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# Phenomenon of Uncertainty in the Process of Holistic Anticipation of Non-deterministic Reality

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## Abstract

Uncertainty is one of the most important features of many areas of social and economic life, especially in the forward-looking context. In order to significantly reduce the uncertainty in the current decision-making (by ordering the knowledge of the present tense), an entity can centre their actions on the future through the foresight actions. This article attempts to answer the following research question: “What factors and methods of foresight methodology enable the identification, analysis and minimization of the effects of uncertainty in the process of holistic inquiry of the future?” The study uses the results of analysis methods and criticism of literature as main research methods.

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## 1. Introduction

In turbulent XX and XXI century, there are no easy methods to predict deterministic reality, which was characteristic for scientific analysis before the beginning of the quantum era. Thanks to the “quantum revolution” deterministic phenomenon in the science was to be overcome, in the beginning, in the area of physics. Then it had incontestable connotations in other sciences, such as philosophy, economics and management science [2]. In addition, more typically it transformed into so called progressive changes, which unlike the usual changes, do not run regularly, i.e. they are discontinuous and irregular and have not an equivalent in the past. The result of these phenomena is the growing area of uncertainty, both about the current decision-making as well as the future state of the examined systems [18].

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The uncertainty of the modern era is also the result of the complex interaction of forces of many kinds: technological, social, political, economic and environmental [17].

Uncertainty next to the complexity of the investigated phenomena, systems, creates a space in which one can determine limits of computability (Fig. 1). Alive systems, the climate, the economy will be still field of experiments and statements to the necessary but not entirely certain prove [4].

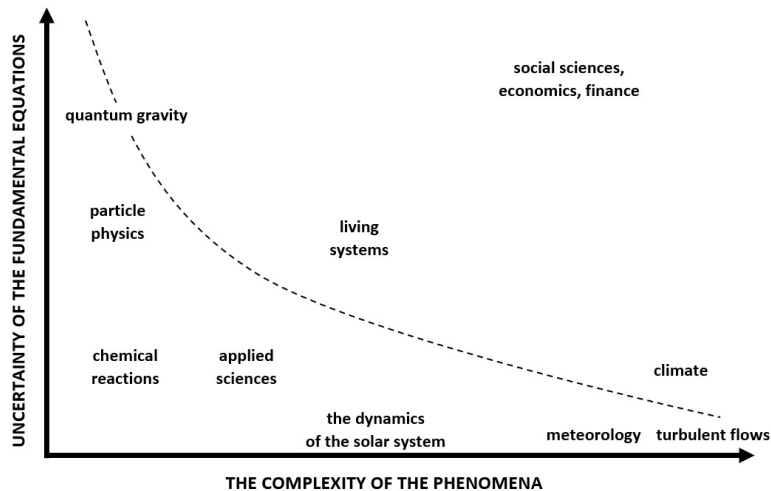


Fig. 1. The uncertainty and complexity as the boundaries of our knowledge.

Source: Author elaboration on the basis [4].

Interesting proposals for overcoming deterministic thinking, especially in the context of anticipation of complex socio-economic-scientific-technological systems, in a holistic view, presents the methodology of foresight. Despite several decades of presence in the field of science foresight still requires unambiguous formulation, especially in terms of methodical knowledge. One of the important areas of research regarding foresight is the phenomenon of uncertainty. In foresight literature this aspect often is cited, but it seems to be the background on future research and not main subject. It takes the form of “action for the future under conditions of uncertainty”.

The research problem in this paper is to identify, in a complex non-deterministic environment, sources of uncertainty by future research, in particular foresight research. This article attempts to answer the following research question: “What factors and methods of foresight methodology enables the identification, analysis and minimize the effects of uncertainty in the process of holistic inquiry of the future?”

In the article was used the results of the methods of analysis and criticism of literature as the main research method. On this basis, author conducted deductive reasoning.

## 2. The phenomenon of uncertainty in the context of study of the future

Predicting the future regardless of time horizon is always associated with some degree of uncertainty. It is the greater if examined areas of reality are longer and more complex [19].

Till now we have many definition of “uncertainty”. Analyzing this phenomenon in the future context of the complex reality, we can say that the uncertainty lies in the fact that the observer tested the system in a given place and time, can not define with complete certainty the further functioning of it (the system), [20]. For further horizons uncertainty continues to expand and deepen. This is due among other things, the complexity of the features, structures and behaviours studied systems which usually extend beyond the area observed and verified by available knowledge, especially for individuals [2].

On the occurrence of uncertainty in the context of future analysis of the development of complex systems which performance is not based on the deterministic phenomena affect following factors [2]:

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