

FORESIGHT AS A SPECIAL CHARACTERISTIC OF COMPLEX SOCIAL SYSTEMS

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SUMMARY

There is a great difference between ordinary and emergent complex systems [1]. One of main differences is the foresight ability of emergent systems. This paper shows some methodological approaches to forecast the possible future behaviours of complex social systems.

KEY WORDS

futures studies, emergent, foresight, future orientation, evolutionary modelling

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STARTING POINTS

The 90's in Hungary gave an excellent basis to think about the future, futures studies and within of them the forecastability of complex social systems in a fresh way. The long lasting period of transition from the eastern type of socialism to the modern western style democracy put new questions concerning our relation to the future and the role of futures studies in forming our society. Under these circumstances we have met the forecasting problems of emergent complex social systems in reality. We have found that the main characteristics of emergent social systems are that *their existing forms are the orientation to the future and the alternativity*. Orientation to the future means that human component of the complex social system interprets, explains, values and scans its environment. Homo Sapiens thinks about how to adapt to its changing environment or to change the environment and itself continuously. During that process the human component makes the social system uncertain and gives to it alternative existential forms concerning both the present and the future of it as well. These characteristics of social system become very strong in its transitional period. The question to be answered by the futurists is: how to forecast the future of this strongly changing or evolving social system?

ANSWERING NEW PRACTICAL NEEDS IN FUTURES STUDIES

FUTURE ORIENTATION OF THE AVERAGE PEOPLE

Future orientation first appeared in futures studies as some pessimistic attitude [2]. Negative future orientation, future shock, in Toffler's assessment, is the result of the individual being overburdened by challenges of the future and excessive environmental stimuli, under which he breaks down. The message of Toffler's book, however, is not only that changes are harmful because they exhaust society's ability to adapt but also *the future orientation; a positive attitude to the changes* can help one to prepare for and live with the changes. The Hungarian experience showed the magnification and problematic nature of the negative attitude to the changes. It was a surprise, since before the transition the lack of change or invariability that had become depressing.

Future orientation is a unique feature and capacity of human beings. This way of thinking is influenced not only by the past and the present but the future too. Additionally, human mind reflects its ideas and expectation regarding to the future. Humankind has a historical view and also has an attitude to the future, which is expressed in the future orientation. Decisions and actions of the future-oriented person are guided more by his/her intentions, goals and desires for the future, than by his/her experience of the past. Future-related inspirations are the driving forces of human activities [3].

Future orientation can be analysed empirically by surveys. Examining future orientation provides specific knowledge concerning individuals' attitudes to the future. In some of our surveys we analysed for example the following questions:

- how deeply people are interested in future and how they activities reflect this future orientation?
- what is the role of “future orientation” in forming individuals' life strategies, and
- what is the role of “future orientation” in shaping future views and social programs?

Empirical analysis can discover the nature of the components of future orientation, for example, interest in and thinking about the future, dealing with the future, decreasing the uncertainty of the future, activities performed in the interest of the future and expectations of the future; on the harmonious or disharmonious relationship of opinions concerning the components; and particularities of the future orientation of certain social groups trained according to different point of view.

Research into future orientation can constitute one part of all types of forecasts which embrace how individuals and citizens think of the future, what they expect from it, and what they intend to do towards. Research into future orientation does not constitute forecast in itself, but it includes activities related to forecast which may prove to be useful amid circumstances of social transformation.

FUTURE ORIENTATION BASED FORESIGHT OF THE HUNGARIAN VOCATIONAL TRAINING

In one research project we set as an objective to give an outline of the alternative development trends of the Hungarian vocational training with the tools of the futures studies [4]. Our starting point was that the extrapolation of the past tendencies of development in our forecasts for the future would not function as an incentive to new, innovative thinking and concepts. Therefore, the functional change, role and tasks of vocational training in Hungary amid changing socio-economic trends need to be reviewed by using a new approach to this problem.

To the outline the alternatives, alternative scenarios, for vocational training in Hungary, our attention was focused on:

- international comparison; how do the countries and regions, now on top of the development charts, define the socio-economic functions of vocational training and the corresponding tasks?
- what is the opinion of the decision-makers of Hungarian vocational training on the problem of Hungarian vocational education, the alternatives of solution and the prospects for future development?
- is there any clear alternative for our vision of the future in the way the prospects are viewed by the functional participants of the system of vocational training, including their expectations, which can be interpreted both as local manifestations of and the solutions to the global or regional problems of vocational training, that hold out the prospect catching up with others, expressing the problems characteristic only of Hungary and putting forward solutions alternatives adaptable by that country?

In our international outlook we have focused on products of futures studies that aim to describe the future models of society and concentrate on the long-term strategy of education and vocational training. We have interviewed the participants of the vocational training system on how they see the problems and the possible development of the Hungarian vocational training, the ways of solving these problems and the possible developments of the system. These actors are as follows:

- schools (teachers and trainers) involved in vocational training, i.e. the providers of vocational training services,
- children and their parents who participate in training, or are directly linked to vocational training services, and
- employers, the customers of vocational training.

Each actor is competent in different issues, therefore, on the basis of their opinions and expectations we can gain valuable information about the social and economic environment, functions and possible systems of vocational training.

In our forecast methodology we used elements and solutions in three primary aspects:

- an international outlook
- empirical studies of the future in Hungary and
- processing of basic forecast information.

Our international outlook was directed to the actual problems related to the development of education and vocational training in the world today and in different geographical regions and countries, the response to those problems, the objectives and tasks on hand to find a solution to the functional reform of vocational training rather than at the current state of affairs in terms of global, regional and national level vocational training are at the standard of development to be considered as guideline to be followed. We are of the view that this is the most practical framework of knowledge to be used in terms of international outlook, given the globalisation, the increased openness of our country and our future plans of accession.

The approach to empirical studies of our future by using the method known as an one-round interviewing of experts was different from that of traditional methods of futures studies in that *our interviews were not confined to experts, and that opinions other those considered typical were also taken into account*. By our view, involvement of non-experts was essential, because vocational training in a global environment will be a part of the service sector. *Involving views other than those considered typical was an important element our survey*, as in our society, which is currently undergoing a process of gradual pluralisation, opposing views and ideas are an inseparable part of the new system. Given the view that future is open (as it has not materialised yet), opposing views and alternative thinking should be brought out into the open rather than be suppressed.

In processing basic forecast-related information we have developed a schedule consisting of two work phases. *Phase one* was devoted to the collection of identical or similar, diverging or uncertain views in specific areas examined, which were then arranged into systems of logical uniformity, which produced future alternatives and variants in education and vocational training. In the *phase two* comparative analysis was performed, leading to a complexity of future alternatives and variants of vocational training in Hungary by logical linking of diverse scenarios for vocational training regarding the future, including social expectations voiced in those areas.

Our improved methodology was a step forward in the direction of a forecasting method where the question to be answered was "what might be" rather than "what will be". By presenting the future as different alternatives and also by using a new methodology in our forecasting work, we set forth a perception of future along with the feasibility of ideas in which the future manifests and functions in the present time in the form of expectations, thinking, ideas, objectives and a will to act. *This perception of the future is referred to a special type of foresight.*

EVOLUTIONARY MODELLING IN FUTURE STUDIES

The range of *possible futures of socio-economic processes can be researched by applying the evolutionary methodological bases* [5]. Evolutionary models of

demographic and economic processes were built up and some possible futures states were generated by these models.

The evolutionary demographic model for Hungary concentrated only on the possible changes of fertility patterns, and their consequences to the change in population number. The starting point was that individuals follow several habits depending on their lifestyles, cultures and future orientations. The term of social gene was used to project the maternity habits in Hungarian society. It means that the different generations of women in which age and with how much probability want to bear a child during their life path. The analysis and forecasting of dynamic variability of fertility patterns make possible to show up a wide interval of changes on population number in the future. This model dynamics shows that *the forecast is more uncertain and this uncertainty cannot be only handled stochastically* [6].

The evolutionary economic model interprets the economic reality not only as the system of connections of the facts in time but also as the time-and-space dimension of facts resulting from the foresight and activities of the economic actors who play a part in the creation of the facts. It stresses that in the economy the changes do not simply happen but they are the results of the activities of economic actors. These actors do not know the future completely, they have but assumptions about and expectations for it, but they may strive to survive and to improve their situation. This is why they cannot make optimising decisions. Their activities may be guided by routine, traditions, learning, foresight and renewal alike [7 – 10]. *By the help of the laws of interconnectivity between the different systems it states a non-equilibrium description of the economy.*

It follows from this concept of the economy that *chance is a determining element of both the economy and of our theoretical model.* Chance can make economic changes probable but can also generate them. Chance can be brought about by the incomplete rationality of economic actors and the changes in interaction between the economic system and its environment. It is this chance that allows the theoretical creation through the evolutionary model of the possible range of economic change.

Evolutionary approach and modelling may enrich the storehouse of forecasting and, thus, that of futures studies and its methodology too. Amid conditions of instability, the evolutionary theory and modelling can further develop the scientific bases of research and study focussing on forecasting the domains of the possible futures. The concept of evolution provides the attitudinal framework within which the different planes of time and space, the past, present and future can be conceived as they interact. *Evolution is not only a biological analogy but a statistically irreversible change that leads to the formation, iteration and transformation of an organised structure of time and space.* The space-and-time dimension, the connection of the different time and space planes, is, therefore, a characteristic constituent part of evolutionary theory and its models. The sequence, the passing of time generates the iteration of the steps. During one iteration the events and possibilities of the previous and the forthcoming time (the past and the future) together determine the characteristics of the current time (the present).

In evolutionary models *there is an organic link between the past, present and future,* which can be used for the reconstruction, understanding, explanation and forecasting alike of the social and economic reality. Using them for forecasting, however, is limited in the sense that it can provide only a short-range description of the probable future of a modelled sphere of realities. *The possible behaviour in time of the*

demographic and economic system and the changes in their dynamic characteristics may also help us conclude within what time range the well-known deterministic and stochastic methods allow us to forecast, and under what conditions and when we must make do with the limited nature of the possibility to foresee.

Evolutionary models can show the future only with uncertainty and in its potential. This feature constitutes its strength, however, as it helps to discover a rather wide range of future possibilities, which makes the separation of what is and what is not possible in the demographic process and economy far more reliable. The possible domain of the socio-economic future is wider of course, as it may comprise different renewing and declining futures beside the consequence future. Our models are able to generate these future domains automatically.

Social and economic forecasts are not only about stating what is possible but also about *providing distinct alternatives* within our means. These models in themselves are not suitable for that, but combined with other forecasting methods they can theoretically provide a more reliable forecast than the hitherto used combinations of methods. These latter could also provide alternatives but without us actually proving their possibility. With the evolutionary approach and the use of our models we can turn around the logic of forecasting. *First we explore the future social and economic possibilities and then we look for and form - among the possibilities - the acceptable, tenable, desirable, etc. social and economic alternatives with the help of other forecasting methods.* The direction of further methodological research is, therefore, to explore what other or new combinations of methods can be used together with evolutionary models for making social and economic forecasts that provide alternatives, too.

FUTURE PROSPECTS OF FUTURES STUDIES

There are two paradigms in progress in the contemporary futures studies: the evolutionary futures studies and the critical futures studies [11]. The traditional futures studies focuses on the different variants of probable futures which are the consequences of the past and the present. If the materialised future was not among the previous range of forecasts - which happens very frequently - then the problems or the limits of the traditional paradigm of normal science become visible at once. If futures studies turns towards the futures which are qualitatively different from the “consequence futures”, then one must transcend the earlier paradigm and start to build an “interpretative scientific paradigm”. The way of reconstruction of theoretical and methodological base of futures studies shows that two alternative paradigms - evolutionary and critical futures studies - are shaping.

FORESIGHT IN THE EVOLUTIONARY FUTURES STUDIES

Theories and methodological trends dealing with the forecasting possibilities of emergent complexities are named evolutionary futures studies. Evolutionary futures studies supposes the future should be a kind that is open, defined and undefined at the same time, and is the scene of human activity. The uncertainty of the future is evolutionary, as the risk is the survival of human society.

According to this notion the subject of futures studies is *the evolution of so-called emergent complexities, which include everything, even human being her- and/or himself.* Thus futures studies as a social science focuses on complexities of which human being and his or her society are organic parts. Human being plays a part in these complexities not only as a biological but as a psycho-social being too. His or

her biological participation and evolution are less significant for the purposes of futures studies because changes of this nature are very slow and their time span transcends the sphere of interest of futures studies. Human being's ability to feel, to think and to form different social organisations, however, is considerably more changeable than his or her biological entity, which is why the real subject of futures studies is the interaction between the former quality and its natural and artificial environment as well as its evolution.

The representatives of evolutionary futures studies *accept the hypotheses of the general evolutionary theory as regards its general features*. They stand for the notion that the evolutionary change of emergent complexities is generated by external environmental changes, but the development of complexities unfolds through inner counter-reactions. An evolutionary change takes place when the mechanisms that reduce fluctuations are no longer able to hinder errors, and the growing fluctuation sets complexity on a new course by generating bifurcating mechanisms. In this time a number of options, possible social futures emerge, and it is extremely uncertain which of the possible futures will transform complexity and saturate its subsystems [12]. Once the competition among the futures is settled, a period of dissipation ensues when the changes engulf and reshuffle complexity, thus giving rise to a new level of evolution.

Evolutionary shift is preceded by the accumulation of tensions and deviancies of differing character and crises. These can be recognised by means of society's information system. Evolutionary shift, however, is a great deal more difficult to forecast due to its uncertainty. For this end not only an evolutionary approach is needed but also *the ability to recognise the possible new value patterns unfolding in society*.

Human being plays a defining role in this approach. His or her position and role, however, depend on the cognitive interpretative notion of the future. In evolutionary futures studies *human being plays an important role as one of the components of progressive complexities*. The knowledge about progressive complexities and their evolutionary movement furnishes insight into the future expectation, values, goals and activities of human being and his or her social institutions as well as their changes. This knowledge forms part of the cognitive map of reality. Evolutionary futures studies, therefore, examines the dynamics of different social complexities in order to explore the map of possible prior knowledge and understanding of the future. Therefore in the practice futures studies has to study the future orientation, invention of people, their groups and institutions and their changes. *These kinds of human thoughts, options, wills, plans, and actions for the future can also be seen as special forms of human foresight*.

FORESIGHT IN THE CRITICAL FUTURES STUDIES

According to the critical futures studies *the future can be interpreted not only as something that will be materialise as time passes but also as something that exists in the present too, in our thoughts and emotions*. This future affects the present and forms an integral part of life's rules. Besides being a peculiar form of cognitive interpretation, it is also an emotional (optimism, pessimism, hope and fear). This future which exists in the present is the most developed form of human foresight. The latter is a human ability to protect human beings from harm and to render their activity smooth and uninterrupted. It emerges in the course of learning and can be developed. At the human being's current level of development thinking of the future and having a consciousness of the future can no longer be regarded as two separate forms of thinking.

In this way the present is, on the one hand, the limited time category of "here and now", on the other hand, an "extended present" in our conscience, able to condense and update the past, the present and the future. *Human foresight functions in this extended present*. That is why critical futures studies targets this type of future envisaged as human foresight. Its task is discovering human foresight on the one hand and the further development of this activity, raising it to the social level on the other hand [13].

Futures studies that focus on human foresight break with the time-honoured and widespread concept of traditional futures studies. By forecasting the future the old method provides a prior knowledge of the future. Opposite to this, critical futures studies considers this impossible and undertakes nothing more than to discover the future contents existing in the present, to analyse them critically, to socialise them and to provide help in developing individuals' and social institutions' ability to foresee. Due to its links to human foresight and its critical attitudes to it, *this type of futures studies is also called foresight*.

THE NEED OF FURTHER DISCUSSION ABOUT FORESIGHT AND ITS ROLE IN THE EMERGENCE OF COMPLEX SOCIAL SYSTEMS

Human foresight activity has a crucial importance in the further development of different futures activities. But there are a lot of questions to be answered for that *the foresight gets his right place in futures studies and forecasting practice*:

- there are different foresight meanings (from future orientation to hopes and fears of future events) arising from the practical needs and the theoretical-methodological research works,
- the application of quantitative evolutionary models shows that data may play an important role in signing the limits of our subjective desires and dangerous future zones,
- at present both the qualitative and quantitative approaches of the foresight run side by side, and
- the options of new information and communication technology have not been exploited yet in different foresight activities and futures studies.

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PREDVIĐANJE KAO POSEBNO SVOJSTVO SLOŽENIH SUSTAVA

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SAŽETAK

Velika je razlika između ordinarnih i izrastajućih složenih sustava [1]. Jedna od glavnih razlika je mogućnost predviđanja kod izrastajućih složenih sustava. Ovaj rad pokazuje metodološke pristupe predviđanju mogućih budućih ponašanja složenih društvenih sustava.

KLJUČNE RIJEČI

proučavanje budućnosti, nastajanje, predviđanje, stav prema budućnosti, evolucijsko modeliranje