crowdsourcing [8]; wikinomics and mass collaboration [22]; open collaborative innovation projects [26]; transaction-free zones, collaborative consumption, electronic networks of practice or online communities [11]. The most discussed examples of collective intelligence applications are labelled as the Web 2.0 or Web 3.0 applications. “The exploitation of the social media potential to leverage the connectivity, responsiveness, creativity and co-creation of value with stakeholders is common for these paradigms” [24]. To tackle the increasingly complex societal problems, a vibrant society must rely on the initiatives and collaboration of the citizens to be able to create the desired future. Indeed, a relevant feature of the ICT is the ability to enhance the communication among the users and to allow creative participation, community formation and coordination. This can be used in transforming the production of public open spaces into an interactive process enabling the creative community participation and empowerment. Considering this as a great opportunity, however, the problem with ineffective utilization of a large number of technologies could appear. The certain threats linked with the use of the ICT in public spaces can be discerned: “the danger of engaging only those people who are already engaged in an issue” [1], “closing up within one’s communities, the constraints of individual freedom, privileged access to community resources and the limitations on the engagement of the outside persons” [15].

The capability of people to join the communities can be influenced by such factors as a discrimination for age, gender, sexual orientation, cultural background and disabilities as well as factors such as income, educational level and geographical urban/non-urban location. If the values of the participants acting in a collective network are not aligned and if the technological decisions are implemented in an immature environment, these technological solutions can accelerate the negative aspects of collective systems and distance even more from the desirable goal of the community. On the other hand, the design and structure of technological solutions can give a purposeful development towards a common wealth. The attractive, inclusive and responsive public spaces can influence more sustainable behaviors and lifestyles that are based on better information. “The extended awareness contributes to a

low-carbon economy (collaborative consumption), provides the facts/evidence from the citizens for a better decision-making at personal or institutional levels (crowd mapping), develops the alternative collaborative approaches to a problem solving (crowdsourcing, crowdfunding, participatory design)” [1]. The collective decision-making is the main axis of contemporary democracy. The modern concept of civic engagement is related not only to the national identity, but also to a capacity of the communities to make collective decisions and proactively solve the social problems. In recent years, the active-passive dimension [12] of citizenship has attracted the interest of the researchers from the various scientific disciplines. The first research findings of Skaržauskien et al. [18] also indicate the promising active behavior of the young people in the online platforms of collective cooperation as well as their increasing civil power. Torney-Putra et al. [23] claims that all civic behaviors are correlated with the level of trust vested by the young people in a local community (school principals, chefs in local restaurants, friends, acquaintances and family). The representatives of the medical science emphasize that an active lifestyle delivers the numerous health benefits and, in addition, the psychologists and sociologists claim that the social, occupational and political activities contribute to the common welfare [6, 21].

The aim of the conducted doctoral workshop (Thessaloniki, 2016, www.enhancements.arch.auth.gr) was to develop the students' competencies in order to evaluate the different web mediated environments (spaces, communities, networks, platforms, etc.) using a Collective Intelligence Potential Index (CIPI) methodology, created by the researchers team at MRU [18]. Aiming to answer the question how the social technologies affect the performance of collective intelligence system (in this case web mediated environments), the research group lead by prof. A. Skaržauskiene identified a set of indicators to evaluate the technological readiness of the networked structures to generate collective intelligence. This chapter focuses on the sharing experience of applying the new developed assessment tool in the doctoral students training with the task to design the more attractive, inclusive and responsive public spaces.

METHODOLOGICAL FRAMEWORK FOR EVALUATION OF WEB MEDIATED ENVIRONMENTS

The proposed methodology for the calculation of Collective Intelligence Potential Index (CIPI) [18] offers the framework to evaluate the digital enabled networks (platforms, spaces, communities, etc.) and defines the potential of system to generate collective intelligence. Based on Luo et al. [13], the Collective Intelligence system is conceptualized “as a knowledge network created by a web mediated interaction amongst the individuals with a personal knowledge.” The web mediated public spaces can be considered as CI systems, because they have the potential to integrate all the elements listed above.

Collective intelligence is defined as emergence of new knowledge, ideas, suggested problem solving methods and solutions, shaped up or structured opinions, developed innovations, prototypes, generated added value, etc., in the networked environment. The CI systems may differ in the terms of users or purpose, but they all seem to share a number of common characteristics. The “intelligence” in the system can be described as “collective” not only in the sense “that it arises from the interactions – that is not new – but that it does so according to the specific principles better known for extracting wisdom from crowds” [17]. The “wisdom of crowds” means that the community, platform or network commonly exhibit the higher-level intelligence capability than any individual member does. Surowiecki [19] identified the 4 basic criteria for the emergence of collective intelligence: diversity, decentralization, independence and an appropriate mechanism for information aggregation. The digital enabled public spaces are open, dynamic, have vague boundaries, offer more freedom of joining and leaving. A massive participants’ inclusion into the interactions online ensures the emergence of the greater intellectual capabilities. This results in an easier engagement of the citizens with the different demographic, educational and cultural backgrounds and continual flow-in of new ideas and knowledge. Following the Internet design the networks adopted a decentralized structure and contradict the functioning of the traditional hierarchical mechanism. The inclusive and responsive web mediated public spaces offer possibilities for the networked self-organization and self-governance due to the technologies that enable the exchange of large amounts of information, and moreover, enhance the collective decision making and its implementation. The central axis within the web mediated environments is information and data, thus, the spaces should be designed in a way, which would create the opportunities for information exchange and knowledge creation.

Based on the empirical research results of Skaržauskiene et al [18] the CI Potential Index is designed around the 4 indices: CI Capacity Index, CI Emergence Index, Social Technologies Index and Social Networked Responsibility Index (See Figure 1).

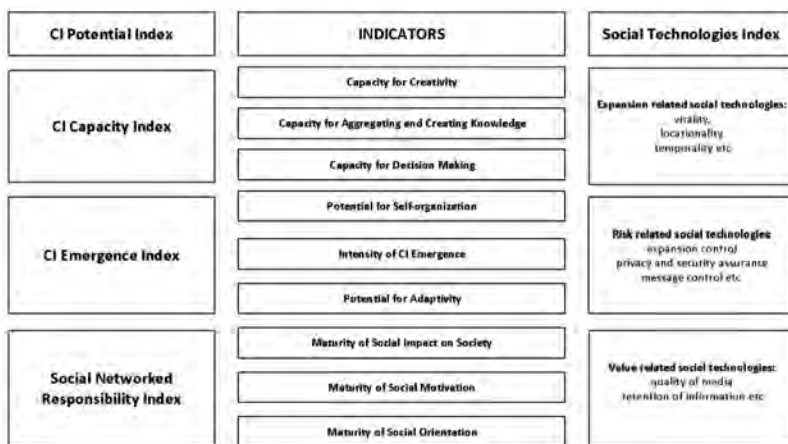


Fig. 1: CI Potential Index model (Source: Skaržauskiene et al [18]).

The CI Capacity Index is a relational conception that defines the capacity of a CI system for aggregating and creating knowledge, creativity and decision-making. The CI Emergence Index evaluates an ability of the system for self-organization, transparency, adaptivity and synergy effect. The Social Networked Responsibility Index analyses the CI system's autonomy and identity, strength of internal and external connections, maturity of generated content. This Index also evaluates the system's impact on the society and social motivation of participants (psychological drivers and/or the socio-cultural reality).

TABLE 1: CI CAPACITY, CI EMERGENCE AND SOCIAL NETWORKED RESPONSIBILITY SUB-INDICES AND THEIR COMPONENTS (SOURCE: SKARZAUSKIENE ET AL. [18])

CI CAPACITY SUB-INDICES	INTERPRETATION	COMPONENTS
CAPACITY FOR CREATIVITY	Identifies the dynamism and openness of community. The more varied structure of participants, the higher capacity for creativity	Degree of diversity in the source of ideas Degree of diversity in the engagement forms
CAPACITY FOR AGGREGATING KNOWLEDGE	Identifies the level of capacity for creating collective knowledge among network members	Degree of interdependence Degree of adequate supply of critical mass ("swarm effect")
CAPACITY FOR DECISION MAKING AND PROBLEM SOLVING	Identifies the level of competencies for independent decision making and problem solving	Degree of decentralization Efficiency of the problem solving Degree of independence

CI EMERGENCE SUB-INDICES	INTERPRETATION	COMPONENTS
POTENTIAL FOR SELF-ORGANIZATION	Identifies the degree of self-organization to reach community tasks	Degree of self-organization Degree of distributed leadership Degree of development of the transparent structure and culture
INTENSITY OF EMERGENCE	Identifies the intensity of emergence of new quality based on distributed memory and shared knowledge ("wisdom of crowds" effect)	Degree of development of new qualities in form of ideas, activities, structured opinions, competencies, etc., based on distributed memory system
POTENTIAL FOR ADAPTIVITY	Identifies the degree of ability to adapt changes in socio-cultural context (local, national, global)	Degree of development of improvements and learning processes within the community Development of life-long learning

SOCIAL NETWORKED RESPONSIBILITY SUB-INDICES	INTERPRETATION	COMPONENTS
MATURITY OF SOCIAL IMPACT	Identifies the extent of civic engagement and impact on public opinion	Degree of civic engagement Degree of sustainability
MATURITY OF SOCIAL MOTIVATION	Identifies the maturity of motivation to deal with societal challenges	Level of maturity of social motivation of community Level of social sensitivity of community members
MATURITY OF SOCIAL ORIENTATION	Identifies the maturity of monitoring (identification) social matters and value of generated content for society	Level of maturity of the reaction to social issues Degree of diversity in cooperating partners and financing Level of maturity of generated content

The various components cover different aspects of each Sub-Index, for example, the *Capacity for Creativity* includes the 2 components: *Degree in diversity in the source of*

ideas and *Degree of diversity in the engagement forms*. Each component related to the Sub-Index reflects from a grouping of different indicators. For example, the component *Degree in diversity in the source of ideas* is measured by *Percentage of females in the community, Percentage of different nationalities and age groups, Superadditivity (diversity in opinion, solutions, predictions, etc.)* (See A Appendix).

The Social Technologies Index explores the structure, design and human-machine interaction enabling the technological solutions of the networked system. An effective social networking technology has to possess the following 3 relevant characteristics [5]: the capacity/expansion related technologies at the Capacity Index level, the emergence/risk related technologies at the Emergence Index level and the value related technologies at the Social Networked Responsibility Index level. As mentioned before, the information and communication technologies are critical for the formation of CI. Because the Internet became an extensive distributed inventory of information and knowledge, it partially fulfills the functionality of a “distributed memory” system. “Incorporating all sorts of computing and information processing technologies (e.g. the Semantic-Web-based reasoning tools, Web Services and other Web-based applications), the Web platform has obtained some capability of intelligence in its own right, and such Web intelligence may be furthermore combined with participants’ human intelligence to form higher-level community intelligence” [27]. The dimension of Social Technologies Index includes the 6 integrated indicators: external and internal networking/collaboration technologies, safety and privacy technologies, decision-making support, knowledge creation and knowledge sharing technologies, media/design quality, data aggregation and assessment technologies (See B Appendix).

The theoretical insights and our empirical research results reveal that at the current knowledge level the capacity for developing the collaboration competencies, social and technological conditions for the CI emergence and level of social maturity are important features of the CI systems. Measuring them could be useful in predicting the performance of the CI system as a whole. The CI monitoring technique is expected to facilitate the policy makers, urban designers and community managers or moderators to recognize whether a community has a potential of becoming an effective CI system, maximize the benefit that the community and individual users will receive from the system and decide on the adequate technological design and solutions. The CI assessment tool offers an opportunity for the IT developers to integrate or develop new applications that can be exploited through the community or stakeholders to create and enrich the human-machine networks.

GAINING INTERDISCIPLINARY PERSPECTIVE THROUGH THE INNOVATIVE METHODOLOGICAL APPROACH

The general focus of the doctoral training school was based on creating a shared understanding of the possibilities that forms of man/machine/space interactive

narratives. The tutors aimed to introduce the innovative research approaches along different domains related to the shaping and making of technologically enhanced public spaces – from architecture, landscape and interaction design to urban development, sociology and digital humanities. The training school initiators from different EU universities wanted to increase the awareness on the new methods, techniques and materials for the production of responsive and inclusive urban places as well for their effects on human behavior, preference and response. The topic “*Collective intelligence in web mediated environments*” was chosen for the module “*Transforming Value: responsive technologies, prototypes and concepts*” and was implemented during a 6 hours workshop for 25 students from the different EU countries.

The structure of the training was following:

1. The theoretical insights on collective intelligence with the task to develop a basic understanding on the concept of collective intelligence and preconditions for its emergence in the networked platforms.
2. The introduction of the CIPI tool and assessment of the different web mediated environments (spaces, communities, networks, platforms, etc.) using the proposed questionnaires and analyzing the platforms according the set of socio-technological indicators (see Annexes A and B). The groups of students had to apply the methodology for evaluating the 3 different research subjects in different countries selected by the workshop group itself. Each participant was assigned to offer for selection procedure one example of a web-mediated environment from his country before the training to have a more content oriented discussion during the workshop.
3. The development of an attractive, inclusive and reflective prototype of one of the New Thessaloniki Seafront Gardens (Greece, Thessaloniki) with the attention to the socio-technological indicators and best practices accrued from the research activities they have followed. The task included the precondition not only to offer a technological solution or design idea, but also to explain its social value for the community.
4. The presentation of the outcomes in the form of a system model on the paper or on the computer screen.
5. The final discussion included the following questions:
 - What are the best practices for developing the web mediated environments in different countries?
 - How the different mediated environments could become a possibility to effect positive changes in society and communities, taking into account the social and cultural differences between the case countries?
 - How the different technologies could help to structure information, clarify positions, reconcile different opinions and formulate the real voice of society?

- How the mediated environments could help to increase a wider civic engagement into the collective decision-making process?

I. THE CONTEXT FOR THE ASSIGNMENT: NEW THESSALONIKI SEAFRONT GARDENS

The subject of the training activities was the New Thessaloniki Seafront, which stretches from the Royal Theater to the Thessaloniki Concert Hall. It is a distance of about 5 kilometers, which gives the citizens a democratic space with great variety in scenery. Walking the new seafront seems to be a daily treat for a large number of Thessalonians: 5 kilometers, 45 minutes alongside the sea and parks is the distance to walk their dogs, sunbathe, read, relax, and entertain themselves. The main purpose of the urban planners was to reconcile the city with the sea, which had turned their backs on each other's, to create the feeling that someone walking along the seafront is walking on the water [20]. With such aspirations in mind, the urban architects P. Nikiforidis and B. Cuomo designed 2007-2011 a series thematic parks, each of which retains features of the old seafront. While walking from park to park, the two architects reveal that they want their work to become a multicultural and multiethnic hub [20]. The urban designers wanted the seafront to be visited not only by the tourists, but also by locals. They hoped that the seafront's influence to Thessalonians will help them to develop their artistic tendencies. Having in mind this context the trainees at the doctoral school decided to use New Thessaloniki Seafront Gardens as the subject for case study at the school with the task to re-envision and re-enable innovative architecture and design along different aspects of shaping the constitution of technologically enhanced public spaces.

Yet, the production of responsive and inclusive urban places and the quality of public open spaces remains critical for cultural identity development, as they provide important gathering points in the urban fabric and offer the *place* for interactions among generations and ethnicities. People of all ages still need contact with nature and with other people, in order to develop different life skills, values and attitudes, to be healthy, satisfied with their lives and environmentally responsible. The task of the module was to generate knowledge for a co-creation approach to be used to merge the use of ICT with these essential functions of the public spaces. With wireless connectivity and information sharing new technology mediated opportunities emerge for human/space/digital interaction. Society is becoming more and more what people create technically. Using socio-technological approach and looking at the technologies as the value for society creating tool, we tried to explore the new dynamics of open spaces as a trusted service for community and expand our understanding on how mediated public open spaces function, paying attention to stakeholders, local context and different social groups. Designing, monitoring, evaluating or revising web-mediated environments require evidence from across the disciplines, from natural and social scientists to humanities and must be supported through community engagement.

II. APPLYING THE CIPI TOOL IN TRAINING: THE LESSONS LEARNED

Certainly, it seems that the discourse of the interdisciplinary is everywhere, but it is not enough to put students with various background from different disciplines together. It is more important to offer them the collaborative framework to study collectively. The challenging task by gaining interdisciplinary perspective was to understand the complexity and correlation between different factors. The CI Potential Index evaluates the basic characteristics, functionality, and technological design of CI systems (in this case platforms or online communities) using a set of integral socio-technological indicators (CI Capacity, CI Emergence, Social Technologies and Social Networked Responsibility Index). We can describe figuratively, that networked platforms had “to pass” cognitive, emotional and social intelligence test and “revise” their digital competencies by undergoing assessment with innovative highly interdisciplinary CIPI tool.

The monitoring results provided participants a “helicopter view” on the potential of digital enabled environments to generate intellectual products and engage community members. By analyzing selected platforms, the students gained awareness about the importance of different socio-technological indicators and insights on the game changing communities or their engagement strategies. Discussing technological indicators the participants aggregated knowledge and “fresh paradigm” about the relationship between technologies and their social impact on platform performance. The monitoring results provided the information about the limits of analyzed platforms and initiated the argumentation in the groups about what changes must be implemented to overcome the limitations. Better understanding of the CI emergence dynamics is necessary to design the web mediated environments and support communities to deliver the intended intellectual or social outcomes. Exploring the potential of collective intelligence can help communities to multiply their abilities to organize themselves and become more productive and efficient by solving their problems. After the evaluation of selected platforms, the participants developed some ability to recognize potential for creativity through the engagement of different participants groups or potential for knowledge creation through the existence of adequate technological solutions for knowledge aggregation or decision making. Thus, the participants moved to the second task, designing a possible prototype of the selected Garden in New Thessaloniki Seafront, having in mind the necessary preconditions for the successful cooperation models for inclusive and reflective web-mediated environments.

Divided into three groups the participants chose the following gardens for prototyping: The Water Garden, The Garden of Sculpture and The Garden of Sounds. The choice was made during the morning walk through the thematic gardens of the New Seafront. The impressions were fresh and captured on the cameras, so the students had many insights to develop their creativity. The Water Garden with its hydrophilous

plants and water lilies is a real freshwater ecosystem right next to the sea. The visitors can relax listening to the sound of the artificial waterfall that stretches all along the park, eliminating any noise from the traffic. The idea of the first working group was to make the garden more interactive by involving the citizens in co-creation of an attractive and inclusive place. They proposed to install the different sensors and apply the gamification strategies to engage the visitors into activities like playing with light colors on the water surface or various music performances: "The sensors could recognize the places where the visitors are crowded and the performances would be activated when a particular number of visitors is reached. To have a water-music performance, for example, you have to invite as many people as possible to reach the required number. When a crowd is big enough for activating a performance, a possibility to take collective decisions and solve different community projects could be used." Another creative idea followed: "The visitors can vote for different ideas to take collective decisions and the results will appear on the screens or in different water pools, which indicate the YES or NO decision through different water performances." Summing up the brainstorming, it can be concluded that the working group learned the following lessons:

- Importance of the building an online platform for engagement the community members to increase awareness about social issues.
- Advantage of a gamification approach by implementing technological solutions for the engagement strategies.
- Understanding of the basic principles of "wisdom of crowds" idea: supply of critical mass to reach synergy effect, capacity for self-organization and collective decision making.
- Perception about sources to increase creativity, such as diversity in source of ideas and diversity in engagement forms.
- Knowledge about a social value creating technologies, such as technological solutions to vote/rank the ideas, or mechanism to make the decisions, implement a virtual brainstorming, generate feedback, and technologies for the aggregated knowledge visualization, creativity and quality of visualization, etc.

The aim of the Garden of Sculpture is to become an outdoor museum to host sculptures and artworks. The visitors get a feeling of the traditional Greek villages with white marble benches. The attractive feature of the garden is a large water surface with special night lighting effects, spectacular flowerbeds and surrounded with many spots to sit and enjoy the view. The second working group prototyping this garden decided to initiate an online discussion between the citizens, local cultural communities and artists how to promote the arts in open public spaces. The Garden of Sculpture could be a starting point for the community to take collective decisions about which particular art pieces should be exhibited and where they should be placed: "The local and international artists or people, who spend time on sculpting as a hobby, could be

able to upload their work for the online competition. The responsibility for evaluation takes the “crowd”..., the citizens could vote which of the art pieces would be selected for exhibition in the Garden of Sculpture, defining the place or conditions of the performance (the hour, the background view, positioning, sound effects, duration, etc.)”. The group also discussed the different citizen’s engagement strategies and motivation factors to involve different age groups in co-creation. The participants became able to understand following messages from tutoring:

- Value of co-creation for society by designing public places with the emphasis on the relationship between people-place-technology (social maturity, diversity in cooperating partners, etc.).
- Relevance of the technological solutions to make collective decisions: tools for a collective brainstorming, mechanisms to make a decision or conclusion, vote or rank the idea, add value to content, generate feedback, and tools for increasing diversity in the decision making (group/individual; evaluate/select/ vote/ consensus/averaging), etc.
- Understanding of how a capacity of the system for the information processing and a variety in the problem solving alternatives can influence the efficiency and timing to solve a problem in the group.
- Understanding of how to generate and extract the “wisdom of crowds” by adapting the principles of self-organization, transparency, independence, adaptivity to socio-cultural context and development common community norms and regulations, shared infrastructure, etc.
- Knowledge about the importance of motivation factors and their adequacy to the different needs of the community members.
- Perception of the concept of community intelligence in the form of the new ideas, activities, structured or aggregated positions (idea improved after comments), created products, prototypes and the exhibition of the higher intellectual capability than any separate community member.

The Garden of Sounds is considered as the most peaceful area in the New Seafront. The original idea of the architects was to plant the reeds because of the unique natural sounds they produce when the wind blows. However, it was eventually replaced by the rich flora of different origin [20]. The main problem with the Garden of Sounds is that it does not have a connection to the name. The challenging task of the third working group was to recreate a connection to the name and attract more visitors by involving them into redesigning process. The group suggested to transform the Garden of Sounds into a real cooperation and co-creation space. The inspiration for the group was the area covered with gravel and rocks: “We decided that stones should constitute the focal point of our work – transforming stones into musical instruments for visitors. We propose to augment each rock with sensors, and the gravel area with a positioning system. The space will be also equipped with a public

display screen and a speaker. The system “reads” the position of the rocks in the space, and translates their position into the sounds (e.g., the X axis is for time, the Y axis is for frequency, just like a music sheet). An audio output is also visually represented with visual cues on the public display screen (for increasing accessibility, diversity and inclusion of people with disabilities)... The sensors will be activated by touching. In order to produce the sounds, the visitors have to move the stones from place to place. Some of the stones are heavy, so the cooperation is obligatory to produce a new sound.”

The group also developed the idea to connect a physical installation with an online platform for the trusted community members. The application could help the online community to schedule the musical events, create the common memories, coordinate the “open jam sessions”, stream remotely what is being played in the garden, etc. Using this certain application, the possibility for real-time remote collaboration will be created. That will enable to remote the musicians to jam with others in the garden. The feature can also have an archival function to collect and store the music composed and the sounds recorded in the Garden of Sounds. The community members will be involved in the different decision-making activities such as selecting the best play lists, promoting the artists, organizing the events or implementing the innovative solutions into the Garden’s environment. The highly creative ideas were developed with all attention to the main tasks of the workshop: the value of co-creation for increasing creativity and solving social problems, the attention to the needs of various demographic groups by designing public places, the importance of interaction between the people and advanced technologies:

- Importance of the combination between virtual and real time activities by building the community.
- Relevance of the realization of gamification approach and the adaption of the activities for the different age groups and for people with disabilities to increase diversity in source of ideas by increasing social inclusion at the same time (social networked responsibility).
- Importance of the transparent decentralized structure, independence, diversity in forms for the decision making (group/individual; evaluate/ select/ vote/consensus/averaging) and equal rights for the participants by increasing communities’ potential for the decision making and problem solving.
- Relevance of the development of the distributed memory in the community by systemizing, storing and sharing the relevant social and technological information about the communities’ activities, and related to this, the need to implement the data aggregation and data access technologies to build the distributed memory, such as the tools to collect data, analyze performance, share and re-use data.

- Understanding of how smart and social value creating technological solutions, such as the tools for idea classification, mass argumentation, the mechanisms to create the interest groups, to visualize and organize data, etc., can increase the capacity of the community for the knowledge creation.
- Understanding of how to support the emergence of collective intelligence by developing communities' social networked responsibility, i.e. increasing potential for learning, social sensitivity, maturity of reaction to social issues.

INSIGHTS AND CONCLUSIONS

The discourse of the interdisciplinary is important, but to implement it in praxis it is not enough to put students with various background from different disciplines together. It is more important to offer them the collaborative framework to study collectively. The challenging task by gaining interdisciplinary perspective is to understand the complexity and correlation between the different factors. The central axis within the web mediated environments is information and data, thus, the spaces have to be designed in a way which would create the opportunities for information exchange. The inclusive and responsive web mediated public spaces should offer the possibilities for the networked self-organization due to the appropriate technologies for decision making, knowledge aggregation and creation.

The participants' discussions were closely related to the initial objectives of the architects of the New Thessaloniki Seafront to satisfy every visitor and to create democratic green space open for everyone. The workshop was highly interactive and creative. The outcomes of the workshop can be useful not only for the researchers as an example of applying interdisciplinary framework, but also for the Thessaloniki city seeking to build inclusive and responsive community. At the moment, the Association of Friends of the New Seafront is already established by a local student looking for a way to protect and enhance the new environment of the city. There are more than 50 active members who occasionally organize the actions such as planting trees, sports activities or fashion performances. The ideas, developed during the workshop, have a practical value for this association or the community in general and can be discussed and implemented in the future so that the community and individual benefits will be maximized.

The participants developed the transferable skills to transform the web mediated environments into effective Collective Intelligence systems and design the spaces with the attention to the different socio-technological indicators. They learned not only to look for the innovative technological solutions or design ideas, but also to understand the social relevance of the technologies and mediated environments for the community. The web mediated public spaces can be considered as Collective Intelligence systems, because they have a potential to create a knowledge network based on digital enabled interaction and integrate the elements of openness,

dynamism, diversity, decentralization, independence, etc. The value of Collective Intelligence is more than sharing, reacting, voting or making decisions. The digital enabled collective intelligence approach helps to identify problems, find solutions and co-create safe, inclusive and reflective society.

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APPENDIX A

QUESTIONNAIRE FOR COLLECTIVE INTELLIGENCE POTENTIAL INDEX CALCULATION

CAPACITY SUB-INDICES	COMPONENTS	INDICATOR (BASED ON WEB ANALYTICS AND/OR QUALITATIVE ANALYSIS)	QUALITATIVE EVALUATION FROM 0 TO 5
Capacity for creativity	Degree in diversity in the source of ideas	Percentage of females in the community, percentage of different nationalities and age groups Superadditivity (diversity in opinion, solutions, predictions etc.) Degree of development of external links	
	Degree of development of engagement forms	Degree of participants (agents, members) outbound 'sharing' activities such as 'send to a friend' or 'share on Facebook' of community content by community members Realization of game based approach Adaption for different age groups	
Capacity for aggregating and creating knowledge	Degree of interdependence	Consistence and density of the network Network amplitude	
	Supply of critical mass ("swarm effect")	Total participation in site polls and surveys Total visits – the total number of times the site has been accessed or visited Unique visitors – the total number of different visitors the community has had Repeat visitors, the number or proportion of visitors who have visited the site more than once (ever, or over some period of time) Number of contributions/contributors	
Capacity for decision making and problem solving	Efficiency of problem solving	Level of capacity for information processing, efficiency and timing with which group is able to solve problems Variety of problem solving alternatives	
	Degree of decentralization	Existence of diversity in forms for decision making (group/individual; evaluate/select/ vote/consensus/averaging) Equal rights for participants	
	Degree of independence	Level of criticism Depth of problem analysis Existence of privacy policy and anonymity possibilities	

EMERGENCE SUB-INDICES	COMPONENTS	INDICATOR (BASED ON WEB ANALYTICS AND/OR QUALITATIVE ANALYSIS)	QUALITATIVE EVALUATION FROM 0 TO 5
Potential for self-organization	Degree of development of shared structure and culture	Existence of common community norms and regulations Development of shared vocabulary and other infrastructure Top and total referrers	
	Adequacy in form of self-organization to community task	Adequacy of type of leadership to community task (hierarchy for simple task, crowd for complex task, distributed leadership for multitasking). Adequacy of task to category of community (collaborative and competitive, centralized, decentralized) Adequacy of task to community members motivation Balance between communities and individual objectives Degree of transparency	
Intensity of Emergence of CI	Degree of development of ideas, activities, structured opinions etc.	Number of new ideas, decisions, prototypes, activities, innovations, structured opinions Aggregated position (idea improved after comments) Diversity of created knowledge/products Exhibition of higher-level intelligent capability than any community member	
	Development of distributed memory system	Capability of “intelligent” problem-solving, i.e. the capability of utilizing the stored knowledge to solve problems Systemized relevant scientific and technological information in the field	
Potential for adaptivity	Ability to adapt changes	Adequacy to socio-cultural context (local, national, global) Degree of development of improvements and learning processes within the community	

SOCIAL NET. RESPONS. SUB-INDICES	COMPONENTS	INDICATOR (BASED ON WEB ANALYTICS AND/OR QUALITATIVE ANALYSIS)	QUALITATIVE EVALUATION FROM 0 TO 5
	Maturity of social impact	Degree of civic engagement Degree of sustainability	
	Maturity of social motivation	Level of maturity of social motivation of community Level of social sensitivity of community members	
	Maturity of social orientation	Level of maturity of reaction to social issues Degree of diversity in cooperating partners and financing Level of maturity of generated content	

APPENDIX B

QUESTIONNAIRE FOR SOCIAL TECHNOLOGIES INDEX CALCULATION

INDICATOR	EVALUATION CRITERIA	EVALUATION SCALE	QUANTITATIVE ASSESSMENT RESULTS (NUMBER IN TOTAL)
External and internal networking/ collaboration technologies	Existence of mechanism for anonymous offering of ideas;	Yes/No	Yes= No=
	Existence of synchronous and asynchronous chat tools, open forums etc.	Yes/No	Yes= No=
	Provided access and integrated service to all devices (handhold, PCs etc.)	Yes/No	Yes= No=
Privacy and security assurance technologies	Existence of mechanism for providing secure and legal activities	Yes/No	Yes= No=
	Existence of mechanism of protection of personal data	Yes/No	Yes= No=
Decision making technologies	Existence of mechanism for collective brainstorming	Yes/No	Yes= No=
	Existence of mechanism to vote/rank idea/solution	Yes/No	Yes= No=
	Existence of mechanism to make decision or conclusions	Yes/No	Yes= No=
Sharing/ creating knowledge technologies	Existence of mechanism to add value to content	Yes/No	Yes= No=
	Existence of mechanism to generate feedback	Yes/No	Yes= No=
	Existence of technological solutions for knowledge visualisation and organisation	Yes/No	Yes= No=
	Existence of mechanism for idea classification	Yes/No	Yes= No=
	Existence of mechanism for mass argumentation	Yes/No	Yes= No=
	Existence of mechanism to create interests groups	Yes/No	Yes= No=
Media/ design quality	Degree of user friendliness, speed and convenience	High/ Medium/Low	High= Medium= Low=
	Quality of visualisation	High/ Medium/Low	High= Medium= Low=
	Level of development possibilities	High/ Medium/Low	High= Medium= Low=
	Design relation to task	High/ Medium/Low	High= Medium= Low=
	The perpetual beta (updating possibilities)	High/ Medium/Low	High= Medium= Low=
Data aggregation and data access technologies	Existence of mechanism to collect data	Yes/No	Yes= No=
	Existence of mechanism to evaluate and analyse performance	Yes/No	Yes= No=
	Existence of mechanism to share and re-use the data	Yes/No	Yes= No=

Application of ICT to enhance the programmes of public greenery on the example of the New Waterfront in Thessaloniki, Greece: a workshop report

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Abstract - *The workshop on the application of ICT to the programming process of public spaces and public greenery to enhance their recreational offer for users was held between 29th and 31st of March 2016 during the first TUI 306 International Training School in thinking and making hybrid space entitled “Enhancements: Mediated Urban Landscapes” (29 March - 01 April 2016), Thessaloniki, Greece. The main purpose of the workshop was to recognize the programming process as an important design stage in landscape architecture, and to identify the possibilities of supporting that process by the use of Information and Communication Technologies (ICT). The results of the workshop concerned the pool of examples of ICT application to selected gardens and the promenade of the New Waterfront of Thessaloniki used to connect the digital and physical layers of that public space. Application of ICT was used as a tool to enhance the recreational offer for all types of users, and contributed to add new values to those spaces including their higher usability and increase in social networking.*

Keywords - programming, design, public greenery, ICT, workshop, the New Waterfront of Thessaloniki

INTRODUCTION

Design in landscape architecture is a complex process constantly intensified with new methods, ideas and solutions (Lynch, Hack, 1984), including the use of new technologies (Ylipulli, et.al., 2014). This approach as promoted nowadays, has resulted not only from a search for new and original forms of public spaces and public greenery, but above all from their users' increasing needs and expectations.

Today, in an age of rapid technological progress and data growth (Beigl, Gellersen, Schmidt, 2001, Naisbitt, 1992), people become more digitally-oriented and their behaviours associated both with work and leisure are commonly based on the access to the Internet (Negroponte, 1996, Suchocka, et.al., 2017). The use of wireless networks is becoming more and more popular in many types of public spaces (Gupta, 2004, Hampton, Gupta, 2008). A large number of people, including representatives of 'digital natives' but also 'digital immigrants' (Prensky, 2001), are interested in staying

connected anytime and anywhere (Forlano, 2008), so almost all types of their everyday activities are moved outdoors (Thomas, 2013). They permanently use different mobile devices, communication tools which put them in contact with other people and provide them with access to information, but which also enhance their work, leisure and entertainment abilities (Ahas, Mark, 2005, Weber, Drüeke, Schulz, 2007). As the digital network becomes an essential part of everyday life, a new digital layer must be added to the urban landscape (Lynch, Hack, 1984) and come together with its existing physical layer (Ampanavos, Markaki, 2014). Finding innovative solutions which integrate those two layers has become one of the main aims of programming modern public spaces. Application of ICTs to that process can also be used as a tool to enhance the recreational offer for users of public greenery.

This report summarizes the whole process and main results of the workshop module on the application of ICT to the programming process of public spaces and public greenery to enhance their recreational offer for users. The workshop was held on 29th and 31st of March 2016 during the International Training School in thinking and making hybrid spaces entitled *“Enhancements: Mediated Urban Landscapes”* (29 March – 01 April 2016), Thessaloniki, Greece, and was developed by the Aristotle University of Thessaloniki, School of Architecture and the COST Action TU 1306 *“Fostering knowledge about the relationship between Information and Communication Technologies and Public Spaces supported by strategies to improve their use and attractiveness (CyberParks)”*.

The workshop was organized and conducted by Dr. Kinga Kimic, representing the Department of Landscape Architecture, Warsaw University of Life Sciences, Poland. The group of participants included 16 representatives of six countries: Austria, Greece, Italy, Malta, Poland and Portugal. The participants were purposefully invited to form small international and interdisciplinary teams of 4 representatives to develop their creativity, encourage them to interact and provide effective cooperation.

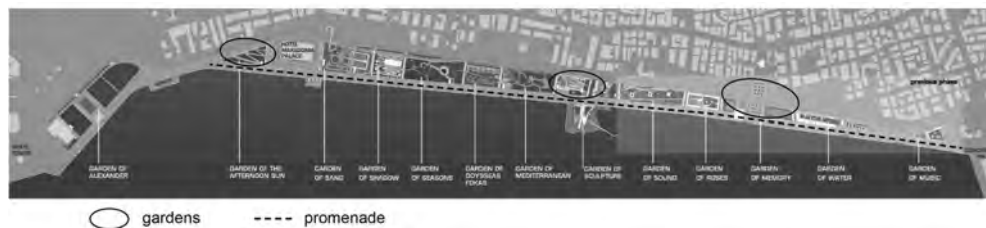


Fig. 1: The location of the selected thematic gardens and the promenade on the plan of the New Waterfront of Thessaloniki (Nikiforidis, Cuomo, 2017).

The New Waterfront of Thessaloniki, designed by Nikiforidis-Cuomo Architects and laid out in 2014, was chosen as a case study. The main idea of designers was to create a large-scale multifunctional public space accessible for all. Its characteristic spatial forms include 2 different areas: the breakwater followed the line of the sea, and a

series of 13 thematic gardens adjoin it along the inland side of the coast (Nikiforidis, Cuomo, 2017). The functional diversity of all sections of the New Waterfront allowed participants to select 4 different spaces for more detailed study. Different areas, including the Promenade, the Garden of the Afternoon Sun, the Garden of Sculptures, and the Garden of Memory [figure 01], were assigned to each team.

MAIN OBJECTIVES, METHODS AND ORGANIZATION OF THE WORKSHOP

The main objectives of the workshop concerned two aspects. On the one hand, it was organized to improve the understanding of the programming process as an important design stage in landscape architecture that usually determines the success of the final project. On the other hand, the workshop was undertaken to identify the new ways and possibilities of supporting the programming process of public spaces and public greenery by applying Information and Communication Technologies (ICT) as a tool to enhance their recreational offer for all users.

The workshop consisted of two main steps:

Pre-workshop preparation - The preliminary work was initiated before the beginning of the International Training School. Upon registration, participants were asked to gather general information about Information and Communication Technologies (ICT) and different examples of their application to public spaces based on recommended literature and Internet sources. They were also required to recognize the main idea behind the redevelopment of the embankment in Thessaloniki and the design of the New Waterfront.

The workshop itself - The workshop included tasks and activities spread over time. On the first day of the International Training School (29th March 2016) participants were divided into 4 teams and each one chose a different area of the New Waterfront of Thessaloniki. During the site visit they recognized the specifics of the selected areas and collected the basic data. They made general inventory of the spaces including their main features, took photos and used the method of observation to identify users and their activities. The proper part of the workshop was conducted during the afternoon session on the third day of the International Training School (31st March 2016). The meeting began with the introductory presentation of the workshop purposes and anticipated outcomes. The presentation also explained in detail the issues of programming as an important initial phase of the design process, as well as different ideas and examples of ICT application to public spaces and public greenery. After that participants started to work with their own data and focused on analyses and evaluation of the current status and programmes of the selected spaces of the New Waterfront. Each team spent about 2 hours discussing the present condition of these spaces including their features, types of users and their activities. The most important task was to evaluate the existing programmes of each site using a 3-grade scale of attractiveness. Then participants used the brainstorming method to invent

and match the proposals of ICT application to enhance the programmes of each thematic garden and promenade. This process was directly consulted with the tutor. The results were collected by each team in two different, complementary forms: programme tables contained short descriptions, and prepared graphics (schemes, sketches, perspectives, functional diagrams, etc.) helped to visualize the main ideas and solutions dedicated to selected spatial arrangements or elements (urban furniture, equipment, etc.) of all the spaces.

The teams' leaders made short PowerPoint presentations which started with the description of the current status of the selected thematic gardens and the promenade of the New Waterfront in Thessaloniki. The gaps in programmes of the selected areas were identified and defined by each team, and the existing programmes of all the spaces were evaluated. Then the proposals of ICT application to enhance the recreational offer for users of all selected spaces were presented.

The final part of the workshop module was a general discussion of the various proposals of ICT application to selected areas of the New Waterfront in Thessaloniki. The representatives of each team answered the questions asked by the tutor and the other participants.

RESULTS OF THE WORKSHOP

The results of the workshop module were collected and presented by each participant's team in programme tables and in sketches or graphics, as follows:

TEAM I

The main idea of the concept was to add a series of small elements to the Garden, activate users to gaming with the real images of the sea in physical and digital layer, and to initiate interactions with others [figure 02].

TABLE I. PROGRAMME TABLE – THE GARDEN OF THE AFTERNOON SUN

NAME OF THE SPACE: GARDEN OF THE AFTERNOON SUN		
Workshop participants: Vasileios Giouveznalis, Eleni Gkrimpa, Lena Kohlmayr, Katerina Tsirepa		
Current status of the space:		
Types of users	Locals and tourists of all ages	
Users' activities	passive	sitting on benches, observing the sea and surroundings, observing other users, contemplating their surrounding
	active	strolling, walking with dog
Features / equipment:	<ul style="list-style-type: none"> - benches, hidden lighting - paths and ramps made of concrete - slope - low vegetation – grass and shrubs 	
Valuation of existing programme:	medium	<ul style="list-style-type: none"> - area isolated by slope - the space too exposed to the sun - lack of trees and shade - low recreational offer for users - panoramic views - sunset (an attractive effect of sunlight and water)
Future status of the space – changes:		
Proposals of ICT application:	<ul style="list-style-type: none"> - glass elements and panels connected to camera lenses and QR Codes - interactive screen - digital platform with information and pictures 	
Added functions:	<ul style="list-style-type: none"> - education - information sharing - gaming via digital devices - development of observation possibilities 	
Added values:	<ul style="list-style-type: none"> - higher usability - co-creation - innovation - well-being and health improvement (health restoration) 	

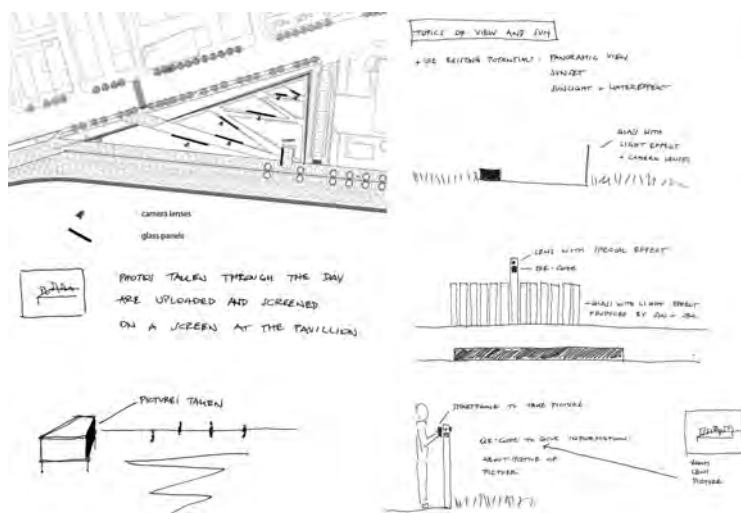


Fig. 2: Proposals of ICT application to the programme of Garden of the Afternoon Sun (graphic and sketches by: Vasileios Giouveznalis, Eleni Gkrimpa, Lena Kohlmayr, Katerina Tsirepa).

TEAM 2

The main idea of the concept was to use the leading theme of the Garden to increase the possibility of contact with art in physical and digital layers at the same time and space [figure 03].

The programme of the Garden was mainly developed into application of new forms of presentation and description of digital sculptures by using advanced technologies, which include different types of location-based mobile apps dedicated to the space and use augmented reality (an overlaying pieces of a virtual world over the real world).

TABLE 2. PROGRAMME TABLE – THE GARDEN OF SCULPTURES

NAME OF THE SPACE: GARDEN OF SCULPTURES		
Workshop participants: Eleni Chousen, Eleni Letsiou, Stavroula Kaparou, Małgorzata Mirgos		
Current status of the space:		
Types of users	Locals and tourists of all ages	
Users' activities	passive (mostly)	sitting on benches, reading, observing the sculptures, observing other users, gathering information about the sculptures
	active	strolling
Features / equipment:	<ul style="list-style-type: none">- glass pavilion- water basin / artificial lake- sculptures- benches- paths and ramps made of concrete- vegetation – small/young trees, flowerbeds	
Valuation of existing programme:	medium	<ul style="list-style-type: none">- area isolated from the promenade- lack of shadow- lack of information about sculptures
Future status of the space – changes:		
Proposals of ICT application:	<ul style="list-style-type: none">- hotspot- smart benches- digital library (information platform)- digital sculptures	
Added functions:	<ul style="list-style-type: none">- work places- virtual exhibition area (artistic expression)- information and education (learning)- gaming via digital layer	
Added values:	<ul style="list-style-type: none">- higher usability- co-creation- social networking- innovation- well-being and health improvement (health restoration)	

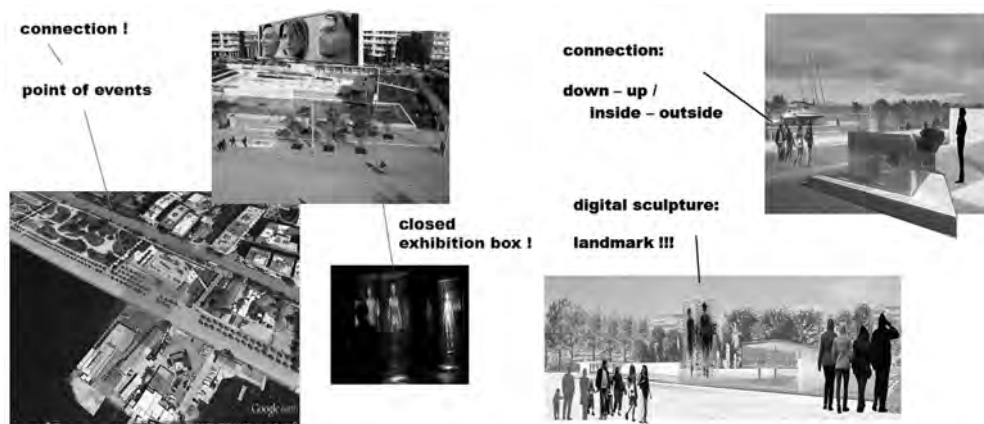


Fig. 3: Proposals of ICT application to the programme of Garden of Sculptures (graphics by: Eleni Chousen, Eleni Letsiou, Stavroula Kaparou, Małgorzata Mirgos).

TEAM 3

The main idea of the concept was to add the digital layer to the Garden using the theme of memory of the site including many variations of collecting and sharing, with information and attractive images of the waterfront. The complex programme of the Garden also allowed the development of the digital layer related to the sports areas to initiate more interactions among players, also between players and their observers [figure 04].

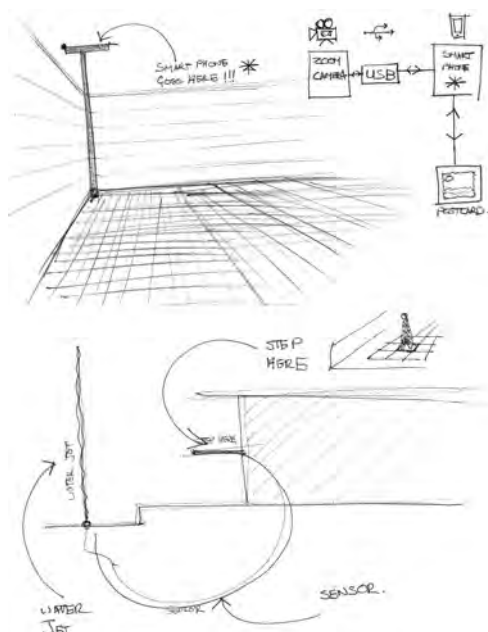


Fig. 4: Proposals of ICT application to the programme of Garden of Memory (sketches by: Artemis Psaltoglou, Isadora Aragão Souza, Hanna Szumilas, Daniel Joseph Tabone).

TABLE 3. PROGRAMME TABLE – THE GARDEN OF MEMORY

NAME OF THE SPACE: GARDEN OF MEMORY			
Workshop participants: Artemis Psaltoglou, Isadora Aragão Souza, Hanna Szumilas, Daniel Josef Tabone			
Current status of the space:			
Types of users	Locals and tourists of all ages		
Users' activities	BUILDING	passive	sitting, chatting, observation
	AROMA HERB GARDEN	passive	sitting, chatting, observing, contemplating
		active	strolling
	SPORT AREA	active	gaming, playing
Features / equipment:	BUILDING	- benches, stairs, ramps, terraces	
	AROMA HERB GARDEN	- paths, benches - vegetation - flowerbeds	
	SPORTS AREA	- sport fields, enclosure	
Valuation of existing programme:	BUILDING	attractive	- shaded area - resting places with many benches - great view of the sea and surroundings
	AROMA HERB GARDEN	medium	- lack of trees and shade - uncomfortable area during summer - low connection to the building - separation from the waterfront - low visual quality - many seats
	SPORTS AREA	attractive	- recreation area - safety area - trees
Future status of the space – changes:			
Proposals of ICT application:	BUILDING	- hotspot - smart binoculars connected to smart phones - interactive floor / stairs (memory games)	
	AROMA HERB GARDEN	- interactive screen	
	SPORTS AREA	- smart score screen - sensors connecting sports equipment to the score and sound system	
Added functions:	BUILDING	- taking photos and printing memory postcards - visual interaction with the sea - access to information	
	AROMA HERB GARDEN	- interactive gaming	
	SPORTS AREA	- innovating games through physical and digital equipment	
Added values:	- higher usability - interaction with other users - entertainment - innovation - more gaming and playing possibilities - well-being and health improvement (health restoration)		

TEAM 4

The main idea of the concept was to link the area of the Promenade to the sea and neighbouring Gardens by different physical elements connected to the newly created and very rich digital layer of the site. ICT was used to increase the usability of the area by many forms of interactive games, inviting all types of users to different forms of interaction [figure 05].

TABLE 4. PROGRAMME TABLE – THE PROMENADE

NAME OF THE SPACE: PROMENADE		
Workshop participants: Valentino Canturi, Steve Cassar, Chrisanthe Kourti, Karolina Parol		
Current status of the space:		
Types of users	Locals and tourists of all ages	
Users' activities	passive	sitting on benches, observing, sleeping, texting, talking on the phone, chatting, using the Internet, listening to music, reading, taking photos, sunbathing, meeting friends, socializing
	active	walking, walking with dog, jogging, biking, inline skating, fishing, performing, painting graffiti, playing with children, participating in concerts and different events (sports shows, fashion shows, etc.)
Features / equipment:	<ul style="list-style-type: none"> - different types of pavement - drinking fountains - benches and platforms - sculptures - lamp posts - vegetation - trees 	
Valuation of existing programme:	medium	<ul style="list-style-type: none"> - lack of equipment - lack of shade - large space for different activities
Future status of the space – changes:		
Proposals of ICT application:	<ul style="list-style-type: none"> - hotspot - smart benches with plugs - interactive smart floor – controlled through app - modular floating system – linked to app with instructions - educational apps dedicated to: the history of the site, existing features, events - outdoor living rooms with screens 	
Added functions:	<ul style="list-style-type: none"> - work places - virtual exhibition area (artistic expression) - information - education (learning) - gaming via physical and digital layer 	
Added values:	<ul style="list-style-type: none"> - higher usability - co-creation - innovation - education - social networking = social interaction - more possibilities of gaming and playing - well-being and health improvement (health restoration) 	

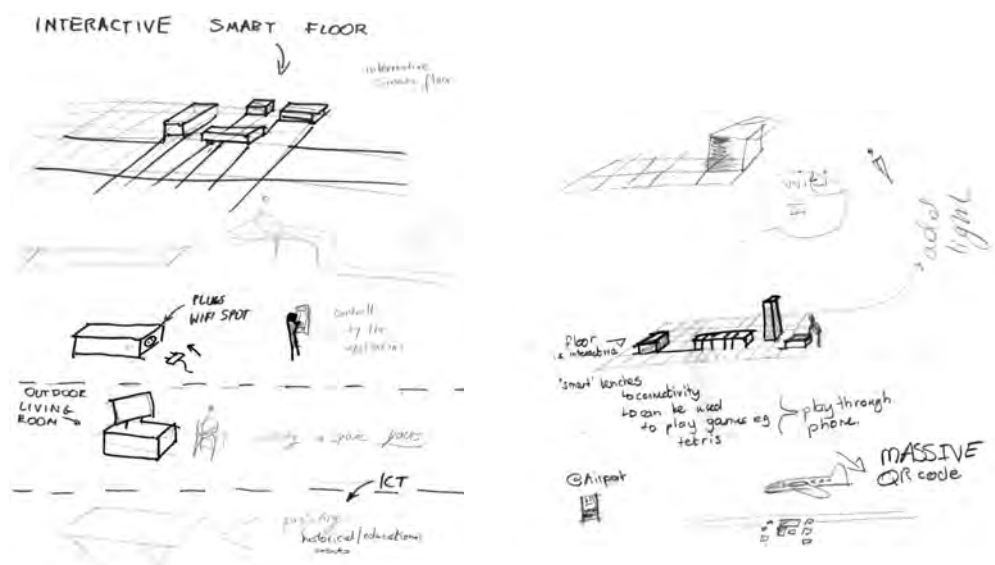


Fig. 5: Proposals of ICT application to the programme of the Promenade (sketches by: Valentino Canturi, Steve Cassar, Chrisanthe Kourti, Karolina Parol).

The current programmes of all the selected gardens and the promenade of the New Waterfront of Thessaloniki were evaluated as medium, rarely attractive. This shows that their potential is only partly used, which means that the recreational offer for users should be improved and made more diversified. All proposals of ICT applications respond to the present condition of the selected areas and engage in the enhancement of their not so varied programmes. Information and communication technologies were used by participants as tools to make the recreational offer of the selected gardens and the promenade more attractive for all types of users.

The main approaches to the programming of all selected spaces of the New Waterfront of Thessaloniki presented by the teams show many similarities. First of all, the prevailing strategy for transforming those areas into more digital ones by using ICT is mainly based on the development of existing features and adaptation of existing elements (urban furniture, constructions, sculptures, buildings). It is only in a second moment that application of ICT takes into account the addition of new elements, always as complements to the previous ones. The group of important new elements include hotspots and other small spatial equipment connected to the Internet - their sizes, forms and locations do not disturb the existing arrangement of the spaces. Thus, this approach demonstrates the understanding and appreciation of the role and values of existing features of the New Waterfront which define its 'genius loci', as well as the respect for the designers' rights.

The new functions added to all selected gardens and the promenade by the application of ICTs refer to two complementary spheres. On the one hand, they improve the diversity of existing physical activities, e.g. possibilities of participation in innovative games. On the other, they also offer a new spectrum of activities available mostly in the digital layer by virtue of Internet access through mobile devices, including information, education, advertising, etc. At the same time, these new functions work by being directly linked through existing or new equipment with the physical layer of the site. Searching for such solutions and their implementation initiates the interaction among all types of users. This approach is one of the ways to create not just multi-functional public spaces, but also more mediated landscapes that bring together users and the places where they can spend more time outdoors. The application of ICT can add new values which refer to many positive aspects, including the higher usability of public spaces as well as the enhancement of their recreational offer resulting in an increase in social interactions.

CONCLUSIONS

The benefits for participants, resulting from the workshop module described in this report, concern a variety of aspects.

First of all, in a theoretical context, the workshop provided participants with a broad insight into the programming process of public spaces and public greenery. Gathered knowledge allowed them to understand the role of that process as an important stage that usually has an impact on the successful complex final design. It allowed to open the participants' minds to new ideas and to recognize the wide range of opportunities arising from the application of ICT to increase the recreational offer of public spaces and public greenery. At the same time, it helped participants to understand that new technologies can be used as tools to increase the amount of time people spend outdoors, to enhance their quality of life, and improve the relationships between users of public spaces.

Secondly, in a practical context, participation in this workshop allowed everyone to gain some general information and instructions about the methods used for programming public spaces and public greenery, which they may in the future apply to their own projects. The proposals of ICT application collected from the introductory lecture as well as the solutions developed by each team of participants for the selected areas of the New Waterfront of Thessaloniki may be a pool of examples used as finished proposals, but, more importantly, be taken as inspirations applied to their future designs.

It was also relevant that participants could share their knowledge, experiences and opinions with their peers during the workshop, as well as develop their teamwork skills.

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Jan Bovelet is an author, theoretician, and architect based in Berlin, Germany. In his work, he focuses on the impact of digitalization processes on architectural design and the production of space, both theoretically and by way of artistic research projects. His main interest is the potential of ICTs for the design of architectural and urban

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GDR and has been professionalized both in the e-commerce sector and the media-art, serving as project manager in companies like ART+COM (www.artcom.de) and Mad Geniuses (www.pixi.eu). In 2012 he has been a founding member and since autumn 2014 an elected board member of the association Flussbad Berlin (www.flussbad-berlin.de). His main interests has always been the opportunity given by digital methods and instruments within the urban and regional planning realm, both as communication tool and as a working device, to achieve best possible outcomes for spaces and people.

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Scott Gaule is co-founder of 'Gizzago' (www.gizzago.org.uk) a Liverpool based creative practice and social enterprise that focuses on the potentials of play and game design in urban settings. Its mission is to encourage conversations about the future of urban life and equip people with playful tools to explore what it means to live well together. Scott works in diverse fields such as health and social care, community development and participatory design. He has a PhD in cultural anthropology, body culture and play. Scott has lectured and researched in numerous UK Universities across the Social Sciences and Humanities and is a Chartered Psychologist.

Adam van Heerden holds a Master's degree in Urban Planning from the University of Cape Town, and currently works at Play the City in Amsterdam - a planning consultancy which uses serious gaming as a method for curating citizen knowledge and for engaging the public in urban issues. With an interest in alternative methods of public participation and citymaking, and in participatory action research, his Master included video ethnography, seeking to include the voices of informal 'waste pickers' in formal planning discussions. His current focus is on digital empowerment through play and through the active co-designing of civic engagement tools and platforms.

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Maria Kikidou graduated in Urban and Regional Planning and Development from the Department of Engineering, Aristotle University of Thessaloniki, Greece, and completed her master's in City Regeneration at the European Joint Master Course, FISD Consortium, Italy. Since then, she has been working in the field of cultural management, participating in projects that promote neighbourhood revival and social cohesion, through citizen participation, cultural initiatives and public art. She's particularly interested in the social and human perspective of cities and their public spaces, investigating how design and urban environment can spark a change in educational, political and economic structures.

Kinga Kimic, Ph.D., is a landscape architect and designer. She works as Assistant Professor at the Department of Landscape Architecture, Warsaw University of Life Sciences, Poland. Her present research focuses on the design and programming of

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Marluci Menezes is a geographer with a Master's degree and a PhD in Anthropology. She is a research associate at the National Laboratory of Civil Engineering, Lisbon (Portugal), where since 1991 she has been studying urban cultures of use and appropriation of space, heritage conservation and urban rehabilitation. She was a coordinator of the Social Ecology Division and has been visiting professor at international universities and institutes. In the area of social and urban intervention, she coordinated the technical and methodological support to Project Old Ghettos, New Centralities (EFTA funds). She is currently studying socio-cultural issues associated

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Juan Luis Rivas Navarro is graduated in Architecture and has a PhD, has been a researcher at the Urbanism Laboratory of Granada since 2001, and a lecturer of the Postgraduate Program of Urbanism at the UGR since 2010. He combines teaching, research and practice in the areas of urban mobility, urban analysis and new cartographies, regeneration of peripheral mixed or agricultural areas and historic districts, urban intervention on river areas and landscape projects focused on border fabrics, having received several prizes in competitions on urban design and urban planning, namely The International Competition of Architecture in Gran Canarias “Flowpolis. The form of the nodal space” (2006); and, among others, the 1st price in the Competition for the Revitalization of the City Centre of Jaen (2012). He has participated in many seminars, conferences on urban planning, urban design, landscape architecture, mapping, sustainability, etc, also as scientific committee member and/or keynote speaker, and has been invited to research and/or teaching of urbanism by different European universities.

Eleni Oureilidou is an architect and landscape architect. During her studies, she received a scholarship from the State Scholarships Foundation and contributed as a teaching assistant at the Aristotle University of Thessaloniki, School of Architecture. She is currently a PhD candidate at the same institution. She has won an award by «GreekArchitects.gr» for her diploma project. She has published her research on the natural environment of the Evros River Delta and she has participated in several conferences promoting the idea of social participation in culture-led urban regenerations. From March 2014 to 2015, she ran the “Kipos3 - City as a Resource” project, as part of Angelopoulos Fellowship 2014, aiming to introduce the concept of community gardens to Thessaloniki. She has worked for renowned offices in Greece (Sakellaridou + Papanikolaou Architects) and abroad (Martha Schwartz Partners in London) and currently she serves the humanitarian sector as an architect in the shelter and settlement department for the displaced populations arriving in Greece (Norwegian Refugee Council).

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Belén Bravo Rodríguez graduated in Architecture from the University of Granada in 2007. She has been a researcher in the Laboratory of Urban Planning at this university since 2005 and, in 2006, a collaborator in the first prize Flowpolis proposal in the International Competition of Architecture in Gran Canaria (Spain). She has been an Associate Professor at the E.T.S. of Architecture in Granada since 2010, and belongs to the Postgraduate Program of Urbanism of the University of Granada, where she worked on her dissertation on the southern district of Granada and its spaces of sociability which was read in January (2016) with the title: "The domestic city. The construction of the first periphery south of Granada". Belén has participated in the main research projects of LUOT, as well as in courses, seminars, workshops and congresses in Valencia, Madrid, Barcelona, Lisbon, Belgrade, etc. In the 2016 academic year, she also incorporated the teaching staff of the Master's Degree in Architecture at the UGR.

Tatiana Ruchinskaya, (PhD, MSt (Cambridge), BA (Hons) Dip Arch) is an internationally trained architect with 15 years of integrated building design experience, sustainability

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Aelita Skaržauskien was one of the initiators of a priority research program for “Social technologies” at Mykolas Romeris University (MRU). Her main research focus is on the emergence of collective intelligence in networked structures (online communities, clusters, virtual initiatives and platforms). As professor, she has been teaching the topic of “E-governance and social networks” and tutoring several PhD students in the fields of responsible innovation, citizen science, cluster management etc. In 2007-2008 Aelita led the Project for the development of self-managing teams in the European Parliament, in Luxemburg and Brussels, with the DEMOS Group Belgium (www.demosgroup.com). She has substantial expertise and experience in the elaboration and implementation of scientific and study projects, coordinating the participation of MRU in more than 10 different projects. She has developed her competencies during the internships at leading world universities: MIT and Washington University, USA; Ajou and Ewha universities in South Korea; USM University in Malaysia; Kasetsart University in Thailand; the Universities of Kingston, Milano etc.

Milena Vukmirović is an associate researcher at the Faculty of Architecture, University of Belgrade. Since February 2015 she has been the Associate of the Director of Urban Planning of the City of Belgrade, responsible for public space development. Her research interests are focused on the relationship between the quality of everyday environment and the competitiveness of cities. At present, she is engaged in the research project Modernisation of the Western Balkans, funded by the Serbian Ministry of Education and Science. She is co-founder and president of the Management Committee of the association Urban Laboratory, active in the field of urban design, urban renewal and urban planning. In 2013, she initiated with professors of the Faculty of Architecture the International Academic Conference on Places and Technologies. Milena is author and co-author of two books, several papers in peer-reviewed journals, monographs and conferences, dealing with topics related to public space design and its qualities, the competitiveness of cities, the concepts of creative and smart cities, cultural tourism and city development process.

Simon Wind is an Assistant Professor in Urban Design with a special focus on mobile ethnographies and digital technologies at the Department of Architecture, Design and Media Technology, Aalborg University (Denmark). He holds a BA in Architecture

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CyberParks - Fostering knowledge about the relationship between Information and Communication Technologies and Public Spaces supported by strategies to improve their use. The CyberParks Project, funded by the European Cooperation in Science and Technology Programme (www.cost.eu/COST_Actions/tud/TUI306), is a collaborative research platform for knowledge and experiences exchange on the role of Information and Communication Technologies (ICTs) to promote participatory urban design processes and the production of inclusive public open spaces. CyberParks is devoted to explore the contribution of ICTs to transform our cities into more social environments, rather than just more high-tech.

In this context, the essays of this book discuss a series of reflections related to space and outdoor digital technologies - the so called Mediated Public Open Space. Thirty international authors and researchers engage in the nexus people, places and technology from different positions and perspectives. They shed light to emerging socio-spatial and technical mechanisms and the multiplicity of interaction of humans with urban spaces intertwined by contemporary pervasive technologies. Can the Mediated Public Open Space enable new interactive experiences? Can it lead to innovative realities where the community celebrate publicness enlivening the public realm? These are some questions posed in this volume and the essays that follow attempt to provide food for thought towards increasing the understanding of public spaces in the postdigital era.

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