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Uncertainty in spatial planning proceedings

Uncertainty is distinctive of spatial planning as it arises from the necessity to co-ordinate the various interests within the area, from the urgency of adopting spatial planning decisions, the complexity of the environment, physical space and society, addressing the uncertainty of the future and from the uncertainty of actually making the right decision. Response to uncertainty is a series of measures that mitigate the effects of uncertainty itself. These measures are based on two fundamental principles – standardization and optimization. The measures are related to knowledge enhancement and spatial planning comprehension, in the legal regulation of changes, in the existence of spatial planning as a means of different interests co-ordination, in the active planning and the constructive resolution of current spatial problems, in the integration of spatial planning and the environmental protection process, in the implementation of the analysis as the foundation of spatial planners activities, in the methods of thinking outside the parameters, in forming clear spatial concepts and in creating a transparent management spatial system and also in the enforcement the participatory processes.

Keywords: spatial planning, environmental protection, uncertainty, planning analysis

1 Introduction

Western intellectual culture has always strove to obtain an absolute and certain knowledge, or at least to come as close to such a knowledge as possible. At least from the time of Plato, the majority of Western philosophers and scientists have acted as if a reliable and verifiable knowledge is an attainable objective (Smithson, 1989). "Such efforts are of course understandable in the field of science, as its fundamental mission is to gain a firm and provable knowledge. It is however quite different in the field of everyday activities and measures taken in the environment and physical space. Here, the need for action is always resulting in operating with a lack of knowledge to some extent. Without exception, spatial planning is also a form of such activity, as the bases for action are usually carried out with time, material and financial constraints. Therefore the uncertainties in planning will always remain and have to be reckoned with" (Marušič, 1993: 29).

Lyle (1985: 131) points out that "planning is, by its definition, associated with uncertainties. When defined as problem solving, then the definition of the problem itself, as a connection between the objective and the obstacle for objective attainment, presumes the uncertainty. The obstacle can always be identified as an uncertainty on how to achieve the objective". Although we, as spatial planners, have to cope with ambiguities, obscurities, doubtfulness, uncertainties and constant change, it is one of the basic presumptions of planning, especially in order to attain the objectives, to reduce the uncertainties. Van Gunsteren (1976; quoted in: Buitelaar, 2004: 2) says that "spatial planning is, similar to a promise or guarantee, a conventional activity that creates order and certainty. It aims to overcome the uncertainty that is inherent in both nature and social relations".

The intention of this article is to present:

- The concept of uncertainty and its causes,
- The phenomena of uncertainty within spatial planning procedures and the consequences of uncertainty in society, the environment and physical space, and also
- The possibility of reducing uncertainty in spatial planning procedures.

This article arises from the perspective that uncertainty in spatial planning procedures can be reduced by a set of spatial planning tasks, a suitable way of their realization and by measures of actually attaining the results of the tasks at hand. On a theoretical and legal basis and experiences of the spatial planning practice, in terms of reducing uncertainty, different tasks, contents, methods, procedures, rules and measures of spatial planning have been analysed. The analysis was carried out with regard to two options of dealing with the future, defined by the Nobel prize-winner Herbert Simon (1981), which are viewed as the guidelines for uncertainty reduction in spatial planning. These are:

- Standardization and
- Prediction.

The first introduces samples, using given, standard ready-made solutions that try to get as close to what could be a solution to the problem as possible. The other option is based on the identified problem, goals and on the analysis of the obstacles that are in a way of the stated goal, and on identifying the solutions. This option is also known as optimization or analysis (Marušič, 1993, 1999, 2005).

Simon says that the effectiveness of one or the alternate option depends on the available information, the extent of uncertainty and the possibility to solve the problem by standard sample solution. When dealing with uncertainty, he points out, that standardization can be more effective than prediction. This is particularly true when the implementation of the analysis and optimization is not possible (Marušič, 2005). The dilemma of standardization and optimization is ubiquitous in spatial planning and applies to both planning procedures, objectives, and to spatial arrangements. Marušič (2005) says that the coexistence of normative and optimization procedures depends on the restrictiveness of the normative and also upon on the available area. He highlights the advantages and disadvantages of both methods of operation. Compared to optimization, the benefits of standardization are in its simple use and ability to control. On the other hand, the disadvantages are, in particular, the inability to adapt to spatial uniqueness and to specific spatial arrangements. Standardization corresponds well with the administration method of functioning, but on the other hand a complex system of standards hands a greater degree of jurisdiction over to administration, which calls into question the democratic decision-making in matters of planning, knowing that a standard-setting process can be undemocratic in itself.

2 The uncertainty term

Uncertainty is a very broad term, which can be differently interpreted and the forms of uncertainty can be classified differently. The term uncertainty is generally defined as a feeling of doubt or concerns about the realization, action, existence, truth, accuracy or safety or effectiveness of something (Bajec, 1979). The uncertainty in spatial planning is reflected as a series of diverse doubts in virtually all aspects and phases of planning, as the causes for uncertainty are numerous. This paper can only mention some key definitions.

Basic introduction of uncertainty can be shown by dividing the reality into four broad classes (Sherman, 1996; Petersen, 2002; Buitelaar, 2004):

- Certainty where we are dealing with known events and knowing how to realise these events,
- A risk where we are dealing with known events and the known probability of realising these events,
- Uncertainty where we are dealing with known events, but the unknown probability of realising these events,
- Chaos or ignorance, we are dealing with unknown events, and also the unknown probability of realizing these events.

In doing so, uncertainty and risk are connected. Faludi (1973: 49) says that "the risk is an unwanted consequence of the actions resulting from uncertainty". The risk in the process of spatial planning and environmental protection can also be defined as a possibility or the probability of damage or loss of a specific environment within a specific time frame. Two things are important here. The risk is presentiment (but not foreseen) to some extent and generally we correctly assume that there is a loss or damage, which is the negative effect. Uncertainty, on the other hand, refers to unpredictable events that can be both positive and negative (Buitelaar, 2004). As far as spatial planning is concerned they both raise important issues (Jolma, 2003):

- When will the event that we cannot with certainty predict actually happen,
- How often can we expect such events, and in particular
- What are the consequences of such an event?

Chechen (1991) generally defines two types of uncertainty we face in the environment and also in planning:

- Ordinary uncertainty derived from probabilistic nature of the phenomena, and
- Incertitude, defined by the uncertain knowledge or even ignorance, not knowing the environment and the processes in it.

The first is characterised by the conditional probability of occurrence or an event, such as tossing of a coin. The second type of uncertainty defines the lack of relevant information, uncertainty about the factors that influence the outcome of the event or in general, insufficient knowledge, which cannot be eliminated in the context of a situation that calls for decision-making and immediate action.

Roberts (1974) identifies three broad classes of uncertainty in the context of spatial planning or in the context of problems that are in the way of a desired solution within the spatial planning process:

- Uncertainties relating to knowing the outside environment,
- Uncertainty about future intentions,
- Uncertainties about value judgments.

In the context of **uncertainty, regarding knowing the external planning** environment, encompass all the uncertainties caused by our lack of knowledge of physical and social spaces, its components and principles, the cause and effect situations, as well as uncertainties regarding future environmental planning, which will be co-created by our decision-making in the context of planning (Marušič, 1993). Doubt arises from the high probability, even though that sounds very sceptical that we will never know everything regarding the environment and that within the planning process, we will never have enough information and data.

The additional uncertainty in planning brings about the method of discovering new facts. If the analysis in the planning process is defined as a type of research, the "design itself is not a form of discovering in a way that it is done in research activity, with a more particular view into the environment. It is however a method of discovering by fabrication. In doing so, we mainly deal with rearranging known things and less with flashes of wit" (Marušič, 1993: 30), yet fabrication itself adds to the doubts towards the correctness, firmness and provability of fabrication. Planning sphere combines analytical and creative thinking, the integration of "the basic duality of our consciousness" (Orenstein, 1972; quoted in: Lyle, 1985: 128). These reflections in reality require a simple division of responsibilities. The creative side suggests and the analytical rejects! Suggesting and rejecting is constantly exchanged throughout the planning process; this is similar to scientific methods where this dualism is reflected in suggesting the hypothesis and rejecting to experiment (Lyle, 1985).

Uncertainties about future intentions or regarding projections of future situations and future occurrences reveal the actuality of facing possible choices in the future. Uncertainties accompany future possible choices as well as spheres outside the field of interest in a specific planning task. Uncertainties relating future situations are reflected in the framework of the physical environment due to the natural and developmental processes and in the framework of the social environment due to technological developments and changes in social structures. The greater the time distance of the planned events, the greater is the degree of uncertainty in the future scheme.

Uncertainties about value judgments are associated with the relative importance that the decision-maker has to attribute to expected or planned situations. These are mainly various fundamental and ethical guidelines, and the acceptance or rejection of the various decisions related to encountering different interests in the area (Roberts, 1974; Marušič, 1993).

Up until the mid-20th century, the spatial planner was considered a kind of all-knowing wizard, which need not explain how he came to his solution. A major shift has come with the environmental movement in the sixties, when proposed solutions were put into question (Lyle, 1985). Despite major progress in creating a more rational, more objective and transparent planning methodology, there are still a lot of proposals and even decisions made in an intuitive way, without analysis, heuristically! If this way of decision-making is acceptable in everyday life, design or even architecture, cannot be acceptable in spatial planning. The main reason is that decisions in the physical space address a variety of different interests that are affected with each decision taken. Therefore, doubt is necessary in cases where we are dealing with narrow, non-objective argumentation and narrow spatial initiatives, seeking only their own interest.

It is therefore necessary to distinguish between two types of uncertainties regarding the source of uncertainty (McGlade, 1993; quoted in: Sherman, 1996):

- External uncertainty, this is the uncertainty arising from sources outside the spatial planners activities and is mainly a consequence of incomplete knowledge,
- Internal uncertainty, this is the uncertainty resulting from the spatial planners' activity and depends upon the context of which of actions were carried out.

3 The connection between spatial planning and uncertainty

3.1 Variety of interest, complexity and necessity of their co-ordination

Spatial planning is primarily a way of adjusting interests in physical space and also representing those interests – a way of ensuring certainty of their realization. One of the main reasons for the need for planning in physical space, which Klosterman (1985) points out in the review of the arguments for and against planning, is representing those interests. Each planning process is essentially a unique form of reducing the uncertainty arising from the definition of acceptability for an individual interest in a physical space. Awareness of the free market weaknesses, without an adequate social note and the importance of interest group representation, has in the United States of America led to the development of 'advocacy planning', based on advocacy for the needs of specific population groups (Davidoff, 1965). In terms of reducing uncertainty, this kind of planning is interesting, as the planner can act as agent also for unprivileged groups that cannot otherwise exercise their own specific interests.

Co-ordination of these interests is becoming increasingly important. It is important to realise that physical space is a limited resource, because of that the manoeuvrability area of the spatial planner will continually decrease (Marušič et al., 2004). Simultaneous societal development, which requires continuous intervention upon physical space and at the same time the persistence of environmental protective efforts, resulting in growing environmental problems, can also mean the persistence of individual interests which conflicts with individual interests or may increase the level of uncertainty upon the realisation of development programmes.

Uncertainty, which constantly appears in every step of the planning process, and within the process itself, is the hardest to eliminate and results from the uncertainties of the value judgments of individual interests. This uncertainty is not of any degree of substance, but purely on an emotional level. It relates to the fundamental and ethical guidelines, where the certainty of judgments is questionable because of different viewpoints. This is a question of so-called weight, the importance of individual criteria and interests in physical space, which occurs when spatial solutions cannot equivalently meet the interests in the area.

3.2 The necessity of logical decision making within spatial planning

Spatial planning means, mediating with the purpose to change the existing course of events in the area. A key spatial planning issue is time placement and legitimacy of the mediation (Campbell and Fainstein, 1998). Why, when or in which situations should spatial planning mediate? The answer to this question can be found in identifying two extreme alternatives to spatial planning as a democratic process and knowing that they are both problematic. The first alternative, totalitarianism: as an extreme form of dominance of a single interest, including the protection interest, even with the best intentions, is incomplete and unsatisfactory. Because of the single-meaning conception of an area, such spatial solutions become totally unacceptable to other users in the area. Certainty of achieving one of the interests means the uncertainty to realize the other interest.

On the other hand, Campbell and Fainstein (1998) point out that the most usual assumption of alternative spatial planning, the free market, can be equated with chaos (as an extreme form of uncertainty), short-term vision, selfishness or self-interest. The assumption of the free market has resulted from the belief of an efficient allocation of resources amongst market participants. A key problem of this assumption is that, for example animals, plants and in particular the future of humanity has not and will never be a participant of the market and in this way provide the basis for their own existence. The assumption

of the free market is all the more problematic, if we know that the free market does not really exist as the actual market is monopolised or oligopolised by stronger more potent (in capital, human resources, lobbying and networking potential) participants.

According to some planning theorists, one of the fundamental characteristics of the market, the uncertainty of the market is also a key reason for the continued existence of traditional spatial planning, as the very logic of the plan should replace market chaos (Campell and Fainstein, 1998). Uncertainty and lack of information results in difficulty in market exchange rates and leads to lower economic efficiency. That is why the economy itself gravitates towards uncertainty reduction or applying the measures of free market regulation (Buitelaar, 2004).

3.3 The complexity of the environment, physical space and the society, and the issue of certain-knowledge availability

Unpredictability of changes and such great complexity, which are impossible to understand in its entirety, is inherent for environmental and physical spaces. Intervals in time and space between cause and effect increase the problem or the ability to be certain. In understanding the complexity of the processes, the environmental sciences face, in addition to old uncertainties and also new uncertainties, which are related to the introduction of new technologies and current processes (e.g. genetic engineering, impact of human activities on climate change).

Traditional scientific methods try to reduce uncertainty, but they do less with respect to presenting this uncertainty. But it is better to be 'about right' than 'exactly wrong'! If scientists and experts do not know enough to provide precise answers, they are obliged to highlight key issues and provide a range of possible solutions and potential uncertainties associated with them. Promoting the principle positions, due to uncertainty of the actual impact, should be avoided. In this way the experts cause uncertainty themselves, instead of facing it. Dealing with uncertainty, therefore, not only increases the certainty of events, but also knowingly allows room for manoeuvring for realising the unforeseen course of events (Petersen, 2002).

Petersen (2002) points out that scientific certainty is, unattainable to all the most important political problems of today. Ravetz (2003) even says that the awareness that science does not provide certainty is a revolution in epistemology. Descartes' belief about the 'ability to correctly assess and distinguish right from wrong' should be, in his opinion, after centuries of domination, finally discarded.

Ravetz (2003) also points to the formation of 'democracy expert knowledge' and raises the discussion as a fundamental task or a guide to science functioning under the wings of politics. It points to the legitimacy of different viewpoints and the danger to limit itself to the dominant, supposedly the right path. The task of science is not to achieve the truth, which has to be adopted by all, but to provide a basis for discussion, with a fundamental condition to be well-intentioned. This type of science is labelled by the term 'post-normal science' (Petersen, 2002; Ravetz, 2003; Funtowicz and Ravetz, 2005). It results from an awareness of the environmental complexity and is typical in cases of 'uncertain facts, values, which can be discussed about, major investments and urgent decisions'. In the field of spatial planning, this kind of consideration coincides with the development of communicative planning (Innes, 1995, 1996, 1999; Stromberg, 1999; Fainstein, 2000), based on the philosophy of American pragmatism and Habermas' (1995) communicative rationality and in Europe 'collaborative planning' (Healey, 2006). The concept of this type of planning is, in terms of reducing uncertainty in the decision-making process, particularly interesting, as it assumes direction in planning procedures to seek approval of all actors involved. Communication should be a vital element of a planners' work – the creation of common goals, knowledge mediation, developing common solutions and social learning (Rydin, 1998; quoted in: Kos, 2004). It therefore has the characteristics that are also the basis for uncertainty reduction, which is the result of incomplete knowledge.

In the construction industry, e.g. construction, mechanical engineering, the problem of uncertainty can be addressed in two ways – with the principle of a 'unique product' or the principle of a 'mass product'. For unique products, the principle of 'burden of worst-case scenario' is used. Security factors are surely the most widespread method of reducing uncertainty and are used as an upgrade upon empirical or theoretically obtained values. In mass products, the possibility of empirical experimentation with the model and a perfecting method is used, which immediately removes a great deal of uncertainty. From an environmental protection perspective, the process of uncertainty removal, through the safety factors, e.g. permitted emission levels of pollutants, is particularly interesting, as it is one-sided; it ensures the certainty of the intervention in the environment, indeed perhaps at the expense of some unnecessary pressure on the environment or increasing the cost (Marušič, 1993).

However, spatial planning is a form of unique product where we cannot use the method of safety factors. The system that we are planning is more complex and with all the uncertainties, we simply cannot provide only one-meaning (or one-way assurance of certainty) in the process of spatial planning, but

we can contribute to a greater degree of certainty by more objective methods.

3.4 Addressing the future

Spatial planning is inevitably related to the fundamental question of (un)predictability of the future. Planning always refers to the future. The term 'planning' is defined as thinking ahead about something, to propose, to determine the appropriate measures, to think, to intend to do (Bajec, 1979). Marušič (1993: 34) states that "the key cause of uncertainty in forecasting the future is that the future cannot be verified in the present. The requirements relating to the future cannot be regarded as facts, but only as assumptions or possibilities".

The future of physical space is highly uncertain because it does not only subjected to the mechanisms of spatial planning, but also to other activities – usurpation, consumption, giving, trading, sacrificing, separating. These actions are the result of conscious decisions, habits (the result of decisions taken in the past), traditions (the result of long-term decision-making process in society) and subconscious (involuntary) responses. Being conscious of the inability of any definitive forecasting of the future, is one of the spatial planning objectives and missions that – ensure the most single-sided future course of events in physical space. We could say in a chequered way, that planning works on the principle "the best way to predict the future is to invent it" (Kay, 1989: 1).

This is why spatial planners are becoming 'activists' instead of professionals and participate in the public decision-making process. Spatial planners do not have the power to control the physical space as an object of their work. They are functioning within the frameworks of the political economy and their visions are competing with the visions of developers and users of physical space or individual interest groups with great social influence. They cannot dictate the sector, but have to rely on super private investments or realization as a result of political decisions. They are operating within the scope of democracy and bureaucracy, giving their objectives, generally low priority on the political agenda. Despite the comprehensive study of physical space and active vision, spatial planners are often forced to limit themselves to playing reactionary and regulatory roles. The spatial planner becomes an activist due to the combination of activities in the social environment and because of uncertainty reduction of results realization in the planning process (Campbell and Fainstein, 1998). This kind of activism is within the Slovenian perspective reflected in increasing involvement of spatial planners, Chamber for Architecture and Spatial Planning of Slovenia, and professional associations in the process of adopting legislation and development programmes, and discussions on current spatial problems (Cimolini et al., 2009; Društvo krajinskih arhitektov Slovenije, 2009; Slovensko društvo evalvatorjev, 2009).

3.5 Doubting the correctness of the decision and the finality of the solution

Thinking of reducing uncertainty and searching for more objective decisions in spatial planning can be linked to the concept of scepticism in philosophy. The notion of doubt in the process of spatial planning does not exactly appear in the form of philosophical questions, but in a completely practical sense, in terms of doubt arising from the placement of new technologies and interventions in physical space, but yet there are a number of important parallels that can be identified.

The basic principle of scepticism is the demand for discovering the basic reasons for gaining confidence in an idea. Scepticism brings, into the thinking, the idea of rationality, with a purpose to systematically achieve the great goal – to find a reliable truth (Huben, 1998). In spatial planning we are confronted with different forms of doubt. These are consistent with the three basic categories of scepticism as a philosophical direction, which vary according to the ability to recognize the truth. (Kurtz, 1992, 1998; Huben, 1998):

- Nihilism or completely negating scepticism,
- Mitigated scepticism and
- Sceptical inquiry, or new scepticism.

Nihilism or completely negating; extreme scepticism excludes the possibility of drawing conclusions about the truthfulness of something. It is based on unlimited sceptical questioning, doubting all of the basic assumptions. Such scepticism states that realization is not possible, and that claim is based not only in the context of scientific and philosophical theories, but also in the context of moral and political categories (Kurtz, 1998), as well as in spatial planning. Negative labels and objections to this form of scepticism, which a state doubts as a principle, are understandable. The main problem of such scepticism is a constant indecision, inability to distinguish a better proposal from the others. Hume (1974) says that the main and most devastating objection to excessive scepticism is that nothing permanently good can come of it. Sceptic, because of his scepticism, cannot even answer the question to what is the purpose of it. Even psychologically speaking, man can not operate in a state of extreme doubt and indecision (Smithson, 1989).

In spatial planning the similarity to extreme scepticism is reflected in the phenomena where some spatial planning interventions are rejected in advance. This is distinctive of many environmental movements, as well as part of the civil service. This phenomenon is reflected as a general doubt towards

new methods and interventions, individual technologies and arguments for initiatives, and an unwillingness to find compromised solutions. An example of such doubt has been the opposition to place the radar for air traffic management at Menina planina in the years between 1995 and 1997. The public then, despite several independent expert opinions, simply did not believe the guarantees for the safety of such a structure. All activities related to the installation of radar have been, since then, suspended (LUZ d.d. and Uprava RS za zračno plovbo, 2000).

Mitigated scepticism, as opposed to nihilism, acknowledges the differences between various levels of unfamiliarity. Such scepticism allows for the comparative assessment of what is in terms of the realisation of the planned interventions to gain a better understanding, and with that the comparison becomes a key spatial planning method. Such scepticism demands to find the most probable opinion with a sufficient degree of certainty for the function (Smithson, 1989). Engineers, much like judges, most of the time operate with incomplete information, unreliable data, questionable facts (Marušič, 1993). Scepticism in this case is the best way to protect against mistakes and premature judgments. This scepticism offers general doubt in all our previous thinking and principles, as well as their own abilities. Hume (1974) says that it is necessary to find the truth by a series of conclusions, derived from an original principle that cannot be wrong or deceptive.

An important capability of scepticism that Hume points to is to ensure judgment impartiality, and enabling the loss of prejudices acquired by education and hasty thinking. Smithson (1989: 14) quotes a significant Zelazny thought when he speaks about: "Doubt is the spirit of virginity". Such scepticism is very welcome in the environment and also in planning. In the first case it shatters illusions, prior value definitions and beliefs. And in the second case, in terms of the ability to go beyond the established, catalogue of solutions. The danger of catalogue solutions is in their lack of adaptation to a specific spatial situation (to the spirit of space), present time and social conditions; although with multiple repetitions this type of solution also provides some form of certainty.

Sceptical inquiry or new scepticism is a category of scepticism that derives from the tradition of pragmatism. Charles Pierce and American pragmatists, from the beginning of the 20th century, believed that sceptical doubt is not merely one of the phases in the process of research but also crucial in testing hypotheses and in divulging adequate evidence and just reasons. If scepticism is often considered as negative, the new scepticism is defined as a positive, constructive, useful in the specific context of research. The researcher accepts the fact that his formulations are not final and future researchers and theories may change them, but contains the belief that reliable knowledge is possible in many fields of human activity and can be achieved by the persistent efforts. In order to detect a reliable knowledge, such scepticism is not only essential in the processes of science research, but also in normative areas such as ethics and politics (Kurtz, 1998).

Scepticism is therefore especially from Descartes onwards, an essential part of scientific research, an intellectual process that can be tackled in the absence of immediate experience. Evidence is required before we can be sure that what we believe is the truth is actually the truth. Eidelman (1999) says that the scientist or the man, who uses scientific methods, therefore spatial planner as well, are obliged to be sceptical whenever a new idea appears, until the genuine evidence confirms it so! If the evidence is acceptable, if the chain of conclusions is acceptable, then the idea may be acceptable as well. In this context, the word sceptic should not be understood in terms of chronic indecision, but in the original Greek sense of that word – "a man who carefully researches" (Russell, 1977: 229).

Scepticism is defined as an evaluation of new ideas. Such scepticism is by no means an absolute 'no'. Indeed, there must be a free way for realisation of new ideas, even if the need, to let some new ideas on the side or even rejected, emerges. However, rejecting ideas should be seen as a positive thing as this leads to the creation of alternatives for rejected ideas because at the end, we must act in some way. This is actually a process of "proposing and rejecting" that Lyle (1985: 128) identified as a basis for spatial planning.

4 Guidelines of uncertainty reduction in spatial planning proceedings

4.1 Spatial planning as a way of co-ordinating the interests in space

Spatial planning and management should maintain its position above individual sectors and the role of the democratic process, also from a viewpoint of uncertainty reduction, implementation of spatial planning procedures and the implementation of the results of these procedures. In spatial planning processes, the need for and the commitment to ensure the involvement of individual interest groups must be a recognized. The duty and right of all the representatives of legitimate interests in physical spaces are, that these interests are reconciled within the spatial planning acts and are reflected in clear, spatial concepts at different levels, and within these criteria and conditions for the arrangements of spatial protection do not allow ambi-

guous interpretations of spatial acts in the process of detailed planning procedures and the building construction process. It is inadmissible to produce spatial planning documents that allow uncertainty in realisation, and to leave the salvation of inconsistencies to the acts of individuals, as this may be to their disadvantage, the disadvantage of all protectionist interests and the interests of society as a whole.

4.2 The setting of the objective and comprehensive planning process

The key for uncertainty reduction within the whole planning process seems to be a blueprint for transparency, reproducibility and as objective as possible. Distribution to phases, decomposition of the problem to the manageable parts and searching for consensus in key steps of the procedure, may be a long process but can generally and eventually lead to more or less acceptable solutions. In the longing for such a procedure, it is necessary to find different options for more objective decisions in spatial planning and to verify the usefulness and effectiveness of these options in each step of the planning process. Kurtz (1998) says that one of the basic features of making sure, that something is certain in a mutual interaction, a confirmation of other people researching the same thing.

Basic instructions of most theorists in the field of spatial planning, as well as other sciences, in fact do not deviate from Descarte's famous rules (1637; quoted in: Russell, 1977: 195) that he set for himself in solving geometric problems and have led him to systematic doubt:

"1. A man should never accept anything but clear and distinct ideas.
2. Each problem should be divided into as many parts as are necessary to solve it.
3. Thoughts should follow in a specific order – from the simple to the more complex, and where there is not order, one should be foreseen.
4. All should be carefully reviewed in order to make sure that we have not overlooked anything".

The development of incremental planning is consistent with this philosophy, resulting from the criticism of planning in the mid-20th century and the urgency for action within the framework of limited information or situation where a comprehensive analysis is not possible. Incremental planning is defined as planning, where step by step gradually reaches a certain goal. In incremental planning, decisions are made by weighing the marginal benefits of a limited number of alternatives. The work does not proceed by the direct expression of long-term goals, but by the progression through a gradual approach towards these goals. In principle only alternatives that represent a small deviation from existing policy, are assessed. (Lindblom, 1959, 1979; Fainstein and Fainstein, 1998).

The framework for defining the other guidelines of uncertainty reduction is the planning process itself. Steps in the process of spatial planning vary according to individual authors, the most useful for determining the guidelines addressing uncertainty seems to be the model that Lyle (1985: 131) named a "paradigm of rational problem-solving". Where, uncertainty is reflected within the steps of either a hindrance or as a help. Thinking about the uncertainties in physical space and spatial planning does not arise only from the assumptions regarding uncertainty, as an obstacle to progress in the process of spatial planning but also as a principle by which it is possible to optimize the content of the spatial planning process.

One of the key reasons for the uncertain outcome of the spatial planning process, within the Slovenian planning practice, is the incoherence of the institutes for planning and protection (environment, nature, cultural heritage), which is reflected in the increasing autonomy of mechanisms, mentality, organizational structures and acts of individual areas (Marušič et al., 2004; Mlakar, 2004).

Let us consider the case of the nature park protected under the Nature Conservation Act (Official Gazette of the Republic of Slovenia, No. 56/1999). Areas, the purpose of protection and the guidance for the development and protection are defined primarily on the basis of nature protection features, although they are highly complex areas, which require co-ordination between multiple interests. Related to nature parks is category of the cultural landscape protected under the Cultural Heritage Protection Act (Official Gazette of the Republic of Slovenia, No. 16/2008). In practice, the departments of cultural heritage protection that define the areas of cultural landscapes are partly response to nature conservation areas of nature parks or because of an inability to collectively define the interests in these specific areas. According to the records of the Nature Conservation Services, cultural landscape areas are often coinciding with nature park areas (Marušič et al., 2004), which is quite logical, since both services deal with landscape as an intertwinement of both the natural and also of cultural values. It is the protection of the same area with similar motivations (to regulate or to limit the interventions and activities in a physical space), but under a different title and different aims or agendas, that is unreasonable or difficult, at least in terms of spatial planning and management, when there are inconsistencies or an incompleteness of developmental directions and protection regimes.

Regarding the contents, the conflict could be successfully resolved with the methods of spatial planning, using the Con-

ception of Landscape Development and Protection, which was unfortunately revoked by the Spatial Planning Act (Official Gazette of the Republic of Slovenia, No. 33/2007). Formally, this is much harder to accomplish. The Nature Conservation Act and the Cultural Heritage Protection Act, both regulate these protected areas by prescribing a management plan that is (amongst others) the basis for spatial planning and use of natural resources. The management plan is not a spatial plan, but a programme document. This leads to two uncertainties: 1. Programme definition, beyond the remit of spatial planning, is questionable, since its' spatial dimensions (necessity, acceptability, feasibility) cannot be verified. The management plan, despite its legal nature, should enter the process of spatial planning as one of the guidelines for interest co-ordination in physical spaces. 2. Directives from the management plan should be easily transferred into the spatial implementation conditions of the municipal spatial plan. The problem arises where the nature park extends over certain areas of several municipalities. The diversity of land use planning policies and the transfer to the municipal spatial plan brings uncertainty with respect to a uniform regulation of the nature park area.

It should be noted that environmental protection effectively implements itself through spatial planning. By the correct placement of activities, detailed spatial arrangements and consideration of the criteria and conditions, in principle, the environmental impact decreases as well. At the same time, protection is a dynamic process which should be constantly involved in the planning system, at different levels, with different precision levels and different substantive and formal reflections. The key question that must be considered, if not resolved, is the question of the relationship between spatial planning and environmental protection. What are the differences between the planning process and the process of environmental protection and how to ensure (in content, time, methodology, procedure) mutual complementation of these procedures in various documents, what is the instrumentation of the two procedures; these are just some of the numerous issues that

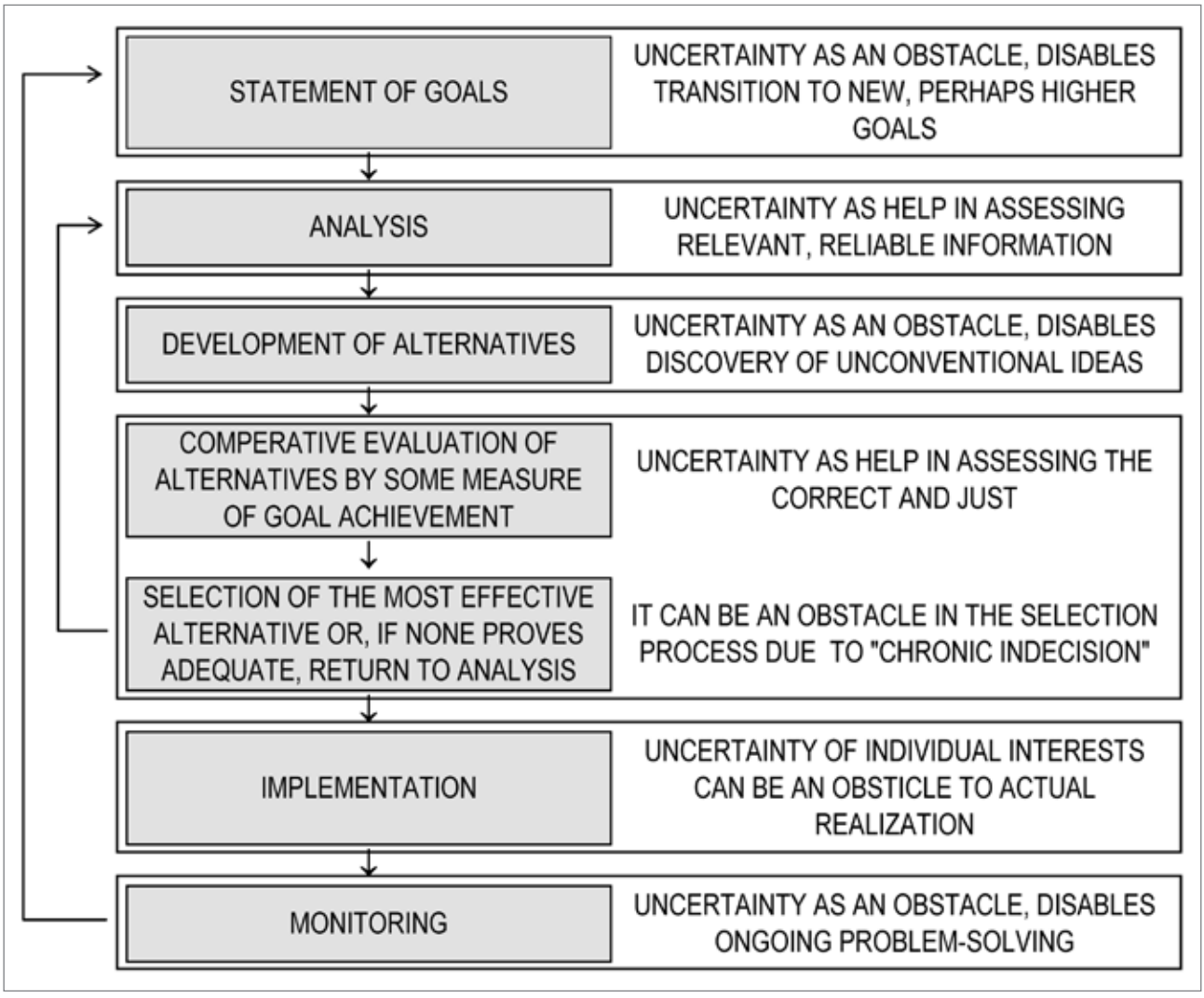

Figure 1: Paradigm of rational problem solving and uncertainty (source: Lyle, 1985).

arise from required and formalized records. The key is however, that the question of the relationship, more than the clarification of responsibilities or identification of the definitions comes from the reflections upon the resultant achievements, consistent with both the basic objectives of spatial management and environmental protection. Rather than from a desire to put environmental protection procedures as autonomous versus the planning process, they should derive from the notion of an optimal arrangement of the area – in connecting all these efforts into a single system of protection and spatial planning and protective spatial planning (Marušič et al., 2004; Mlakar, 2004). This is primarily an integration of content, a content of protection reflection, within the conception of activities placement in the area itself and in the conception of an individual system of local importance, as well as other contents of spatial planning and management methods. The formalised involvement in individual acts of planning is also important, and the way of including the autonomous content of protection into the Act itself, should actually ensure the realisation of protection interests in the processes of construction which follow the spatial planning process.

4.3 Planning analysis as a basis of a spatial planners' activity

Lyle (1985) distinguishes between two basic sets of solutions – invention and systematic exploration of possible solutions – the analysis. The problem of the first set of solutions is that it is not possible to clearly demonstrate the criteria, from which the solution comes from, but also that it makes it subject to significant doubt. And just the opposite, the analysis is connected with one of the fundamental assumptions in reducing the uncertainties – increasing the knowledge or information. In this case, the criteria are known, uncertainty may actually be of help when developing relevant and reliable criteria and the solution is subjected to less doubt. Planning analysis is defined as a set of answers to uncertainties related to the implementation of spatial arrangement or the resolution of spatial problems. Analysis means the resolution of the question regarding the relationship between the findings of the past and present and the deliberation of the future. The general characteristic of such an analysis is to adjust to the problem. The starting point is always the definition of a specific problem in a given area, collecting the facts of the area connected to the problem, processes (natural and social) in the area and on their values, on social particularities of the area and on possible ways of solving the problem at hand.

A characteristic of such an analysis is to include the developmental as well as the protection criteria and also design elements, the assessment and comparison of alternative spatial solutions.

To consciously intervene in physical spaces and to create new arrangements is deemed as thankless work. To avoid the uncertainties related to the process creating new areas, planners usually, with the assistance of various disciplines, try to get to know the circumstances in which different areas have formed and grown, and compare these areas to the ones existing today, take into consideration all the available knowledge, seek all possible alternatives and seek the widest possible social support for a specific solution. It is necessary to understand the role of all the factors that define each specific space and to believe that the planned work has to lead to the creation of a suitable new area.

4.4 Application of alternatives

Forming the alternatives seems one of the best means of reducing doubt and uncertainty. The whole planning process is full of different opportunities or alternatives – about the objectives, methods of operation, the program and its scale, location of spatial arrangements and technical solutions. Uncertainty about certain intervention acceptability in society can be overcome only when we know that other and better opportunities to achieve this intervention are not available. Decision-making at various levels, from the professional, to the political, to the wider public is much easier in the case of the various options offered.

Basically, there are as many alternatives as there are various interests in the area. Doubts about intervention correctness can be reduced by discovering all possible alternatives, by comparing how each of the alternatives takes into account various interests, and by selecting the optimal alternatives. By selecting this optimal alternative, uncertainty can be viewed as an aid in assessing the correct and just, or it can also be an obstacle due to chronic indecision of individual interests involved within the decision-making process.

4.5 The need to resolve current spatial problems and to establish clear objectives and spatial concepts

Spatial developmental objectives must be clearly reflected in the spatial concept that should usurp the uncertainty of what the society will do with an individual part of a municipality or protected area in the future and which areas and spatial elements should be strategically conserved and which spatially develop – actively change. It is essential to actively address current spatial problems by critically considering developmental trends and actively breaking the link with uncertainty about the future appearance and function of individual areas.

Uncertainties in defining the objectives themselves are linked to a certain form of neo-phobia – a fear of everything new, which is created by the system itself that protects the existing regime, protecting it as a guarantee that it will not get worse. This way of thinking is common in the environmental movement and is understandable from the fundamentalist view of nature protection, assuming that each new intervention, in the natural environment is degradation. These uncertainties may hinder the development of society when in the process of transition to higher objectives. That is why it is needed in the planning process in order to face and overcome uncertainty by using spatial planning methods.

Spatial planning stands for intervention which aims to change the existing course of events in a specific area. So it is essential to surpass the logic of passive spatial planning, on the one hand 'the initiative' urbanism and on the other; that of rigid protective guidelines. By active spatial planning, this planning practice, focused on investors' initiatives, the constant servile changing of spatial planning documents, has also to be surpassed. At the same time we have to realise that each era has a right to leave their mark in the physical space we inhabit. Each, generation can speak through the physical space about itself, and arranges it in a way that reflects its time, problems and the ability to solve these problems. However, it is important to preserve the core concepts and to be respectful towards nature as a fundament heritage in itself, towards physical space as a set of human relations, the context of space and local diversity in relation to the past, past generations and their contributions in creating space. Directing development must therefore come from both development guidelines and the protective motivation of an environment and the object lessons of protection itself.

4.6 Management as a way of reducing the randomness of realisation

Directing the action in physical space and reducing the uncertainties related to the implementation of individual interests is possible within the system of spatial management. Spatial management can be implemented by a series of institutions, a set of provisions for managing the proportions, states or actions that provide rules and arrangements which are generally accepted. Buitelaar (2004) points out that when we use these institutes there is an absolute certainty that the information provided is well established and co-ordinated in the community and therefore is more relevant than other perspectives. Spatial planning acts as operational institutes which define the rights and obligations in a certain part of the land. This information reduces uncertainty about what is and is not possible to do with the land. In this way they do not only ensure the achievement of spatial and environmental objectives, but also contribute to economic efficiency.

Basic institutes of spatial management, that should in terms of reducing uncertainty get the most attention, are:

- Spatial articulation,
- Land use and organization of activities in physical space and
- The criteria and conditions for planning and protection of physical space.

Spatial articulation is basically related to the reduction of uncertainty on the state of physical space or the future picture of a given area, as it comes from the necessity of simplifying the complexity of physical space. Properly conducted spatial articulation is one of the conditions of rationally propelled spatial planning procedures and an orderly spatial image. For the units of spatial arrangements, spatial planning acts prescribe rules for planning, admissible land use and intervention – the so-called criteria and conditions for regulation and spatial protection. Spatial articulation cannot be based on the state of the area, but on the desired future state of the area – planned interventions and (strategic/conceptual) planning guidelines on which the acts are based on.

Land use as a fundamental institution of planning eliminates the uncertainty about what is possible in the area. Land use is a typical way of reducing uncertainty with the implementation of standardization principles. Land use is defined as a set of reserves, areas for the implementation of certain activities. Determining land use and permissible activities should therefore primarily be based on the spatial concept and analysis of coincidence between the defined categories of land uses with the aspired use of the area. Only in this way we can realise the fundamental assumption that certain forms of land-use and activities reduce the uncertainty of individual objective achievement, not only development ones but also protectionist ones.

A suitable record of the criteria and conditions is of key importance to reduce uncertainty when realizing the spatial objectives and concepts and a more detailed spatial planning and environmental protection. Given the wide range of criteria and conditions it is important to recognize that the criteria and conditions for each planning zone are not a 'collection' of all the criteria and conditions contributed by individual sectors in the preparation of background documents, but are mutually co-ordinated rules that apply to such an area. One should not forget that in order to reduce uncertainties in the construction phase, the co-ordination defined in the spatial acts and other legal documents associated with spatial arrangements, is of key importance. To reduce the uncertainties in determining the use of the criteria and conditions, the key is to have a one-meaning

definition of regulatory elements, a legally valid framework of values and spatial coherent regulatory lines. The extent of the criteria and conditions that apply to the individual unit is, therefore, dependant on the degree of regulation, which is in turn is dependant largely on the degree of what is already constructed, the problems or difficulty of managing individual units and the strength of the broad spatial planning guidelines that we want to implement in a particular area.

5 Conclusion

Spatial planning has an inherent uncertainty arising from the difficulty of co-ordinating various interests from individuals to groups in physical space, the necessity to accept spatial planning decisions, the complexity of the environment, physical space and society, addressing the future, which is always somewhat uncertain and doubting the correctness of the decision and finality of the solutions. To add to these uncertainties, there are a number of uncertainties arising from a lack of knowledge, low business solidarity of spatial planners and administration and lack of their control, a number of systems and totally conflicting viewpoints, poor organisation and lack of co-operation between different services embedded in spatial planning, incompleteness and inconsistencies of legal regulations, working methods and views on solving spatial problems and in particular, the lack of courage and will to constructively and pragmatically resolve the current problems and find long-term solutions.

The statement, that the power to reduce uncertainty by a specific set of measures can be confirmed. These measures are based on two main principles:

- Standardization – operation based on pre-set solutions, rules and norms and
- Optimization – finding the best solutions.

The co-existence of both principles is possible and necessary, but the reasonableness of using one or the other depends primarily on individual steps within the planning process and the context of solving everyday spatial planning problems. Optimization is a key in the steps of defining spatial solutions, and standardization in the steps of implementing spatial solutions identified in spatial acts. The rest of the initially defined hypothetical guidelines seem to be an appropriate basis for defining the measures to reduce uncertainty – a series of spatial planning tasks, the appropriate manner of their realisation and the measures for implementing the results of these tasks.

The measures are primarily reflected as guidelines of the relevant background documents and spatial planning acts. These measures are connected to two basic measures, relating to all levels and tasks within the spatial planning process:

- Optimizing the legal framework of spatial planning and
- Increasing the knowledge.

'Legal uncertainty' – the term is taken from the De Marchu (1995; quoted in: Sluijs et al., 2003) – seems to be one of the key problems of Slovenian planning practices. It refers to the uncertainties resulting from the incompleteness or diversity in interpretation of legal regulation. Legal uncertainty hinders the transparency of working within the existing legal frameworks, and leads to a passive operation of institutions in decision-making and providing information. A recent survey on the Chamber for Architecture and Spatial Planning of Slovenia operations (Cimolini et al., 2009) has shown that members of the Chamber actually experience bad and disorderly legislation, from the field of construction and spatial planning, as one of the most disturbing circumstances of their work. 74% of respondents stated that legislation should be a top priority for the Chambers' activities. Over 60% of respondents cannot follow the frequent changes in legislation, 64% of the respondents have, because of adapting to project documentation to the changes of legislation, experienced material damage. Therefore, a change of legal regulations, on the basis of clearly defined objectives, analysis of current regulations, democratic involvement of the professional public and the experience of good spatial planning practice is certainly needed.

Increasing knowledge is one of the basic assumptions of reducing uncertainty, and it is possible in spatial planning in a specific fashion – through creating. Creation, defined not as inventing, or discovering new, but also (in spatial planning 'mostly') as "the transformation of existing into a different, new form and with that, a new thing" (Trstenjak, 1981: 31). Similarly to spatial planning Torrance (1958; quoted in: Žagar, 1992: 12) also defines a creative form of problem solving, as a process of "gathering relevant information, identifying problems, identifying the missing elements and discordances, searching and creating hypotheses, testing, modifying and retesting hypotheses and reporting the results".

Increasing the knowledge also refers to increasing the level of knowledge and understanding of spatial planning that can be implemented by promoting good practice, the implementation of various forms of education, making recommendations, reviewing, researching, publishing, choosing the right spatial planners and the employing a suitably qualified administrative personnel.

Uncertainty will indubitably always exist in physical spaces and within the spatial planning process. We should not expect that we will ever know everything about the environment, to have access to sufficient information to solve problems, to be

able to accurately predict the future, to implement the appropriate measures of achieving spatial organisation, nor that we will ever achieve certainty of value judgments. Some level of uncertainty will always exist because of the financial, time and staffing constraints within the planning process.

The problem of uncertainty as a principle is a constant indecision, an inability to determine which proposal is better than the next. Uncertainty therefore has becomes an obstacle to progress in the planning process, development of spatial areas and society within it. However, if uncertainty guidelines are the basis for cautious research, testing of hypotheses, presenting the relevant evidence, assessing the accurate, just and reliable, then this is demonstrated as a great principle in optimization of the spatial planning process. Uncertainty, in this way becomes an essential part of research, an intellectual process to be tackled in the absence of direct experiences. Uncertainty becomes a tool against errors and hasty judgments, allowing the impartiality of judgment and loss of prejudice. It can serve to break illusions, prior value definitions and enable the capacity for the transition from the framework of established solutions. Tackling uncertainty does not only increase the certainty of events, but also consciously allows for manoeuvring room for the realization of unforeseen development of events.

Given the above, it would be more correct to talk about reducing than managing it. Some uncertainties cannot be, or it even does not make sense to be reduced, but it is important to realise they exist. A tendency to control uncertainty is related to the urgency of reducing the negative effects of uncertainty, the desired stability and fairness of society, maximization of the objectivity of the entire spatial planning process, preventing fraud and manipulation, reducing the randomness of development, environmental acceptability of human intervention in an area, the economical efficiency and also to ensure the realisation of investments. This tendency to manage uncertainties arises from one single basic assumption of spatial planning – to create order and certainty.

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Notes

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