

CONFERENCE
PROCEEDINGS

**3RD INTERNATIONAL
ACADEMIC CONFERENCE ON
PLACES AND TECHNOLOGIES**

EDITORS
EVA VANIŠTA LAZAREVIĆ
MILENA VUKMIROVIĆ
ALEKSANDRA KRSTIĆ-FURUNDŽIĆ
AND ALEKSANDRA ĐUKIĆ

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Eva VaništaLazarević, Milena Vukmirović, Aleksandra Krstić-Furundžić, Aleksandra Đukić

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PLACES AND TECHNOLOGIES 2016

KEEPING UP WITH TECHNOLOGIES TO CREATE COGNITIVE CITY
BY HIGHLIGHTING ITS SAFETY, SUSTAINABILITY, EFFICIENCY,
IMAGEABILITY AND LIVEABILITY

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THE ROUTES OF DIGITALIZATION – FROM REAL TO VIRTUAL CITY AND VICE VERSA

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ABSTRACT

We live in informatics society in which we slowly, but certainly reach digitalization of real life in all of its aspects, starting from the user based dimension of functioning of all forms of communication between people through different networks: mobile phones, Facebook, social networks, etc. The spatial dimension (morphology) of entire Earth, regions, each settlement, etc. can be observed through Google. Data based related to every living person is being formed, related to their stationary data, but also related to possibilities to “follow”, “tap/bug” and “track” every individual in space and time.

Flows of financial capital are also being digitalized for every individual (using credit cards, on-line transactions, etc.) as well as in banking systems (on-line transactions). Everyday goods such as food, clothing, etc. can be ordered through portals on the internet. Even various study courses and schools are being organized via internet.

The real world (space, people, money, knowledge) are digitally being moved into virtual space. Here question arises: In which space dimension is this process of digitalization is taking us? This main research question will lead the paper discussion opening basic dilemmas: (1) Will real life slowly move to virtual world? (2) Is the dematerialization of spatial and urban systems is at the end of the digitalization? (3) Shall and what kind of use we will have from virtual world in relation to possibilities of re/questioning developmental model options as well as in perceiving the effects of certain decisions/ trajectories in real life?

The main goal of the paper is giving answers to above disposed questions as well as to the thesis that we have a great range of influence and possibilities on the new meaning of urban development (at all levels) that have to be transformed into digital sphere in order to be effectively and efficiently managed.

Keywords: urban development, digital city, dematerialization, management

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INTRODUCTION

Plural and global societies make crucial changes in thinking about urban development. Castells claims that we are now living in a "network society" that has new types of networks. This network is created by the process of globalization and spatial-temporal compression. Therefore, it is possible to experience different cultures, globally speeded, using multimedia, sitting in the own room. This kind of rapid cultural exchange bring together several levels of globalisation process (economic, cultural, social, spatial, technological) that can have positive and negative impacts to urban development regarding the approach we use to tackle the process.(Castells, 2000) "Societies are organized around human processes structured by historically determined relationships of production, experience, and power. Production is the action of humankind on matter (nature) to appropriate it and transform it for its benefit by obtaining a product, consuming (unevenly) part of it, and accumulating surplus for investment, according to a variety of socially determined goals. Experience is the action of human subjects on themselves, determined by the interaction between their biological and cultural identities, and in relationship to their social and natural environment. It is constructed around the endless search for fulfilment of human needs and desires. Power is that relationship between human subjects which, on the basis of production and experience, imposes the will of some subjects upon others by the potential or actual use of violence, physical or symbolic. Institutions of society are built to enforce power relationships existing in each historical period, including the controls, limits, and social contracts achieved in the power struggles." (Castells 2000: 15) The paper will consider the possibilities to metamorphose real world into digital one in reversible process taking into account forming e-utopia as a paradigm to manage the future real life using various methods and techniques of generating alternatives, moving along them, and helping the future.

FROM REAL TO DIGITAL AND VICE VERSA: E-EUTOPIA PARADIGM FOR METHAMORPHOSIS

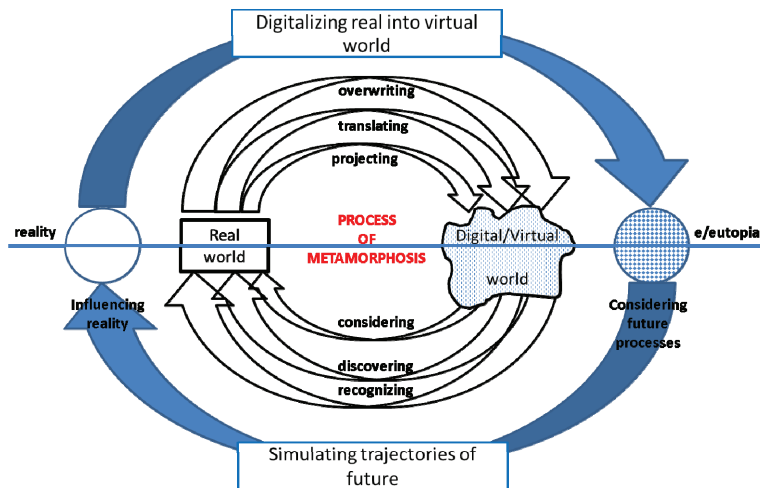
We live in the era of generating, forming and establishing of informatics civilisation that reflects, metamorphoses and transcendent all aspects of our culture especially urban one, enabling multilevel change and exchange of cultural practices and experiences globally providing rapid urbanisation process that are based on old and new kind of networks. The old one stands for traditional kind of organising, while the new one uses digital world for re/creating traditional life into all possibilities of individual, group, community desires. Therefore, we can realize our desires using digital networks, creating our virtual identities, monitoring our alter behaviour on other alter-ids/egos/superegos. Following this process we can create virtual/digital cities that transcendent all resources into virtual networks in which we act as a real persons for new utopias, we would say eutopias. For us digital city as e-utopia can take two directions: dis-utopia and e-utopia. The paper will discuss the processes that can reverse some material dis-utopias to e-utopias and vice versa.

Firstly we would like to distinguish the main notions that the paper is based on. For us, Digital city refers to a set of virtual practices or repertoires that are undertaken in a sustainable manner by individual residents and groups of a particular city for the purpose of interacting, simulating, explaining, reinforcing, monitoring, neutralizing, criminalizing, expanding (locally or globally), processing, transacting, or undermining any political, social, economic, religious or communicational aspect of the daily activities of the urban community. The digital city is an embodied site- the virtual facade of the modern city – where some aspects of social interaction and traditional daily activities are carried out and thereby transformed." (Laguerre, 2005:1) According to Laguerre, this kind of city represents space into which real city expands in a form of another entity for various kinds of communication.

On the other hand Castells claims that modern area is characterized by network society in which we are all interconnected using diverse kinds of communication channels based on information

technologies that creates bases for new types of social, cultural, urban, economic, financial societies (Castells, 2000). "Bewildered by the scale and scope of historical change, culture and thinking in our time often embrace a new millenarianism. Prophets of technology preach the new age, extrapolating to social trends and organization the barely understood logic of computers and DNA. Postmodern culture, and theory, indulges in celebrating the end of history, and, to some extent, the end of reason, giving up on our capacity to understand and make sense, even of nonsense. The implicit assumption is the acceptance of full individualization of behavior, and of society's powerlessness over its destiny." (Castells, 2000:4)

The fact that informatics technology will dominate the future conditions and will become the crucial artifact in observing, assessing and managing future development of human kind; generating all great advantages and disadvantages in influencing future morphogenesis of humans and their behavior, faith, values and mutual (dis)respect, makes this discussion the relevant one for consideration of the ways and trajectories of urban development. As city is an artifact of human organization and reproduction the digital city can be "hell" or "purgatory" for re/cycling and re/creation values for new principles of spatial and cultural organization. The main characteristics of informatics technology is a process of digitalization through which we can, desire and want to project, translate and overwrite real world into digital/virtual one, creating a kind of model/paradigmatic copy (e/eutopia) in which we can efficiently and effectively decide on effects in real world that we face, using different techniques of simulation: mathematic, visual, logic, etc. (Scheme 1)



Scheme 1: Relation between the process of digitalization and simulation: metamorphosis of real and virtual, authors

ROUTES AND PRODUCTS OF DIGITALIZATION PROCESS: DEVELOPMENT OVER TIME

In line with the thesis outlined in the Introduction that is presented in the Scheme 1 the core of the research will discuss, systematize and present the "finite" products of digitalization considering Castells thesis: "...are virtual communities real communities? Yes and no. They are communities, but not physical ones, and they do not follow the same patterns of communication and interaction as physical communities do. But they are not "unreal," they work in a different plane of reality. They are interpersonal social networks, most of them based on weak ties, highly diversified and specialized, still able to generate reciprocity and support by the dynamics of sustained interaction. As Wellman puts it, they are not imitations of other forms of life, they have

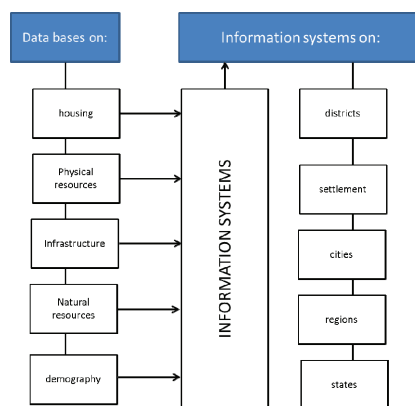
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their own dynamics: the Net is the Net. They transcend distance, at low cost, they are usually of asynchronous nature, they combine the fast dissemination of mass media with the pervasiveness of personal communication, and they allow multiple memberships in partial communities. Besides, they do not exist in isolation of other forms of sociability. They reinforce the trend toward the "privatization of sociability" - that is, the rebuilding of social networks around the individual, the development of personal communities, both physically and on-line..." (Castells, 2000:389)

These "finite" products of digitalisation will be especially considered in the area of professional action in urban, spatial development of cities, regions, settlements considering "urban" and "spatial" level as a core of real as well digital world. The process of mirroring real to digital and vice versa is instrumentalized by the process of digitalization and metamorphosis (Figure 1). In this sense we will systematize and present the steps and phases of the digitalization process of urban systems and its effects on urban activities and development. The systematization is in line with two antipode paradigms in urban and spatial development when creating places: positivistic rational, and collaborative-rational.

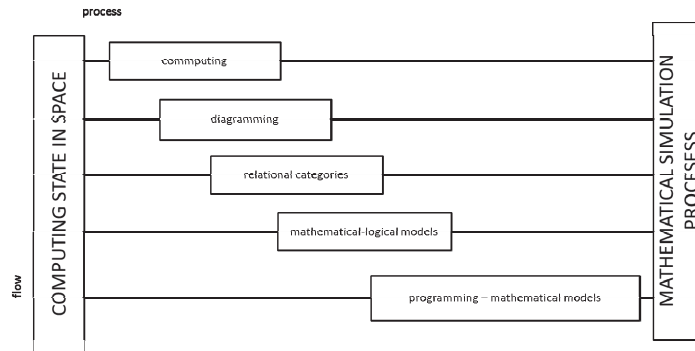
Our paradigmatic model is the one which should widen the H. Simon's bounded positivistic rationality using multilevel dimensions of digital city and space to widen and integrate different legitimate rationalities into coherent shared values and visions of future. Therefore, the digital and real space: "... becomes as an arena for mediating differences in plural society. This integration means making linkages not only between the sectors of sustainability and different interests, but also linkages between different levels of governance, both horizontal and vertical." (Mrđenović, Ralević, 2013). This arena went through various steps and phases of digitalisation in order to have a better insight of the space resources, as well as to manage it in proper manner according to global values (see UN Global Sustainable Development Goals):

- "0 step/level" – Zero step is the beginning of digitalization and informatics society in which the discovery of binary code 0,1 as digital resource, has made a revolutionary thought of mathematics-operational systems when the hardware become a virtual place of binary reality of real urban world;
- "1 step/level" – First step of digitalization of urban space works on the basis of memorizing infinite number of data about space, demography, physical structure, into alpha-numeric data-basison multilevel urban and spatial systems, when professionals form data-bases for assessing present states in and about the world in order to rise a level of implementation of developmental trajectories and options (Scheme 2);



Scheme 2: Digitalization – Information systems

- "Second step/level": process of mathematization of digital space - considers introducing computing techniques that enables efficient work with quantitative data, systematizing them into different categories with relational data bases that produces diagrams of change over time. This is enabled by complex mathematical models: from relational-functional connections to programmed mathematical models (Scheme 3);



Scheme 3: Digitalization – Process of mathematization of digital space

- "Third step/level": Visual digitalization of space, represent a stride for our profession as we got a possibility of graphic spatial representation that are provided through: (1) Sattelite imagenary, (2) Otho-photo imagenary, (3) Digital mapping of geo-referal cadastre, (4) "Google – earth GIS" system that integrated various levels of space (Image 1,2,3,4):
 - Geo-morphology

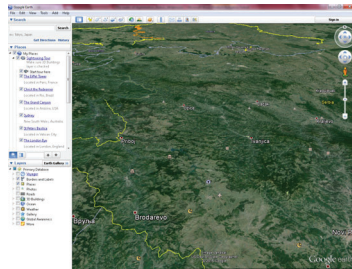


Image 1: Geo-morphology in Google Earth

- Urban maps

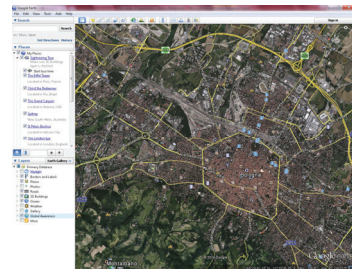


Image 2: Urban Maps in Google Earth

- o Physical representations

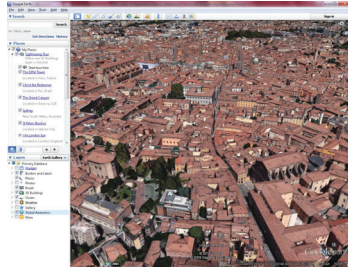


Image 3: Physical representations in Google Earth

- o Virtual walk through space

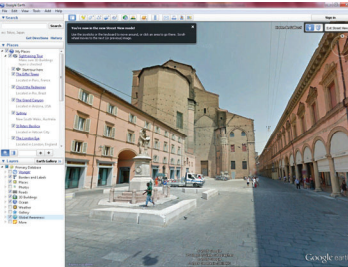
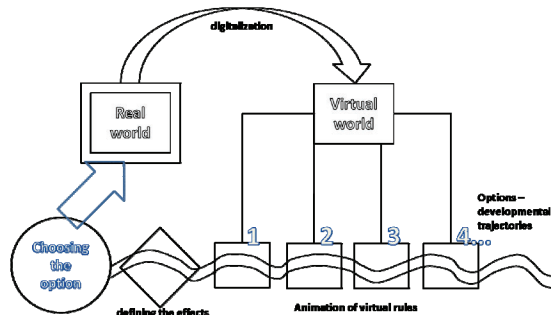


Image 4: Virtual walk through space in Google Earth

- "Fifth step/level": Geo-spatial digitalization of simulation models of complex visual, geo-spatial, alphanumeric data, and value representation in order to support decision making towards adequate transformations on regional and urban level: (1) simulation games in real space, (2) simulation games in virtual spaces, (3) Simulation models of city development from various aspects;
- "Sixth step/level": What if - Digitalization of animation virtual models about real spaces and generating alternatives based on predictions with the cause-effect analysis on all aspects urban and spatial development with aim of continual assessment of our decisions about space (Scheme 4)



Scheme 4: What if digitalization in order to manage the actions with cause-effect assesment

- "Seventh step/level": Represents transferring social communications between people into digital world through Facebook, Twitter, etc. creating a special kinds of virtual societies that become real entities that influence real world and behaviors;

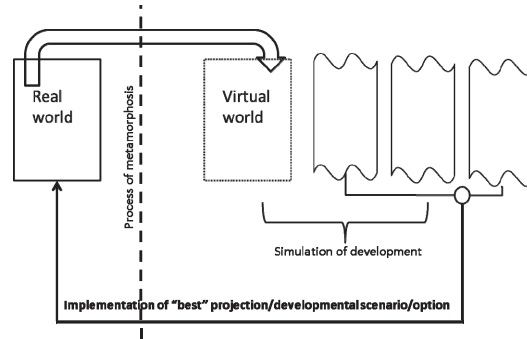
- "Eight step/level": Personal blogs, web-sites through which individuals, institutions, organizations, companies, promotes their offers, results, programmes, etc.

CONCLUSIONS

At this specific moment taking into account previous discussion we can conclude that real world is "moving" to virtual one, creating a specific digital city in order to efficiently and effectively manage needs, desires, interests and values, using all benefits of digitalization process:

1. Efficient reaction and feed-back;
2. Easy accessibility and constant presence of all resources (human, natural, artificial, financial, logistic, etc.)
3. Great interconnectivity of all actors, stakeholders and spatial systems;
4. Full time-based inter-connectivity of all actors;
5. Transparency and accessibility of all real resources using digital world and upgrading the real one using digital society;

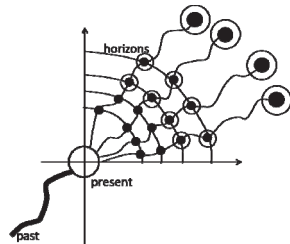
This tendention of metamorphosing real into digital is rapidly developing and forming a kind of digital utopia which should be re-evaluated by rational-positivistic and instrumental values in order to become e-eutopia instead of e-disutopia. On the other hand, e-utopia represents a kind of paradigm to be achieved using different techniques of simulation, animation, that enables us to change our behaviour in real space-city to achieve agreed, shared and integrated values, and manage urban and spatial development using digital city considering cause-effects of our actions and choosing the right developmental option at the time (Scheme 5).



Scheme 5: Process of reversal methamorphosis of real into virtual worls and vice versa in order to choose the "right" scenario at the time

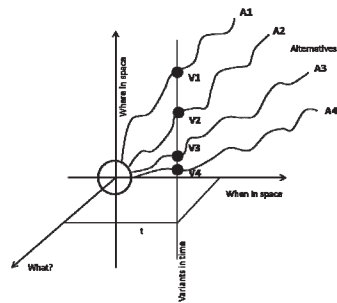
Considering the question of re-discovering future of the cities the creation of „digital real one“ we are in the positivistic situation which opens us possibilities to:

1. Establish a range of alternative trajectories of real world (Scheme 6) (Ralević, 2006);



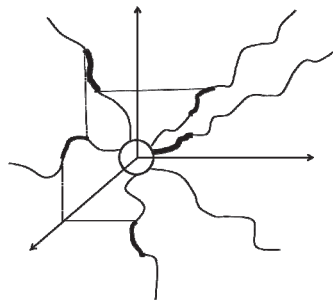
Scheme 6: Establishing a range of alternatives

2. Consider and evaluate future through wide ranges of alternatives in digital world (Scheme 7)(Ralević, 2006);



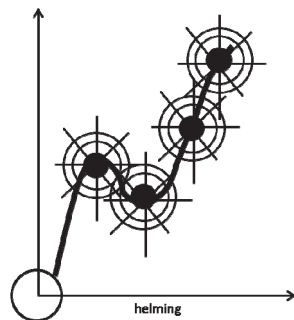
Scheme 7: Evaluating alternatives

3. Following the trends of new needs, desires and interests, we would be able to move along the alternatives (Scheme 8)(Ralević, 2006);



Scheme 8: Moving along the alternatives

4. Take the future "in our hands" managing the movements along the alternatives instrumentally and particular (Scheme 9)(Ralević, 2006);



Scheme 9: Helming

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