SPATIUM *International Review*
No. 24, March 2011, pp. 27-36

UDC 711:004(497.11) ;
007:711]:004(49.11)
Original scientific paper
DOI: 10.2298/SPAT1124027D

NATIONAL INDICATORS FOR EVALUATING THE OUTCOME OF REINVENTING SPATIAL PLANNING IN SERBIA

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This paper is a follow-up to a research in the domain of theorizing planning practice and practising spatial planning theoretical approaches in the context of information-isation, globalisation and EU-isation. The theoretical framework contemplates the meaning of the spatial concept that is grounded in the duality of the information phenomenon and contemporary expression of the space notion, as a way of reinventing spatial planning. The operational framework discuses the spatial planning practice in Serbia through a brief explanation of applied methodology for identifying a suitable indicator set proposed for the implementation monitoring of the Spatial Plan of the Republic of Serbia 2010-2020. The national indicators set represents a theoretical model of knowledge for evaluating relational outcomes of spatial development complexity, and its spatial-temporal character represents a way of practising theoretical approaches as monitoring tools for spatial planning within the limits of the present regulatory system in Serbia.

***Key words:** information phenomenon, relational space, spatial planning indicators*

CONSIDERATION FRAMEWORK: NETWORK SOCIETY AND EUROPEAN INTEGRATION

Is it possible to timely recognize future changes? Are we prepared to respond to these changes? Could we implement theoretical and academic research in spatial planning strategies and how could we insure their application in professional practice? What do space and territory mean under the Globalisation and Europeanization? Without attempting to give final answers, this paper underlines the significance of these questions in the context of growing development and impact of Information and Communications Technologies (ICT) that has changed many elements of the way we work and live. The globalisation and "information-isation" created a highly dynamic, competitive and complex environment of a network society. Qualitative location factors have become more important and the ICT can play a key role in increasing the attractiveness of place and space in terms of liveability, accessibility, e-services, e-quality, e-work, and e-mobility. These changes create challenges to spatial and urban planners who need to understand and anticipate them and adjust their traditional view of planning and planning instruments. Simultaneously, Europeanization creates new geographies and governance trends that require the adoption and reinvention of spatial planning in theory and practice.

The actual demand of ICT development is to achieve the distribution and aggregation of knowledge between relevant survey fields, thus enabling a comprehensive investigation of: (i) real spatial complexity; (ii) existing processes; (iii) prognostic changes; and (iv) decision-making efficiency (Bazik, Dželebdžić, 1997). The main factor for computer progress is component and network development, as well as standard interface implementation. This permits integrate projects and resolves the problem of separate/sector approach and the "closed information system" concept. Traditional elaboration of spatial and environmental problems, by analyzing activities and land use within the concept of functionally-formed treatment of the physical space, has been predominantly rejected, either in the context of information requirement complexity, or in the context of current ICT potential.

On the other hand, borderless Europe "faces a moment of transformation" as it is underlined in the document "EUROPE 2020 – European strategy for smart, sustainable and inclusive growth" (CEC, 2010). It puts forward three mutually reinforcing priorities: (a) smart growth: developing an economy based on knowledge and innovation; (b) sustainable growth: promoting a more resource efficient, greener and more competitive economy; and (c) inclusive growth: fostering a high-employment economy delivering social and territorial cohesion. Sustainable development is still based on three major principles: (i) inter-generational equity (principle of futurity); (ii) intra-generational equity (the principle of social justice); and (iii) the principle of transfrontier responsibility or inter-country borderless accountability (Selman, 1995). The implication of these statements is often in stark contrast with the traditional concept of bounded space under the jurisdiction of an authority with territorial and functional

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The paper was prepared within the research project „The role and implementation of the national spatial plan and regional development documents in renewal of strategic research, thinking and governance in Serbia", number III-47014, financed by the Republic of Serbia Ministry of Education and Science.

synchrony. "The idea of the nation-state having complete control over its territory may have to be consigned to history" (Waterhout *et al*., 2009). The focus of the planning approach is moved from the quantitative approach of capacity and representation, through land-use, to the *quality* of life in relation to the level of pollution, safety and health of inhabitants, and work conditions or aesthetic standards from a global to a local scale and vice versa. Of particular importance is the "recognition that sustainable development strategies are as much a journey as a specific destination and, in their implementation, process may be as important as the product" (Selman, 1995).

Spatial planning in Europe needs to adapt fundamentally to the new circumstances because of the emerging European territorial cohesion policy (CEC 2008), which alongside with other EU sector policies may change the conditions for local planning practices. By "theorizing practice and practising theory" (Boelens, 2010) all stakeholders responsible for spatial development in Serbia should be prepared for new conditions while following basic principles for inclusion in the European integration process. Researchers and academics can play a crucial role in these processes "by analysing and reflecting upon current practices, by comparing them nationally and internationally, by seeking innovative ways and modes within the limits of present regulatory systems" and by preparing existing professional practitioners and students "analytically, as well as in terms of designer and communicative skills" (Waterhout *et al*., 2009) through joint studies or lifelong learning programmes.

The discussion will now consider the following: (a) the theoretical framework of meaning spatial concept that is grounded in the duality of information phenomenon and contemporary expression of the space notion; and (b) the operational framework of spatial planning practice in Serbia through an analysis of the national indicators set as a model of knowledge for evaluating relational complexity outcomes of spatial development.[2]

DUALITY OF SYSTEM AND PROCESS

The Third technological revolution unrestrainedly produces different changes by technical and technological innovations. They reflect the transformation of communication patterns and knowledge configurations and network connectivity. The ICT ensure progress of the planning process and research for the future, and many developed countries have decades of experience with its implementation. Technological changes might be an element of long-term and balanced spatial development on condition that new power concentration centres are not produced, more specifically, the nucleus of producing and distribution of knowledge, technical skill and a life style for the rest of the world. One of the positive implications of information technology development (computer science and telecommunications combined) is the improvement of information transfer by removing distances in space and time, that is, by developing an informatics infrastructure. An "open possibility for everyone" would help in eliminating privileges and in exceeding a marginal position of some areas that consider a new dimension for upgrading spatial planning and design processes. At the same time, informatics infrastructure represents a precondition for the implementation of a sustainable development concept that initiates the achievement of an appropriate quality of life for contemporary and future generations as the dominant development intention. The improvement of knowledge is the way to quality; distribution of information is the way to improve the knowledge; and the informatics infrastructure is an efficient way for the distribution and accumulation of knowledge. Moreover, the informatics infrastructure is treated as a new element of spatial planning and design process that is added to the existing infrastructure potential of space.

Phenomenon of information

Information science theory interprets the information phenomenon as *an information system* that is realized, now being realized or may be realized, in some information *process.* In this case the term *information system* does not have the usual meaning of a system for collecting and processing data, but it means that the information phenomenon already represents a system as a group of elements connected by interrelations and can be considered as a whole. Information is a system of possibilities and potential in some proposed situation or time and public knowledge presentation is single and partial realization of some possibilities that predict the information system. Thus, the public knowledge presentation *(information process)* is separated as reality or existing fact, and the information *(information system)* is contemplated as a hypothetical product (Bazik, 1996).

According to the information science theory, there are three different and irreducible explorations of the information:

a) information as a knowledge resource that exists in a text, or a document, or a message – information is created by data processing, or by increasing knowledge through communication, or by a facts exchange process with the intention of increasing the knowledge. In the context of spatial planning, it is not appropriate to equate information with data and facts. Every space and place has specific spatial and temporal features and it could not be categorized within a fixed and static common group of data;

b) information as a new form of knowledge and it is no more text implication – it is a logical and semantic issue, a new form of knowledge that is present parallel to existing messages, documents and facts. Subjective assessment is crucial for information consolidation and validation. The number and different features of stakeholders in the spatial planning process with a different role, power, motivation, interest, interesting, cognitive potential or background knowledge, is very hard to operationalize; and

c) information as a model of knowledge that represents the key notion of information science and signifies hypothetical construction that interprets different real/practical objects as books, documents, plans, messages, news or data (Šereš, 1977). Information as a hypothetical construction enables the understanding of experiential phenomenon by fixing invariable features of communication process. Information permanence could be described with entities from information process/reality. In the domain of spatial planning, this information concept creates two key possibilities: (i) to analyze a transmission and transformation of knowledge as a physical entity that contains certain, not exact or fixed, news, messages, data, facts or theories; and (ii) to analyze the knowledge interchange through presentation or organization of some cognitive content separately of users demand and cognitive capacity.

Relevant data and information selection is grounded in the aforementioned theoretical exploration of the information phenomenon: (a) raw data as a result of some inventory and has its exact meaning, but only in relation with other data could it develop and get full significance; (b) aggregated raw data as statistical information of distribution with different data relations and meaning that request additionally explanations; and (c) indicator as a complex information about some phenomena or appearances that could not be measured alone, or cannot be directly seen. They are based on data, but ideally add value to data by expressing them in a way which

[2] The theoretical and operational frameworks considered in this paper are the results of authors' contributions within the COST 358 research team (D.Bazik) and the SPRS 2010-2020 planners team (O.Dželebdžić) during the last two years.

is more understandable and more relevant to the user, regarding the indicator's capability to represent a wider context than the data regarded separately.

Indicators are a standard spatial planning tool in all planning process segments, from the spatial plan production, through its evaluation, implementation and monitoring. Besides that, indicators are one of the basic supports of the theoretical and methodological spatial planning framework. The practicability of indicator development is grounded in the normative and directing character of spatial plan documents. Accordingly, the main purposes of spatial planning indicators could be a basic tool: (a) for better coordination of spatial planning proposals with well-timed digression mark; (b) for explanation of trends and progress of development; (c) for recognition of regional disparities and other spatial analyses; (d) for environment and social assessment analysis; (e) for analytical framework of region and urban typologies; (f) for providing relevant and precise information on benefits or disadvantages of planning proposals to decision-makers, stakeholders, investors and the local community; and generally (g) for creating a basic information set of existing living quality, quality of the environment and its development level. Only a part of all the uses of indicators in spatial planning process is presented here (Dželebdžić, 2002). Contemplation of comprehensive indicators would demonstrate their contribution to the advancement of spatial planning practice through decision objectivity, reliability of the evaluation process and monitoring efficiency.

To respond to the abovementioned tasks, indicators have to be: explicitly defined within the context of a phenomenon expected to be explained; correlated with the basic dynamics and changes within a context towards objectives achievement; and clearly correlated with concrete policies intentions (Bracken, 1981). Accordingly, indicators assortment should be highly selective and oriented towards the key phenomena within the spatial system and not too overloaded with information and data. The indicators of spatial development should also be based on the integral spatial planning methodology directed towards the general idea of sustainability.

It can be said that spatial inventory provides data, analysis of data provides statistics, and interpretation of statistics relations provides indicator as a model of expert knowledge that helps to inform different stakeholders about the information process in reality. The robustness of that information process increases with the new ICT potential in: (a) establishing consistent data relationship, with more complex opportunities in perceiving space entities and their relations, as well as recording changes and updating all data bases across analytical procedures; (b) processing multi-criteria analyses and examination of different scenarios of the spatial physical structure, functions and organization in future; (c) simulating spatial changes and processes, and comparing more variants of activities on territory; and (d) new modelling methods in particular planning phases, land use, environmental assessments, etc.

Contemporary strategic spatial planning and sustainability pattern both request appropriate contemplation of the information phenomenon as a model of knowledge. In the planning and management of the development process this means: not only the service for making plans or a tool for the implementation of plans, but rather a fundamental and socially verified resource of sustainable development. As the process of accomplishing life quality for contemporary and future generations, development integrates the cognition, communication and information activities. The quality is reached by comprehension and articulation of knowledge – *cognitive activity*; knowledge is increased by transmission and distribution – *communication activity*; and knowledge selection and accumulation is a precondition of balanced and sustainable development – *information activity* (Bazik, Dželebdžić, 1997). This means that adequate use of information technology represents a basic element for improving the information function of reinventing strategic spatial planning within the planning outcome framework.

The world information processes that represent information function of spatial planning are founded in the development of a Global Spatial Data Infrastructure (GSDI) through technical developments in the geographic information systems (GIS). A recent key development was achieved in GIS servers: the role of GIS servers in managing GI knowledge (maps, data, 3D visualization, and models) on the Web; and GIS servers as a platform for building and integrating server-based applications for other geoclients or Web services. Simultaneously with the adoption of the directive of the Infrastructure for Spatial Information in Europe (INSPIRE), the EU took a unique approach to developing its spatial data infrastructure as a contemporary and holistic information process in Europe. The Directive covers a wide range of domains – in total 34 spatial data themes, and requests emerging technical architecture for spatial data, services, and metadata, as well as adequate strategies and challenges for providing access to "harmonized data" across Europe. At the national scale in Europe, there is a concept of the National Spatial Data Infrastructure (NSDI) that represents a national information process that would be both a base and a goal for developing a national spatial information market. It will minimize the transaction cost for the provision and use of spatial information, which will in turn lead to a dramatically increase in usage. Spatial information is regarded as an economic asset, integrated into value chains, which is produced and traded. This will not only enhance the spatial information market, but also all sectors of economy which depend on the availability of reliable spatial information resources (Bazik, 2008). Market mechanisms would be used to coordinate the supply and demand of spatial information products.

Relational space as a model of knowledge

The consideration of the 'space' notion is different according to technological change, to the communication technology that has a serious impact on space-temporal change and to the connectivity. In everyday communication, the notion of 'space' can have multiple meanings – 'physical', 'virtual', 'personal', 'material', 'mental' or 'cosmic' – that interpret its complexity and ambiguity.

The classic view of space as '*absolute*' considers the pre-existing space of Newton and Descartes that could be measured and calculated. Space and time are treated separately. For David Harvey, the absolute space is geometrically the space of Euclid and therefore the space of all manner of 2D cadastral mapping and engineering practices (Castree et al., 2006).

The Modern Period considered the notion space as '*relative*' space in keeping with Einstein's theory and non-Euclidean geometry. Space and time are integrated as the notions space-time or space-temporal, and depend on the observer's movement and preferences. Relative space is physical, real, material, divided, functional, autonomous, positional, measurable, typological, ordered and 3D visualized (Metapolis dictionary, 2000). Comparisons between different space-temporal frameworks can illuminate the problems of political choice, such as a space-temporal conflict of financial flows and ecological processes that might be disrupted.

The accelerated science and ICT development contribute to the new interpretation of the notion of 'space' according to achievements of new mathematics and physics. In the present age, the notion of space is considered as '*relational*' space that exists as a relationship in or internal to process. Relationship/interaction created in process is space-temporal defined

and it is impossible to separate space from time. Relational space is real, as well as informational, virtual and digital. Relational space is operative, reactive, tactical and topological, with synergy and 4D attributes for decision combinations in dynamic systems. It is not simple to measure and quantify the relational space, but it could be considered by an aesthetic criterion and quality evaluations through a new mathematical theory and modular dynamic models.

In his consideration of the notion of space, carried out in 1979, David Harvey underlined that those different human practices create and make use of different conceptualizations of space. Nearly thirty years later, he confirmed this position in his paper *Space as a Keyword* (Castree et al., 2006). The *absolute* space concept may be adequate for issues of property boundaries and border determinations, but their placement on the property market depends on *relative* space in correlation with location position, functionality and equipment, or on *relational* space that considers the relationship and information of financial and energy flows as well as the compatibility with personal vision, spatial understanding and aesthetic criteria of process participant (Bazik, 2008). Accordingly, relational space is a hypothetical construct and could be considered as a model of knowledge separately from its emitter or receiver.

Despite these different spatial concepts, the relational approach becomes, especially at the academic level, more widespread and acceptable in the domain of theory and practice of architecture and urban and spatial planning. It may be suggested to consider the relationships and processes with a new mathematical apparatus and technological potential instead of objects and forms (Bazik, 2010). Uncertainty of future development and confronted views of the limits of new technology suggest caution in elaboration of possible implication, as well as careful definition of aspects of future development and the characteristics of planning in future, from the position of spatial organization and use. One of the most significant objectives of development is continuous growth of knowledge, and most importantly, or still equal to natural or artificial resourses, potential of development might be the possibility of knowledge interchange and access to it. The knowledge does not decrease by use; it becomes greater. To transmit knowledge to someone does not mean that it is no longer in our possession. It incorporates the increasing conviction that the information is development resourse as a precondition of scientific, technical and technologic development. Cognitive and communicative activities of the spatial planning process represent accepted and conventional dimensions of the mentioned concept (Agenda 21, European Urban Charter, Habitat Agenda, Millennium Development Goals, Europe 2020, etc.). We do not consider them as constants and already we contemplate them as variables that depend on the knowledge interchange process itself. Relations between cognitive, communicative and information activity of the spatial planning process are not rigid (Bazik, Dželebdžić, 1997). The development of every activity will be enhanced by its interrelation improvement. Consequently, we recognize that the promotion of the knowledge interchange process contributes to appropriate contemplation of the spatial planning outcome framework.

Current ideas about geographical and spatial economic processes can be grouped under the label of 'relational space and place' (Waterhout et al., 2009). We are witnesses of a diffusion of wireless communication networks around the world, which is taking place faster than any other communication technology to date. Communication is at the heart of human activity in all spheres of life, and the advent of this technology, allowing multimodal communication from anywhere to anywhere where there is appropriate infrastructure, raises a wide range of new patterns of behaviour and of fundamental changes in the existing ones (Castells et al., 2007). Consequently, the production of space and place is increasingly understood as a result of a complex interplay of multiple socio-economic processes taking place at multiple and overlapping scales. In this view, the concepts of spatiality and territorialisation are seen from a relational perspective, putting emphasis on fluidity, reflexivity, connectivity, multiplicity and polyvocality (Graham & Healey, 1999; Healey, 2007; Davoudi & Strange, 2009). A place thus could have multiplex-meaning and mixed-uses for different stakeholders and at different spatial scales. Brenner (1999) underlines that in Western states with open economies "(t)he boundary separating spatial scales is … becoming so blurred that it may be increasingly appropriate to conceive the scalar organization of contemporary capitalism as a continuum of glocalised interaction".

Table 1. Types of space

Types of space	Described by Harvey	Metapolis dictionary	Expressed examples
Absolute	concrete, material, fixed, bounded, territorialisation, space of Euclid;	geometrical, measurable, calculable;	blueprint plans, private property, cadastral maps, 2D; **data**
Relative	multiple geometrics, frame dependent, variety of choice;	physical, real, functional, positional, autonomous, divided, typological;	transport networks, water infrastructure, grid, 3D; **statistics**
Relational	complex, in process, socially constructed, space-time, convergence;	informational, virtual, model of knowledge, tactical, topological;	network society, space of flow, dynamic, 4D. **indicators**

(Adapted from Harvey, 2006 and Metapolis dictionary, 2000)

TOWARD A REINVENTED SPATIAL PLANNING PRACTICE IN SERBIA

The former conceptualisation of spatial planning in Serbia was rooted in a rational comprehensive tradition and was too rigidly structured to solve fast and basic changes in socially unstable conditions. The ongoing "information-isation" and "EU-isation" of the Serbian society create new dynamic and more complex environment for spatial planning reinvent. The fact that different sectors require different periods of time to be transformed implies that the process of comprehensive planning has to be fundamentally reformed. In the period of post-socialist transition there is a need for a new approach that will respond to changed conditions: free market, privatization and political pluralism. There are generally two concepts of change: (i) complete reform of the planning system; and (ii) the step by step approach. The first alternative means the transplantation of sophisticated planning systems from a European country which requires developed institutional network working on its own. The step by step approach seems much more appropriate. Problems could be solved one by one, measure by measure, in an adequate order, with a purpose to fill the gap between theory and practice (Boelens, 2010). The aforementioned relational planning approach, grounded in the duality of system and process, performs the theoretical framework for further consideration of the step

by step reinvention of Serbia's spatial planning practice. The focal point of discussion is the conceptualization of national indicators that generate spatial planning outcome framework. The new context for this "practising theory" consideration could be recognized in two main aspects:

a) Redefining the role of the nation-state that the borderless EU has limited and transferred decision-making powers: The Council Regulation for Structural Funds 2007–2013 (Council Regulation (EC) No 1083/2006 from 11 July 2006) emphasises the need for enhancing the efficiency of regional policy and the requirements of studies, data and observation of regional development trends. "Community knowledge on regions and larger territories promoting a European perspective/context in policy development is gaining importance, both for European and regional competitiveness, as well as for the fulfilment of the Lisbon objectives and for ensuring Community aims of cohesion" (ESPON, 2010). The academic capacity for applied research and studies on territorial development issues will be further strengthened in Europe. Reinforcing regional policies in light of the challenges facing European territorial cohesion means the strategic objective of meeting the policy demand for data, information and evidence through the delivery of the applied research and studies results.

The Spatial Plan of the Republic of Serbia 2010-2020 (SPRS) defines "the integration of Serbia in the wider surroundings and achieving sustainable development by defining, encouraging and harmonizing modalities of international/regional cooperation and applying international strategic documents" as the basic goal. Deferent global conventions, international agreements and programs, as Conventions on Climate Change, on Biodiversity or on Wetlands, could provide valuable support at the thematic level. Linkages with these mechanisms are encouraged to orient and empower various processes of regional co-operation. In the Guiding Principles for Sustainable Spatial Development of the European Continent (CEMAT, 2000), nine types of European regions (including: mountain regions, eurocorridors, urban area, rural area) are considered, with framework of spatial development measures for each of them. Accordingly, in December 2010, the European Commission adopted the EU Strategy for the Danube Region. This is a comprehensive Strategy, covering several Community policies and targeting a 'macro-region' that covers parts of eight EU countries and six non-EU countries, including Serbia. European territorial cooperation and cohesion contribute to the "shaping of soft spaces, fuzzy borders and borderlands" (Allmendinger, Haughton, 2009) as a new set of relationships that is spatial planning responsibility.

b) The second contextual aspect is transferring decision-making powers to different levels and stakeholders. The SPRS emphasizes that "the spatial development of Serbia will present a continual responsibility for all stakeholders, namely (i) authorities and competent institutions on all levels; (ii) public and private sector which will, by their activities, exert influence on spatial development and its elements, and (iii) spatial planners, town planners, engineers and other experts whose activities will influence changes in space, that is, the quality of changes in certain municipalities, districts or regions" (SPRS, 2010). The experience of European planning practice recognized the need for multi-level governance and rescaling of governance that takes various directions: 'downscaling' of the state and 'upscaling' of municipalities. It requires spatial planning to adopt bottom-up approaches also. "Likewise, private stakeholders and investors are gaining on importance as financers, designers and implementers of planning objectives. Meanwhile, citizens and interest groups increasingly challenge the legitimacy of planning interventions" (Waterhout et al., 2009).

These two aspects point out the real world complexity that theoretical planning framework should adopt. Relational approach to spatial planning, with appropriate mathematical apparatus and ICT tools, offers new possibilities for it. The focal points are transferred from objects in isolation to their relations and from arrangements on the surface to element interactions. Consequently, visualization by a traditional map with two-dimensional space could not be sufficient to reflect the relational complexity of multi-scalar and space-temporal planning entities.

Spatial planning outcome framework of Serbia

Although plan-making still seems the dominant mode of planning, "the planning system is now more than ever concerned with promoting the role of planning as a coordinator, integrator and mediator of spatial dimensions of wider policy streams". That generates new challenges: "how to improve the traditional indicator framework from a static set of indicator values into a more dynamic and discursive framework" (RTPI, 2008) that would be understandable, measurable, comparable and recognizable as spatial planning output and outcome set for different spatial scale and timeframe; and how to develop a monitoring system for spatial development strategies that could properly reflect spatial planning outcomes in complexity of integrating multi-spatial levels and cross-sectoral policies?

The object-oriented approach adopted in the Spatial Plan of the Republic of Serbia emphasizes the linkage among key objectives of policies, strategic targets, outcomes and output indicators. Process delivery objectives, targets and indicators are used to measure the implementation of planning policies. In addition, indicators are used to help measure outcomes and in assisting the understanding of the evolving context in which the planning strategy operates. The identification and specification of indicators which in an adequate and characteristic way describe the spatial development of Serbia is a precondition for establishing the basis for continual monitoring of the spatial development of Serbia (SPRS, 2010). One of the main challenges is defining a limited number of indicators through the Program of Implementation of the Spatial Plan of Serbia, which will cover a broad range of topics, including the accepted determination that indicators must be harmonized with available and accessible data bases and directed towards five main objectives of Serbia's spatial development. Such indicators must fulfil the main planning requirements regarding quality, relevance, long-term monitoring, spatial multi-level and covering broadness. An important recommendation is that the selected indicators should correspond to indicators for monitoring the European territory in the framework of the European Spatial Planning Observatory Network (ESPON).

The mission of the European Spatial Planning Observatory Network (ESPON) Programme is to support policy development in relation to the EU Cohesion Policy. It does this by providing evidence and knowledge about European territorial structures, trends, perspectives and policy impacts which enable comparisons of regions and cities and which support the understanding of European territorial diversity. The current policy debate at a European level is focusing on three main avenues: (i) implementation of the new treaty goal of territorial cohesion; (ii) contribution of cohesion policy measures to "Europe 2020" (Strategy of Smart, Sustainable and Inclusive Growth within Europe); and (iii) the content of an EU Cohesion Policy after 2013.

Spatial development monitoring has to accomplish simultaneously two information requests for: (a) data and information set for spatial analyses; and (b) information about main development trends and about policies evaluation. In both information requests there

exists a difference between information sets for: (i) comprehensive spatial development monitoring; and (ii) focused spatial monitoring that is policies-oriented (ESPON, 2006). Consequently, there are two indicator levels for monitoring that are conceptualized in the Spatial Plan of the Republic of Serbia:

1) The first one generates the "spatial planning outcome framework" for comprehensive spatial development monitoring which contains a limited set of quality expectations derived from the objectives of planning as operational targets. Theoretical conceptualization of the spatial planning "outcome" could be established by treating the information phenomenon as a 'model of knowledge' within a relational planning approach in a 'relational' space context.

2) The second one is the "spatial planning output framework" for focused spatial and policies-oriented monitoring that consists of relevant features which could be measured and quantified. They are recognized in theoretical consideration of 'knowledge form' and 'semantic meaning' of knowledge, as well as in the domain of 'absolute' and 'relative' space.

'Spatial Planning Outcome Framework' should be observed as territoriality of "the combined effects on socio-demographic, economic and environmental changes brought about by the planning system and other forces that seek to achieve sustainable development" (RTPI, 2008). The aforementioned complexity of multi-level governance and variations in sectoral priorities influences the assessment and measurement of spatial planning outcomes. The hierarchy of planning outcomes could further be considered by introducing the spatial scale. The planning outcomes of one spatial scale may consist of various outputs at another. For instance, regional strategies seeking to facilitate 'sustainable economic growth' will require a series of localized outputs in the form of land being made available, etc. Similarly, a series of regional outputs may constitute the outcome at the national level.

Simultaneously, relational planning accepts the notion of relational space that exists as a relationship in or internal to process. Relationship/interaction created in the process is space-temporal defined and it is impossible to separate space from time. Concerning that, it is important to establish the appropriate timeframe to ascertain different policy outcomes and to assess changes in processes. In the Spatial Plan of the Republic of Serbia (2010) it is highlighted that spatial planning takes two to three years to see some immediate effect of the policy and at least five or more years to measure any medium to long term effect of spatial planning policies. Spatial planning involves complex stakeholders and a network of activities with different outcomes and different rates of change. At the same time, a clear articulation of what outcome framework means and whether it is equivalent to the measurement of the strategic and longer-term impacts in the EU framework, represent a key requirement of the spatial planning outcome framework.

Continuous monitoring of spatial development is the main tool for policy makers and their assessment of recent development trends, as well as for scanning problems and creating action plans. In regard to this, it is important for the outcome and output framework conceptualization to reflect the integrated multi-level and cross-sectoral spatial development policies.

Spatial planning output: National indicators of Serbia

The main objectives of Serbia's spatial development are: (1) more even-balanced regional development and improved social cohesion; (2) regional competitiveness and accessibility; (3) sustainable use of natural resources and protected and improved environment; (4) protection and sustainable use of natural and cultural heritage and landscape; and (5) functional integration in the broader surroundings. They perform a general concept of spatial development in Serbia, through qualitative, rather than quantitative, information set that has to be operationalized for further spatial monitoring. The first level of main objectives operationalization represents the 'spatial outcome framework' with 37 quality expectations for phenomena that cannot be directly seen, but reflect the territorial policies concept that is of great significance for decisions-makers, for example the concept of polycentric development, urban-rural partnership, or concept of accessibility in general. The second level performs output indicators that are measurable and quantitative. On the one side, output indicators could form, at both regional and local levels, a strategic overview of the different functions served by output and outcome indicators in monitoring spatial planning strategies. On the other side, spatial planning process efficiency and effectiveness is seen as being central to the delivery of the visions of sustainable development and greater 'liveability'. This means that the ability of plans to be flexible and adaptable and to contribute to the achievement of these wider outcomes has to be assessed through an operational set of output indicators.

The new performance framework of spatial planning output in Serbia proposed a radical reduction of national indicators to a set of 106 indicators that are outcome-oriented (Table 2).

Spatial planning outcome and output indicators set in Serbia are a result of multi-level selection process. The proposed indicator set needs to be accurate, reliable and feasible, with possibilities for the implementation of policies and spatial problem solving. The criteria for the evaluation of output framework are as follows: (i) connection with objectives and priorities of strategic spatial development of Serbia; (ii) reliable measuring possibilities; (iii) durability; (iv) relevance to space creation, use and management; (iv) collected on a regular basis by statistical data sources and (v) synchronized with ESPON indicators. The following list of main indicators (Table 2) is the first proposal of adequate indicators set for spatial observation and it represents the possibilities for and challenges of future spatial monitoring in Serbia. The main structural characteristic of the indicator set is the separate overview of spatial development goals as spatial planning outcome, and the concentration on the limited number of indicators as spatial planning output. Consequently, the monitoring of SPRS implementation could be based on the objective-oriented measurement. It means that the entire outcome and output sets of indicators need to be flexible and adaptable relationally to the changes of goals, policies and new knowledge of specific and relevant spatial questions.

Main indicators proposal is the starting framework for developing the second level of a spatial monitoring system that includes additional indicators relevant for detailed analysis and thematic researches. The recognition of territorial disparities, trends and their relation with territorial policies goals, as well as efficient measurement of the goals realisation, could be done only with continuous monitoring. Further research on the detailed concepts of the monitoring system model should involve three different hierarchy levels: (1) a main indicators list or an outcome list that is on the top system level with its spatial strategic function based on the goal-oriented approach; (2) the second level consists of additional indicators for different spatial areas that are more detailed according to requests of sectoral policies and area users which need more specialized observation of it; and (3) the third level consists of thematic indicators set with very detailed content of considering field or regional and local specifications.

Table 2. Summary of key indicators proposed for monitoring spatial development in Serbia

Objectives	Outcomes/Targets	Output/Indicators
1. MORE EVEN-BALANCED REGIONAL DEVELOPMENT AND IMPROVED SOCIAL COHESION		
Sustainable demographic development		
	Balanced distribution of population	1. Population density* (critical mass) 2. Migratory balance*
	Improving/maintaining the demographic structure	3. Share of population by broad age group* 4. Fertility rate*
Improving social and economic cohesion		
	Improving the education level of population	5. Population by the highest education level attained*
	Reducing the number of the unemployed	6. Unemployment rate, below 25 years*
	Improving spatial balance of the education level among the employed	7. Employed persons by the highest education level*
	Securing equal opportunities on the labour market	8. Part-time employment 9. Employment rate of elderly workers
	Provision of housing security	10. Number of social (non-profit) dwellings by the number of households in the social housing programme
Reducing social exclusion and poverty		
	Available labour force and employment	11. Activity rate of male/female population (15-64 years)* 12. Employment rate 13. Rate of increase of economically active persons in relation to persons with income of their own and dependants
	Reducing regional economic disparities	14. Rank-size index by GDP
	Achieving spatial balance distribution of wealth:	
	- Maintaining a mix of social groups and preventing social segregation in a community	15. Gini index of household incomes+
	- Decreasing gaps in the purchasing power of population	16. Regional Price Index+ 17. Proportion of households with a standard of living below the poverty line
	- Ensuring maximum involvement of regional resources by using them efficiently	18. Unemployment rate* 19. Long-term unemployment* 20. Share of jobless households+
Sustainable settlement structures		
	Polycentrism of the urban system	21. Rank size rule (by population) 22. Primacy Rate* 23. GDP per capita as a % of EU15 average 24. Isochronous accessibility of services of general interest at a regional level 25. Average travel time to the three closest regional cities+
	Sustainable settlement structures (urban-rural relations)	26. Demographic trend in urban areas compared to rural areas+ 27. Volume of commuting 28. Proportion of long-distance commuters+
Balanced spatial organization of public services		
	Improving accessibility to public services	29. Accessibility to central places by public transport (including: accessibility by railway)* 30. Number and proportion of population without access to primary healthcare
Improving access to infrastructure and information		
	Providing equal accessibility in the space	31. Potential multimodal accessibility to the population*
	Providing a basic level of sustainable mobility to people who do not have or do not drive a car	32. Proportion of population living within 30-minute isochrones from the railway station+
	Increasing water management infrastructure in settlements	33. Share of a settlement (% of households) connected to the public water supply network 34. Share of a settlement (% of households) connected to the sewage system
	Improving electric power network in settlements	35. Share of a settlement (% of households) connected to the electricity network of high supply functional reliability level
	Improving access to ICT	36. Share of households with Internet access+
Territorially responsible governance		
	Improving transparency of territorial administration	37. Corruption perception index
	Providing public participation in governance activities	38. Public participation in activities of the civil sector
2. REGIONAL COMPETITIVENESS AND ACCESSIBILITY		
	Economic strengths and dynamics	39. GDP per capita* 40. GDP per capita in PPS* 41. Correlation of GDP growth and employment rate in a specific region 42. Annual GDP growth rate per capita* 43. Import-Export ratio at a regional level 44. Share of exports in GDP
	Diversity of regional economies	45. Employment by economic activity* 46. Share of agriculture, forestry and fishery in regional added value* 47. Share of technological manufacturing industries in the regional added value* 48. Share of financial and business services in the regional added value* 49. Share of administration, education, health and social services in the regional added value*

Objectives	Outcomes/Targets	Output/Indicators
	Improving the technological level of regional economies (the aspect of innovation and know-how technology in the economy)	50. Number of enterprises in innovation+ 51. R&D personal % of total employment* 52. Employed in high-tech sector* 53. Gross domestic expenditure on R&D as percentage of GDP* 54. Access to broadband systems 55. Energy intensities by industries+
	Sources of global competitiveness	56. Foreign direct investment inflows in the regions 57. Investment rate+ 58. Number of multinational companies in the region 59. Employed in foreign firms in total employment in the region 60. Share of foreign firms in total export by region
	Competitiveness of labour force	61. Labour productivity+ 62. Labour costs*
3. SUSTAINABLE USE OF NATURAL RESOURCES AND PROTECTED AND IMPROVED ENVIRONMENT		
	Preservation of natural resources	63. Land use (agriculture land, forest land, built land, water area) (CORINE) 64. Share of organic/controlled production area in utilised agricultural area 65. Quality of river water (quality index) 66. Quality of groundwater 67. Specific consumption of water in the settlements (litres per day per person) 68. Portion of piped water lost before reaching consumers 69. Ratio of renewable and non-renewable energy sources in total energy consumption
	Rational land use	70. Fragmentation index* 71. Land consumption by transport infrastructure+ 72. Urban growth – urban sprawl (2010–2015–2020) 73. Share of urban fabric in total area+ 74. Share of artificial area in total area+ 75. Illegal construction in zones of water sources 76. Number/surface of brownfield sites
	Reducing environmental impact of transport and sustainable use of energy	77. Intensity of traffic to the transport network sections 78. Modal split passenger transport+ 79. Renewable energy in total energy production+ 80. Energy consumption by source and type of users+
	Healthy environment and prevention of hazards	81. Share of population living in areas exposed to permanent or frequent excessive air pollution 82. Housing (% of population) around high pollution areas from industry, mining, power plants
	Prevention of natural disasters	83. Housing settlements in areas with potential risk from flooding (CORINE)* 84. Settlements in earthquake risk zones 85. Housing settlements in areas with potential risk from landslides
	Reduction of waste, increasing recycling	86. Municipal waste+ 87. Share of municipal waste collected by utility services (% households) 88. Generation of industrial waste (t/year, ha) 89. Share of the total amount of waste that is recycled
4. PROTECTION AND SUSTAINABLE USE OF NATURAL AND CULTURAL HERITAGE AND LANDSCAPE		
	Limiting the reduction of nature areas – protection of natural habitats and preservation of biodiversity	90. Formation and development of natural landscapes 91. Protected nature areas+
	Maintaining cultural markers and preserving the specific character of the landscape	92. Protected cultural assets* 93. Cultural heritage proposed for protection 94. Identified landscapes
	Improving regional potential for tourism and creative industries	95. Tourist accommodation in rural households 96. Arrivals and overnight stays of tourists per year 97. Galleries and sale points for traditional handicraft and artwork
5. FUNCTIONAL INTEGRATION IN THE BROADER SURROUNDINGS		
	Participation in cross-border and interregional co-operation programmes and projects	98. Number of projects with international participation per municipality 99. Membership in international organizations and co-operation networks
	Trade links with neighbouring countries	100. Trade exchange per capita with neighbouring countries 101. Share of trade exchange with neighbouring countries in total foreign trade 102. Passenger and freight traffic between river ports 103. Container traffic (in river ports)
	Permeability of borders	104. Density of road and railway crossings per segment of the border area 105. Weekly return flights to European MEGA areas 106. Travel time by car to MEGAs and transnational FUAs areas (weighted according to the importance of FUAs)
		Note: Corresponding with routing (*) and wish (+) indicator of ESPON

CONCLUSION REMARKS

The planning as an activity seeks to improve social and environmental well-being in a "real world" of diverse peoples who interconnect in complex and unpredictable ways with place and space. Planners need to recognize the multiple dimensions of such relations and pursue actions that promote sustainable outcomes. It could be termed "holistic or comprehensive sensibility, a faculty capable of grasping the broader context of a problem whilst selecting specific aspects and actions to guide current action" (Healey, 2009). On the other side, Information-isation, Globalisation and EU-isation create new behaviour patterns within the network society of the 21st century. These two sides point out the real world complexity that spatial planning framework should adopt. Relational approach to spatial planning, with appropriate mathematical apparatus and ICT tools, offers new possibilities for it. The focal points are transferred from objects in isolation to their relations and from arrangements on the surface to element interactions. This means that no single territory can be treated as an island which develops in isolation without coordinating activities, networking and cooperating. The purpose and mode of the European spatial planning/territorial cohesion policy are thus encapsulated in three 'Cs': cohesion, coherence, cooperation (Faludi, 2009a). Going beyond economic and social cohesion, territorial cohesion includes all sector policies in a comprehensive approach to reinventing spatial planning. Macro-regional strategies for the Danube River Basin represent examples of cross-border, pan-European and transnational planning that require collaboration and "(a)n intergovernmental approach and as such form pointers to the future… What is needed is a dynamic understanding of EU governance; of the role of territory; and of spatial planning/territorial cohesion policy… The story of the European spatial planning/territorial cohesion policy, too, is full of tailor-made arrangements… So we need to re-think the governance for 'soft' spaces. 'Soft' territorial governance requires well known tools like spatial analysis and strategies, or visions, but no longer exclusively for local, regional or national jurisdictions. Rather, there can and should be many strategies for the many spaces into which the world is splintering" (Faludi, 2009b).

The operational framework of this paper discusses the spatial planning practice in Serbia through a brief explanation of applied methodology for the identification of a suitable indicator set proposed in the Spatial Plan of the Republic of Serbia before 2020 (SPRS). The national indicators set represents a theoretical model of knowledge for measuring relational outcomes of spatial development complexity, and its spatial-temporal character represents a way of practising theoretical approaches to spatial planning within the limits of the present regulatory system in Serbia. The abovementioned key indicator set proposal should be considered as the first step toward more sophisticated spatial monitoring in Serbia. Key indicators will be especially tested in the development process of the spatial monitoring system in order to create territorial policies grounded in the continuous development trends evaluation. There is an expectation that selection of other indicators based on the proposed key indicators, filtered by the criteria of spatial relevance and regional and temporal accessibility could check reviewing possibilities of spatial development observing. This selection will get a form of a periodical report in the future. By focusing on the timeframe of analysis, indicators can be seen as static or dynamic. "A snapshot of the statistical value at a particular point of time will produce static indicators, whereas examining the variations of values over two different points of time will provide dynamic measures of change. It is then possible to conceptualize a hierarchy of outcomes along the time axis" (RTPI, 2008). This concept will be the central point of further research in the implementation of Serbia's key indicators.

Following the basic principles for inclusion in the European integration process, it is necessary to achieve the goal of territorial cohesion and harmonious territorial development. "Territorial cohesion refers to a situation whereby policies to reduce disparities, enhance competitiveness and promote sustainability acquire added value by forming coherent packages, taking account of where they take effect, the specific opportunities and constraints there, now and in the future. Territorial cohesion policy refers to measures promoting good territorial governance with the aim of achieving coherence as described. European territorial cohesion policy more in particular refers to such measures taken by EU institutions" (Faludi, 2009b). ESPON (European Spatial Planning Observatory Network) provides "comparable information, evidence, analyses and scenarios on territorial dynamics and revealing territorial capital and potentials for the development of regions and larger territories contributing to European competitiveness, territorial cooperation and a sustainable and balanced development" (ESPON, 2010). Besides the significances of numerous researches within ESPON Programme, there is a need for continuous contribution in this field at Serbia's national level, in the programme of the National Spatial Data Infrastructure (NSDI) development, if it is possible, as well as within activities of the Serbian spatial plans implementation. EUROSTAT methodology for collecting, storage and processing data should be the common statistical methodology with the aim of enabling data comparisons.

Soft spaces, fuzzy borders and borderlands request a research into how can the regulatory planning system be made more flexible in order to provide room for informal, unexpected, complex associational and across time and place moving spatial planning exercises. It means that spatial planning needs to be in interrelation, or sensitive, to the particular times and places rather than to generalized theories or accepted methodological protocols. According to Boelens (2009), while the debate on the significance of relational geography has influenced how planners plan, it has failed to change, in a meaningful way, what planners plan. More case studies (Healey 2007; Davoudi and Strange 2009) show that planners experience great difficulty with imagining the complexity of space and place in relational ways. "One reason for this is the lack of suitable data describing the characteristics of a place and the intricate ways of how it is linked to its wider surroundings. Evidence about geographical processes, to underpin powerful concepts and strategies, may well become one of the most sought after issues in tomorrow's strategic spatial planning" (Waterhout et al., 2009) and the conceptualization of national indicators for evaluating outcomes of reinventing spatial planning in Serbia represents new steps in Serbia's "theorizing practices and practiced theories" approach.

Is it possible to timely recognize future changes? Are we prepared to respond to these changes? Could we implement theoretical and academic research in spatial planning strategies and how could we insure their application in professional practice? What do space and territory mean under Globalisation and Europeanization? This paper discussed those questions without giving concrete answers, but with the intention to give directions, or initiations, for further research into the spatial planning theory and practice in Serbia.

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Received February 2011; accepted March 2011