ARCHITECTURE CIVIL ENGINEERING ENVIRONMENT
The Silesian University of Technology No. 3/2015

MAKING BELGRADE A GREENER CITY – MASTER PLANNING OF THE PAST VS ENVIRONMENTALY, SOCIALY AND ECONOMICALLY SUSTAINABLE FUTURE

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Received: 8.10.2014; Revised: 27.11.2014; Accepted: 5.07.2015

Abstract

We are now still looking for a strategy that could lead to solution to the contemporary problems. Guidelines for the strategy are to be marked mostly with 4 "e": economy, environment, education and ecology. They should be asking for realization of all sorts of sustainable eco- development. This approach includes cultural and natural resources protection, healthy and stable (economically and socially balanced) affirmation of the environment, which undeniably includes nature and green bodies within our city boundaries. Researches made so far, presented in the numerous studies, explorations and plans, in as much as master planning ever since it began in modern Belgrade of 19th century, provide quality material for creation of a necessary database, as one of the steps suggested in methodological approach for realization. Belgrade, by its natural characteristics, richness of culture and historical heritage and international significance offers ideal possibilities for sustainable and ecologically intense projects. It could have become a green or at least much greener city already, few times in its past, and it still can reach the same goal in the near future.

Streszczenie

Nadal szukamy strategii, która mogłaby prowadzić do rozwiązania współczesnych problemów. Elementy strategii określane są jako 4 "e": gospodarka, środowisko, edukacja i ekologia. W tych dziedzinach dąży się do realizacji wszelkiego rodzaju zrównoważonego eko-rozwoju. To podejście zawiera rozwój kulturalny, ochronę surowców naturalnych, ochronę zdrowa i stałą (ekonomicznie i społecznie potwierdzoną) afirmację środowiska naturalnego w granicach miasta. Szereg badań podejmowano już w nowoczesnym Belgradzie od 19 wieku odkąd to dostarczano jakościowego materiału, tworząc bazę koniecznych danych a jednym z kroków było metodologiczne podejście do przyszłych realizacji. Belgrad, przez jego naturalne cechy, bogactwo kultury i historycznego dziedzictwa oraz międzynarodowe znaczenie oferuje idealne możliwości dla zrównoważonych i ekologicznie intensywnych projektów. Jak już projektowano w przeszłości miasto mogłoby stać się zielonym a przynajmniej w dużym stopniu zasłużyć na miano zielonego miasta i osiągnąć ten cel w bliskiej przyszłości.

Keywords: **Sustainable future; natural resources; Design and planning; Accelerated and more valuable development.**

1. INTRODUCTION

In year 1894 the Swedish scientist Svante Arrhenius was the first to observe that humans are changing the Earth's climate. After extensive calculations he predicted that we need three thousand years of coal burning to double the carbon dioxide (CO_2) content in the air [1]. Today, 120 years later, CO_2 concentration in the air has increased by more than one third (385 parts per million) [2]. If CO_2 concentration continues to grow with the current trend, by the year 2050 it will reach 500 parts per million [3]. Therefore Arrhenius's prediction is off by approximately 28 centuries. Scientists claim with confidence that "the global average net effect of human activities since 1750 has been one of warming" [4] and warn: if we want this galloping climate change to bring to a halt, and have even the slightest chance of succeeding, the biggest industrialized countries must reduce carbon dioxide emission by 80-95% by 2050 and 25-40% by 2020 [5] [6].

Unfortunately this is not the only negative effect humans have on the environment. Since the industrial revolution in the world unprecedented technological, industrial and scientific growth led to increased consumption of resources, increased wealth, better health, and population explosion [7]. Additionally vast areas are appropriated for urbanization, woodland, agriculture, grassland and pastures. Today 38% of Earth's surface area is appropriated for cultivated land [8], 47% of world's forests are lost [9] [10] and more than 50% of the earth's wetland vanished [11]. All of these factors are seriously affecting living conditions on our planet as they have impact on the climate, global water cycle, the water, the soil and the air quality, as well as biodiversity [12]. Belgrade is no exception.

Industrial societies on the planet Earth are ruled by cities. Already 47% of all people live in urbanized areas and by 2030 it is expected that that percentage will increase to 60%. This raises two major concerns. First is that paradoxically cities take 3-4% of Earth's surface area and use 80% of its resources [5]. The rapid advancement of technology led the urban areas to be highly dependent on unsustainable fossil fuels. As global supplies are wearing off and cities are cut of agrarian land, it is obvious that oil dependency is "pathological" one [13]. That is exactly where proper master planning might help a lot.

Longing for better life, many people are migrating to cities, where coming from different cultural background, this clash of different cultures results in exclusion, lack of participation and ghettoization of new comers. Slums, sprawled around city centers in developed countries, are just some of the consequences. Unfortunately today, integration programs, which Davis [14] calls "ill-conceived structural adjustment programs", are not giving any significant results. Seeing cities as places for dreams of better life, salvation and social empowerment people are constantly flooding in them making urbanized areas not able to live up to their demand. Because of this complex problem urbanized areas must be main target points for tackling emerging environmental, social and economic problems [15].

In these failing societies business cannot succeed. After the 1950s, the population on planet doubled, quantities of food produced tripled, energy consumption quadrupled, and global economic activity quintuples [16]. Unfortunately economic growth is in close relationship with degradation of environment, because when communities grow the environment declines. For this reason Bookchin [17] stresses that

Figure 1 and 2.
Two rivers of Belgrade, Sava in the foreground and Danube in the background

capitalism together with market relation must be seriously reconsidered and examined, otherwise Earth will continue to be just a mere resource for exploitation, treated as a commodity. He argues that all contemporary ecological problems are result of our dysfunctional social arrangements. Unlike many authors suggesting that solutions can be found in technical, biological, physical, economic studies, he proposes understanding of the essential social processes as solution of the problem.

Evidently today we as a global society are facing many challenges from environmental to economic and social ones. These challenges force us to reconsider all aspects of our life. People are not living sustainably on the planet Earth [18]. What is proposed as a possible guideline for solving a myriad of previously mentioned problems is sustainable development. Though many agree with this fact, what sustainability is and what sustainable means has not met unanimous agreement. This broadly interpreted term relates to almost every life facet on our life on the planet. Defined through perspective of ecology it means diversity and productivity of biological systems through time. For human beings it stands for continual preservation of well-being, which is in close relation to preservation of nature and its resources, but nurturing green bodies within city boundaries as well. In other words, it "...is about stabilizing the currently disruptive relationship between Earth's two most

complex systems – human culture and the living world" [19].

When sustainable is defined as "to maintain, to endure, keep in existence, to prolong" [20] to human society, not much sense can be made, because maintaining human society in the same position and under same circumstances is impossible [21]. Human society is one complex system embedded in system that supports it – the natural environment. While living in symbiosis for thousands of years they are constantly changing, evolving and adapting [22]. Observing them through history, it can be concluded that constant evolution and change is their main characteristics. Maintaining their ability to adapt and evolve at the same time is of utter importance and prerequisite for their development. Therefore, sustainability looked through this perspective translates into sustainable development.

In 1987 sustainable development was first defined by Brundtland Commission as "...the development that meets the needs of the present without compromising the ability of future generations to meet their own needs", adding that "...sustainability requires meeting the basic needs of all and extending to all the opportunity to fulfill their aspirations for a better life" [23]. This report addressed paths of Earth's ecosystem protection while taking into consideration economic and social dimension. The definition provided by Brundtland Commission, though until today stays the most quoted one, is not globally accepted and has been reinterpreted in various ways. As detailed review of definitions is not in focus of this paper it will not be presented here [24] [25] [26]. Though very diverse, majority of definitions have something in common. They all stress importance of looking at one dimension of sustainability in relation to the other two. These "three pillars of sustainability" – environmental, social and economic one must be reconciliated, cannot be mutually exclusive and must be mutually reinforcing, or in other words people, economic systems and habitats are interrelated [15].

Because sustainability as a concept is very broad, differently interpreted by many authors from various educational backgrounds, it lacks consensus [27]. What is more it is not always understood that sustainability is not a destination that could be reached but a constant work towards better and resilient future. Lastly when sustainability is discussed all the "pillars" have to be taken into consideration. Exactly these facts are what make implementation of sustainable development arduous. For this reason ever growing number of experts stress that global problem must be solved at local level and that all professions must make contribution. At local level, the level of municipalities, cities and regions, challenges must de discovered and actors mobilized [26]. Additionally, contemporary problems are complex, multilayered and interrelated. Therefore multidisciplinary approach is required, where all the professions while collaborating must make contribution from their own field of expertise.

Architects and urban planners, and their designs affect people by improving or deteriorating their environment. In industrialized countries buildings are responsible for about 35% of total CO_2 emission [5]. Lack of social engagement and responsibility, narrow and parochial views, egocentricity, overemphasized individualistic creative statement, and underestimation of nature can unfortunately be seen at many architectural and urban planners' practices around the world. Many are trying to contribute to the solution of the problem. Architects and urban planners, who plan and make major interventions in our environment, are trying to turn themselves to nature, its postulates, and base their design on that. Only in this way they can enable their objects and master plans to live in synergy with environment. What is more, architects and their buildings, and urban planners and their master planning are able, not just to sustain neutral position by not harming people and the environment, but are in position to therapeutically affect them. Research shows that allowing patients views on natural surrounding they recover faster, use less medication and levels of aggression are significantly reduced [28]. What must be stressed is that architecture and urban planning is no panacea, but it can and should be an agent of change for better, of course.

When occasionally architects and urban planners describe their buildings and master planning as sustainable, lack of deeper comprehending what sustainable means is obvious. In these cases just one dimension of sustainability is mentioned – environmental. This "shallow" approach to sustainability [29] implies that through recycling, saving resources and reducing CO_2 emission, architecture and urban planning can reduce its impact on environment and contribute toward more sustainable life. Architects and their buildings are able, not just to sustain neutral position by not harming people and environment, but are in position to affect our choices, preferences and generally human behavior [30]. Many experts stress this is exactly what we need in transforming our life on the planet into sustainable one. Unfortunately these and

similar ideas are shyly penetrating academic and architectural circles. Just a few observe that "spatial and urban planning shows us a number of arbitrary and inappropriate paradigms, unrelated and unbalanced connections between physical, architectural, urban landscaping and structures, capabilities, capacities and possibilities" in relation to sustainability; and stress that "there is an urgent need to correct and properly direct that entire range for the benefit of local community" [31] [32].

As it could be seen today a global society is facing numerous environmental, social and economic challenges. What is proposed as a possible guideline for solving a myriad of contemporary problems is sustainable development. Despite the fact that many countries, among which there as Serbia as well, advocate this idea on a country level, what causes problems during implementation is: a very broad definition that lacks consensus, a lack of comprehension that sustainability is not a destination that could be reached, but a constant work towards better and resilient future, and a lack of integration of all three dimensions of sustainable development.

For this reason ever growing number of experts stress that global problem must be solved at local level. At the level of municipalities, cities and regions, challenges must be discovered and actors, people willing to contribute to solution, mobilized [28]. Beside this contemporary problems are complex, multilayered and interrelated and acquire multidisciplinary approach, where all the professions while collaborating must make contribution from their own field of expertise.

Architecture is powerful profession and there is enormous potential for architects to positively affect the change towards more sustainable future. This is a result of understanding that design and urban planning can play crucial role because designers and urban planners are the ones giving new forms to various needs of the future [27]. In order to do so architects and urban planners must be able to analytically approach local sustainability problems and take responsibility for their actions. Architecture and urban planning that epitomizes postulates of sustainability can act as catalyst of change on our way to a more sustainable future.

Unfortunately architects, as Papanek [33] says, act as master assemblers of elements. The same applies to urban planners. They too often rely on standardized and conventional planning and seldom explore how their design can contribute to contemporary social, environmental, and economic sustainability problems. Their design demonstrates lack of comprehension of all three dimensions of sustainability, it is not location specific, hence bares the stamp of irresponsibility. Additionally the notion that architecture and urban planning should be a catalyst of change on our road to more sustainable future is shyly penetrating architectural academic and practice circles. Serbian National Sustainable Development Strategy providing very little guidance how different professionals may contribute is not aiding the greater involvement of architects and urban planners in the battle for more sustainable tomorrow. Architectural competitions, popular architectural magazines, as well as peer reviewed ones, by confusing environmental dimension of sustainable development with sustainable development and not promoting more holistic approach to sustainable architecture, are just contributing to widening of sustainable architecture understanding gap.

For this reason literature was reviewed and following key sustainability themes emerged:

Environmental: land use, quality of air, quality of water, consumption and waste, transport, natural resources and climate change, and energy consumption;

Social: safety and security, health, physical activity, food, sense of community, participation, inclusion, equity, cultural diversity, sense of a place and education; and

Economic: general economic well-being, skillfulness, employment, cost-effectiveness, durability, operation and maintenance, and flexibility and adaptability.

It is planned that this set of key themes or framework is used in our architectural and urban planning practices as well as for working with students at academia on sustainable architecture and urban design course. When sustainability is defined and key themes and indicators determined at local level they are the most useful. Therefore it is suggested that this set is used as a framework or guideline for further exploration, and not as a definite and firm set of themes and indicators.

Architects and planners should adapt and further develop them at local level with local members according to the existing problems, interests, and needs, so as to be appropriate and relevant. By using the framework in this way it will optimistically aid better understanding of main sustainability themes, provide solid background for future explorations on the topic and provide fine tool for initial and final evaluation of architectural and urban design projects.

What is up to now very clear is that when sustainabil-

ity is defined and indicators determined at local level they are the most useful. Definitions and themes derived at global level are sometimes too broad for use in specific situations. Additionally when a problem or a situation at a local scale is approached with pre-existing set of themes and indicators there is a danger of overseeing the main challenges. Therefore it is suggested that this set is used as a framework or guideline for further exploration of themes and indicators. Architects and urban planners should adapt and further develop them at local level with local members according to the existing problems, interests, and needs, so as to be entirely relevant.

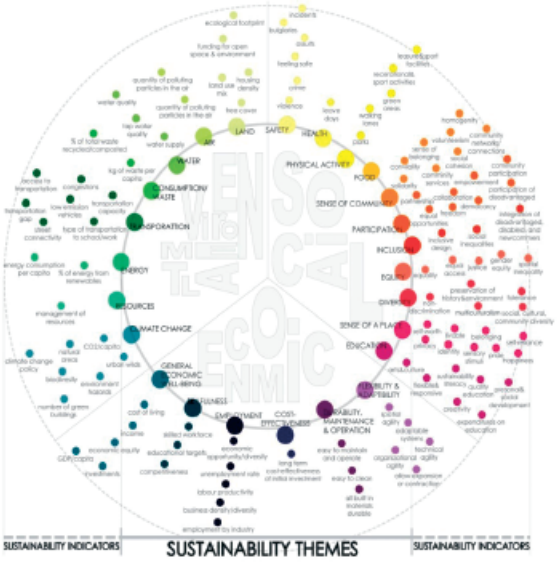

Figure 3.
Sustainability themes and indicators, by Predrag Milošević and Marta Brković

Compiled list of environmental, social and economic sustainability themes and indicators, that might be relevant for architects and urban planners wishing to contribute to sustainability at local level, shows that they come from researchers with diverse educational background [34]. Therefore a unanimous set of themes and indicators could not be found. Though what could be established is a set of key sustainability themes that appeared in majority of the studies.

2. MASTER PLANNING BACKGROUND

Since 2008 Serbia has National Sustainable Development Strategy [35]. The strategy thoroughly analyses majority of environmental, social and economic challenges. Additionally according to Millennium Developmental Goals national aims were set and indicators established for monitoring the progress. The strategy states that for more sustainable tomorrow active involvement is necessary on all professional and institutional levels. However, it does not suggest any sub-strategies or institutions providing any guidelines how different professionals could participate.

When architects and urban planners sight goes not further then the construction plot, sustainability cannot be discussed.

No surprise, first roots of sustainable urban planning are actually in the past of master planning in Belgrade, in as much as certain wrong-doings that did not make our city greener and more sustainable. And this is still to be felt in our environment today. In that light, let us now see how the past of urban planning in Belgrade looked like, for hundred and fifty years before our time [36].

2.1. Emilian Josimović, 1864-1867

First Master Plan of Belgrade, "A City in Ramparts", as it was called, by first modern Serbian urban planner Emilian Josimović, was inaugurated in 1864-1867, some 30 years before Arrhenius, who was the first to observe that humans are changing the Earth's climate.

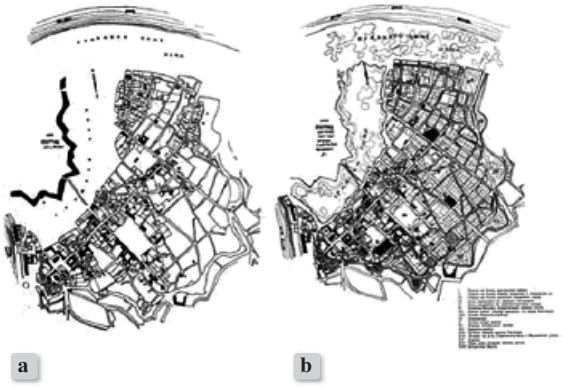

Figure 4.
Master plan of Belgrade by Josimović 1864-1867 (a-before planning, b-after planning). (Source: Urban Planning Institute Belgrade, 2007)

2.2. George Pavlovich Kovaljevski, 1923

General plan of the organization and expansion of Belgrade dated 1923, produced under the direction of a Russian immigrant George Pavlovich Kovaljevski, was the first ever that covered the entire

area of today's New Belgrade, along with the Great War Island on the confluence of two huge rivers. The plan at that time passed, but no part of it that is related to those two, at the time entirely green areas. In the light of author's idea here and today it is interesting to note that the work of Kovaljevski also proposed a link Dorćol-Zemun and bridges over the Great War Island, a sort of true urban rather than non-urban (as still so unfortunately is today) gaps, connecting the street or Tsar Dušan in Dorćol and the square of Karađorđe in Zemun. The same plan predicted almost identical merging of islands using causeways and bridges with the area around the Ušće (Confluence) Shopping Center today, roughly in the axis of the present street of Milentije Popović. In addition, two bridges whose construction is proposed on this site by the author were also mentioned in the work of Kovaljevski: one between the present Old Sava Bridge and Gazelle Bridge, in today's Boulevard of Avnoj axle, and other in place of existing causeway at the top of downstream gulf of the Ada Ciganlija Island. So, long ago Kovaljevski was obviously very aware of the need to support the construction of sustainable metropolitan Belgrade with the construction of capital facilities in these places, as he was aware of the fact that the beauty of the Sava and Ada should not impair on its downstream side, just for the sake of a new bridge with the fashionable high pylon even 200 meters high, just in that position, which occurred recently as a part of so-called Inner City Half Ring Road of Belgrade.

Figure 5.
Master plan of Belgrade by Kovaljevski 1939 (Source: Urban Planning Institute Belgrade, 2007)

2.3. Nikola Dobrović, 1948

Preliminary plan of Belgrade made in 1948 under the direction of the architect Nikola Dobrović, like the previous solutions by Kovaljevski, has also planned the proposed bridge to the Great War Island from directions of both Dorćol and New Belgrade, in slightly different positions. As in this author's vision from the year 2010, Dobrović's solution proposed new bridges on the Danube in Zemun's Upper City and today's New Galenika Housing, and the bridge across Sava in the lower zone of the causeway with the Ada Ciganlija, where this author proposes a tunnel. The second tunnel under the strait of Sava, proposed by the author upstream of the first, is positioned below the upper, upstream causeway with Ada Ciganlija. In Dobrović's work instead the bridge was suggested, slightly upstream. It is interesting, and very telling, that Dobrović, according to available data, was the first one who has exactly indicated in his work, bravely, although in the modest way, the need for urbanization of the northern bank of the Danube, extending axles of his visionary Danube bridges by boulevards which continue through Banat part of the city and parallel to the Danube, creating a kind of a radial scheme of entire Belgrade on that river bank.

Figure 8.
Master plan of Belgrade by Đorđević and Glavički 1972. (Source: Urban Planning Institute Belgrade, 2007)

2.4. Miloš Somborski, 1950

The Master Plan of Belgrade dated 1950, that has been made under the direction of the architect Miloš Somborski, proposed a full integration of the Great War Island in Belgrade urban organism, with the aim that it really becomes an urban green void in the frame of sustainable metropolis, by construction of

causeways to it in positions of Zemun's Karađorđe square and New Belgrade's later built Milentije Popović street. This plan also proposed bridging the Danube in Zemun's area of the Upper City, which, together with the existing Pančevo Bridge, determines the urban matrix of Trans Danube Belgrade, although a bit more modest than what is given in Dobrović's solution. Work of Somborski, and this author's work from the year 2010, proposed a new bridge in the axle of today's Boulevard Avnoj, and bridge on the position of lower, downstream causeway to Ada Ciganlija, where this author proposes a tunnel. Somborski's work, like Dobrović's, predicted another bridging of Sava, in a place slightly upstream of Ada.

Figure 7.
Master plan of Belgrade by Somborski 1950 (Source: Urban Planning Institute Belgrade, 2007)

2.5. Aleksandar Đorđević and Milutin Glavički, 1972

Master Plan of Belgrade dated 1972, made under the direction of Aleksandar Đorđević and Milutin Glavički, almost completely ignored the possibilities of Trans Danube Belgrade, north of second largest European river, fitting only its narrow coastal part in their own idea of "the city in a sea of green" and proposing building a large sports center in the area of Great Mud Lake in the north east. The same plan proposed new Danube bridges, one in the downstream part of the island of Forkontumac towards the center of the city of Pančevo, and another near the Great Village, both in the east.

The first of these was significantly downstream of the bridge in this part of the Danube predicted in this paper, while the other is in the position where it is now in the current Master Plan of Belgrade 2021, adopted in 2003. Similar to the proposal by this author, work of Đorđević and Glavički provides two new bridges on the positions of both causeways that exist today to Ada Ciganlija, where this author provides tunnels under the riverbed of Sava and Ada itself.

Figure 6.
Master plan of Belgrade by Dobrović 1948 (Source: Urban Planning Institute Belgrade, 2007)

2.6. Konstantin Kostić, 1985

Changes and amendments to the General urban plan of Belgrade until 2002, adopted in 1985, are made under the direction of Konstantin Kostić, in order to "create conditions for the rational construction of the city, in accordance with the actual material possibilities," as stated in the text.

The aim was to make spatial organization more compact by increasing the density of construction, new zoning and reduced network of primary roads, primarily in relation to the previous solution of Đorđevic and Glavički from 1972. All these objectives could seem necessary in the years before the disappearance of socialism and the destruction of Yugoslavia, the country at the end of a false political and economic time. However, reducing urban visions never, not even this time, proved to be a usable answer to the real problems of a city and country.

Kostić amendments envisaged two new bridges over Sava, one in the lower zone, downstream of the causeway to Ada Ciganlija (where this author from the 2010 proposes a tunnel) and another near the village of Ostružnica on the Belgrade Circular Road in the south west. They also proposed a new bridge over the Danube in the area of New Galenika in the North West and a new bridge near Ada Huja Island's lower peak in the north east, and the one at Great Village. But in these amendments there are no indications of a new, Trans Danube Belgrade, exactly in line with what was intended by the government as a customer and, perhaps, the author of the solution.

Obviously, and so unfortunately lots of good urban planning chances have been lost during the century or so, we should say, in the past of the city of Belgrade.

Figure 9.
Master plan of Belgrade by Kostić 1984 (Source: Urban Planning Institute Belgrade, 2007)

2.7. Vladimir Macura and Miodrag Ferenčak, 2003

General Plan of Belgrade 2021, adopted in 2003, made under the leadership of Vladimir Macura and Miodrag Ferenčak, has, as its authors stated, "the basic characteristics imposed by the transition of society, new social framework, market and democratic relationships: flexibility rather than rigidity, dynamics rather than statics" [37]. This saying is certainly unquestionable.

That is, as the authors themselves further state: "a plan that supports the processes, rather than a plan that supports the "image". Well, here is of course an objection, necessary enough, or otherwise we should throw down the water everything what was very much guided by "the image of a city", what many great urban planners managed to achieve in the cities across Europe and the world: Sankt Petersburg, Paris, Luxembourg, Venice, Barcelona, Budapest, Moscow, London, New York, Cape Town, Rio de Janeiro, etc.

An "image" is never in collision with a "process". An image always follows a process. That is unavoidable nature of things. An opposite order, i.e. situation in which the process will follow an image is not possible. Or, let us say, there is no process without the image, or image without a process. They have just always been a part of a unique urban vision, as in the case of Belgrade in works of Emilijan Josimović, and later in works of Nikola Dobrović and Miloš Somborski. Similar was clearly done by deeds of Georges-Eugene Haussmann, Ildefons Cerda and Sunyer and Rob Krier, for example. Observation of "backwards", as it is at this point necessary, is a precondition to be able to see "in advance". And that is exactly what builds a vision, without which the planning for a sustainable city cannot be possible.

The plan currently in place in Belgrade, predicted new bridges over the Danube also at New Galenika and Great Village, but as a part of the extension of largely problematic design of Inner City Half Ring Road. That road certainly cannot be a solution for Belgrade's connection to the trans-European highways that are coming from south west and north east parts of Europe. This connection can only be achieved by constructing a circular bypass around Belgrade. The bypass will collect the roads from numerous directions such as Dobanovci, Batajnica, Padinska Skela, Jabuka, Pančevo, Starčevo Village, Bubanj Potok and all the roads crossing Danube. Finally, the bypass will have to have exits to Zrenjanin, Bucharest, Bela Crkva and Smederevo. The same plan envisioned a new bridge on the axis of Boulevard Avnoj, and apparently tunneling junction of New Belgrade and Banovo Brdo in the position of lower, downstream causeway to Ada Ciganlija, as it is proposed by this author too.

So, globalization and the new Serbian Danube orientation, followed by rapid transitional development, require many changes of visions of the Master Plan of Belgrade 2021, whose authors have unfortunately not identified on time, taking no looks to previous good solutions, or they were probably prevented to do so by certain politics [38].

3. MAIN FOCUS: A STATE-OF-THE-ART

For the "westerners", who are still unrelieved of their own stereotypes, Belgrade is still a "strange" city, "gloomy" and "communist gray", although perhaps less now than before. But this city is actually always changing, never completely, just as we all like. That is exactly how it is with every other city on this and on any other continent.

Changes in Belgrade, as elsewhere, took place in waves and in the highest possible measure in accordance with the plans. What distinguishes it from Moscow or London, for example, with what each of these cities has as "innate", that is primarily the frequent lack of construction in accordance with the plans, and in many large urban areas, which was not the case in both highly commanding state of real-socialism and in the developed world of capitalism either.

Let us go now through some permanent issues-of-the-day, briefly and one by one.

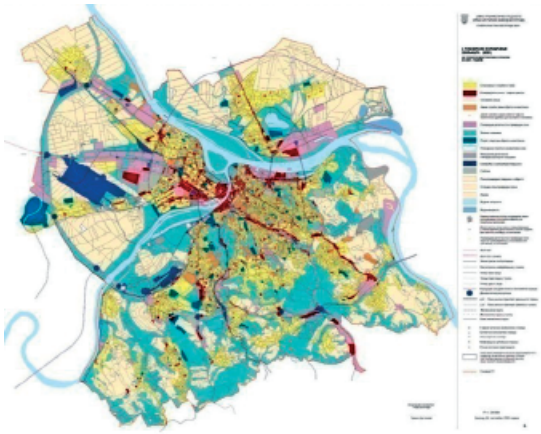

Figure 10.
Master plan of Belgrade, the current one by Macura and Ferenčak 2003 (Source: Urban Planning Institute Belgrade, 2007)

Figure 11.
Inner City Half Ring Road, bypassing what is not reasonably bypassible, within Master plan of Belgrade by Macura and Ferenčak 2003 (Source: Urban Planning Institute Belgrade, 2007)

3.1. Ignored "Image" of Belgrade

The main goal of every city that holds onto certain standards, to its urban planning and architecture, is that it remains as it is, different from other cities, but also to change in such frames. Belgrade has already become a "world city", a compact metropolis open to all what is new global, modern and dynamic, the future-oriented city of international importance [39]. It is a kind of urban policies that are now all held in the city, and that applies not only to a number of modern buildings, skyscrapers, and others, raised here and there. At the same time, the city should preserve all of what its people feel that is good and all that its visitors prize: it's lovely, although a little "dusty" refinement of old Serbian and Yugoslav capital, as well as its somewhat neglected "Belgrade-glance", traditionally preserved charm of one of the major European cities, built to the greatest extent in the previous two centuries.

3.2. Between Tradition and Progress

One should bear in mind everything that appeared in the city since the twenties of the twentieth century, which still is not present enough in the minds of many. Building fund that was created after the Second World War is still the subject of attention of the minority that are primarily architects and urban planners in city structures, as well as certain elected local politicians who understand that nobody wants to live in a city that falls apart, or in the city which conserves to be like a mere museum.

Even the eternal skeptics cannot avoid confessing and recognizing that now is a time of great change in already much altered conditions for the life of every man. It is time to use all of our own strengths and talents, for the accomplishments that Belgrade is to achieve. Policy that is leading and will lead the city in years and decades that follow, should foster and encourage exactly this sustainable approach, primarily.

3.3. From Center to Outskirts

Neither Belgrade nor Moscow before it will ever become a city such as communists and socialists thought were possible. But its significance is not reduced with the disappearance of (temporary?) "large" and "non-aligned" Yugoslavia. On the contrary, for these or those reasons, the importance of Belgrade has now essentially changed geopolitical circumstances in south eastern Europe and beyond, throughout the world. That is now more obvious than ever and growing before our eyes every day. The importance of its capital city goes far beyond the borders of the present Serbia. It even goes substantially beyond the borders of the former Yugoslavia.

If those who make decisions knew how to do so properly, Belgrade would take the place of one of the most important European capitals, in a short enough time.

3.4. Belgrade Crossings the Danube

A fear of those who are firmly "stacked" in the past, whatever it was, from the "rapid" and "oversized" changes of Belgrade as a real world city, from much of what is "foreign" and new, from the multitude of foreigners who will then come, still makes the prevalent mood. Happily elected a city management could

easily put all these "arguments" where they belong, i.e. to the history of Belgrade and Serbia. Urgent and very necessary expansion of the city to the Danube and further across the river could not be prevented ever because it is actually unstoppable.

The City now needs the foundation of the third of its proper parts. We must now vigorously launch the development of a super-modern sustainable Danube city on the whole space between the New Galenika and Višnjica Village, all along the Danube river, but in form of a huge semicircle on the northern, Banat bank of the Danube. Enhancing the existing (along Pančevo highway road) and the construction of a new urban railway line (following Zrenjanin highway road and elsewhere), and new bridges over the Danube, northern half of Belgrade Ring Road, construction of circular boulevards through the Banat part of Belgrade (similar to those that are built in the nineteenth century in Pest, Hungary), it will make possible to stop still almost completely spontaneous urban development in that vast territory of Belgrade, which is of a first-class importance for sustainable development of the city.

Retail and administrative buildings of some famous automotive and other companies are just the first swallows that already landed here, and as such are not sufficient to move minds of those who make decisions about Belgrade's urbanism in the next, epochal direction. And that is the only valid way. "Belgrade on the Danube" is important at least as much and "Belgrade on the Sava River", and in new circumstances, probably, even more, because it opens much more opportunities to make the city and the country more sustainable.

3.5. Danube Wreath

Future of Belgrade lies on the north side of the Danube, much more than its present moment flows south, on both banks of the Sava. This confirms the fact that the normative power of latent logic of the urban development and the actual situation is usually stronger than any kind of fashion in urbanism.

Focal and starting point of Banat part of Belgrade is certainly somewhere near the crossing of two highways, to Zrenjanin and Pančevo. But in this vast space, extended between the new proposed Danube bridges at New Galenika and Great Village, there would be much more focal points as the time progresses. The majority would be created in some axes of other new bridges on the Danube and their surroundings. From the time when the Zrenjanin road turned into a good

Figure 12 and 13.
Greater Belgrade, with the necessary network of Ring Road (green – existing; red, blue and purple – planned) and major urban roads, supported by underground

part of modern urban boulevard, and especially since 1995 when the Pančevo road became a real city highway, and when the first system of urban railways, "Beovoz", was launched in the direction of Pančevo, it is clear that this part of the territory of Belgrade is a place of a big change of state: city increasingly becomes Belgrade on the Danube, and not Belgrade just on the southern side of the river.

Hopefully, in predictable future quarters on both sides of the Danube should be equally comfortable for living, with equally good services, and equally significant. This should apply to both parts of the Danube Wreath, upstream and downstream of the Kalemegdan fortress across the Danube. Belgrade with its three development centers, one of Terazije plateau, the other in New Belgrade and the third one in Banat near the fork of two existing main roads has long been necessary to make a metropolis sustainable. Number of sub-centers should be determined in accordance with the three-pole scheme, and always in relation to stations of the main means of city transportation, primarily "Beovoz", that is, "Metro Belgrade".

Figure 14 and 15.
Belgrade Y (Metro Beograd) (existing) and Railways Half Ring network (grey – existing passengers' and cargo railways; red – planned for hazardous transports only)

3.6. Jet of the Rapid and More Valuable Development

The country at the end of previous century was going through a difficult time of destruction of Yugoslavia and civil wars in the immediate neighborhood. That is why Belgrade, unlike similar cities in other developed countries during the nineties of last century, did not experience a quick and comprehensive transformation of the general urban matrix, unthinkable anywhere in Europe only a few years before. It would be a transformation not much different from that which is happening today before our eyes, perhaps only slightly less tumultuous.

Belgrade as a metropolis in transition requires new development directions, new territory on which city will be able to meet growing frequency of requirements of foreign and domestic investors for the construction. In that light, Danube amphitheater and the Banat part of the metropolis are necessary next steps in the restructuring of the city, after "filling" in New Belgrade, on the Srem side of the city, which is already in full swing, and will not take long before being fully completed.

3.7. Turnovers in Urban Tectonics

For a long time our traffic jams, at least, clearly point to the fact that over the Belgrade rivers, these "water boulevards"; a number of new bridges must be built. The same applies to the whole course of the Danube that still flows nearby and not through (!) Belgrade. The bridge in extension of the street Tadeusz Kosciuszko would only be one of four required upstream of the only existing bridge over the Danube in the city, Pančevo Bridge, the only one downstream of the Great War Island. The other three would be in places where the inner and outer urban ring highways crossing the Danube: the axis of Nicholas Ostrovski street in Zemun, in the Upper Town of Zemun and in the axis of the initial part of a highway to Novi Sad. Great War Island, as future large park and recreational area for the entire metropolis, remains at the heart of Belgrade. Two new Danube bridges downstream from Pančevo Bridge, one in Višnjica Village and another in Great Village, are mentioned in the current planning regulations (although the first in the area of Ada Huja Island), as well as the one in extension to initial part of the highway to Novi Sad. Third of these should be raised at the place where the outer ring in Višnjička Banja crosses the Danube.

Figure 16 and 17.
Proposal for Danube amphitheater in Belgrade by Predrag Milošević & Vladan Nikolić 2006

Figure 18 and 19.
Proposal for Danube amphitheater in Belgrade by Daniel Libeskind 2009

Current plan completely overlooks a need for new bridge on the Danube to the north-western side of the ring-road, in the zone of the city of Batajnica, as part of the broad profile road that comes from the opposite side of the Danube, starting by Great Village, and east of Belgrade. The same plan does not mention either the entire northern half of the circular road, the Belgrade bypass, unlike its southern counterpart, the later still under construction. Northern part of that road would connect places on the Banat side of Danube (Padinska Skela, Jabuka and Pančevo, let alone Belgrade), directing continental traffic further on to Zrenjanin, Budapest and Bucharest in the north, but Smederevo, Niš, Athens and Istanbul in the south too. As for the smaller of the two "water boulevards" in Belgrade, technical capabilities allow for some new "bridging" of Sava, and tunnels from New Belgrade Dr. Ivan Ribar and Youth Brigades Streets, with already provided bridge to the axis of Proletariat Solidarity Street.

4. CONCLUSION

Undeniably humans and their activities are altering climate on the planet Earth. It started with industrial revolution in the late 18th and 19th century when great advancement of technical, technological, and scientific domain happened, and led to better health, population expansion, increase in wealth, and exploitation of resources. This resulted in increase of carbon dioxide concentration in the air, vast areas being urbanized, natural areas turned into cultivated land, lost of forest land and wetland, persistent population growth, high pressure on agricultural land due to the high demand for food, excessive consumption of all resources, high dependence on fossil fuel, migrations towards urbanized areas, cultural clash, and economic growth that negatively affects environment. Yet these problems are not exclusively emanating from the 20th Century inheritance.

All this applies to Belgrade past and present as well.

Some good chances are lost in the past of Belgrade, definitely or not, future has to show.

Such a state-of-the-art at both local and global levels makes its deep traces on spatial and urban substance of Belgrade, capital of Serbia.

A fundamental step that Belgrade in its own interest and whole of Serbia has now to make, should not exceed substantially different than the one after the Second World War, when the west bank of Sava River in Srem Region, opposite to the old city built on east side of the river in Šumadija Region, was chosen for foundation of New Belgrade. Both of these two parts of now metropolitan Belgrade work today as one. They are both on the right, south bank of the Danube River, while the left, north bank of the great European river in this city remained largely left to a chance, i.e. "illegal" construction. Consequently there is still no metropolitan Belgrade on the north bank of the Danube River.

Kind of a competition among cities in this part of the continent has begun recently, including the large number of factors. Danube position, with growing Danube orientation are an excellent prerequisite for Serbia and Belgrade for more accelerated and more valuable development.

Surrely, Belgrade citizens all need to develop an understanding of issues of sustainable development and planning that should interact through government's and community collaboration, to get more and proper eco-tech solutions and environment-green bodies in as much as healthy urban environment, but also a sustainable eco-survival and development in their immanent areas.

Belgrade should not miss the chance to make it, and itself, greener and more sustainable, as already happened so many times in city's past, ever since 1864 and 1923.

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