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 & Sanagustín, 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 news 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 Museums-insel 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.

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 administrational 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. Theymake 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 extend 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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