

FORECASTABILITY, PREDICTABILITY, MANAGEABILITY OF WORLD DEVELOPMENT IN THE DIGITAL AGE

V.S. Chernomyrdin is ascribed to the following words: “Forecasting is a difficult thing, especially if we’re speaking about the future”¹. Usually, these words are treated ironically. Meanwhile, the quotation has a fairly certain sense. The matter is that forecasting can encompass both the *domain of the future* (moving in time) and the *domain of the further* (moving in space). The domain of the future is the sphere, which can be approached moving along the time axis. However, description of the results of following some azimuth in space is no less interesting. For example, when transferring from one region to another, or from one country to another. Here, one can single out variants of unexpected and expected information. Let us say, appearance of a black swan or a white swan.

It’s advisable to use the “predictability” term to describe the effect of moving in space. V.V. Ivanter clearly divides forecasting as a result of the analysis of future development scenarios that is made basing on models, algorithms, etc., and prediction as a direct statement referring to this or that situation in future². Overall, forecasting can be characterized as the way from the past via the present to the future made based on a certain algorithm (model, scenario, calculation, etc.). Prediction is a way from the future to the present made via intuition, sensations, insight, etc.) Thus, forecasting should be viewed as a consecutive process of movement along stages while prediction should be viewed as a result of short-term mental “spurt”. At the same time, forecastability means efficiency of a certain forecasting procedure (algorithm). Forecastability is related to the impact of socioeconomic factors and predictability to the effect of mental and psychological factors³. Finally, a forecast itself can be the result of forecasting and the result of

¹ Viktor Chernomyrdin: Quotations. E-book. URL: https://www.e-reading.club/bookreader.php/1020265/Chernomyrdin_-_Viktor_Chernomyrdin_citaty.html (accessed on March 11, 2019)

² Ivanter V.V. Forecast as Prediction // *Rossiyskaya Gazeta* (Russian Newspaper). 2016. No. 258(7126). URL: <https://rg.ru/2016/11/14/viktor-ivanter-potencial-rosta-ekonomiki-rossii-eto-6-8-procentov.html> (accessed on March 16, 2019)

³ Brushlinsky, A. V. Thinking and Forecasting: (logical and psychological analysis) / A. V. Brushlinsky. Moscow: Mysl, 1979. – 230 p.

prediction, as well as the result of performing them jointly. Consequently, origination of non-forecasted events is an evidence of the time's heterogeneity or non-uniformity, and origination of non-forecasted effects is mostly an evidence of the space's heterogeneity or non-uniformity.

Overall, mastering information about the structure of economic space-time relies on both the process of forecasting (in the context of time) and the process of prediction (in the context of space).

Let's note that the object of such planning within the framework of strategic planning is seen as a whole system in the spatial and temporal continuum and consequently can serve as a subject for forecasting and prediction at the same time. Thus, the strategic approach to analysis of economic processes and phenomena provides for integration of objective governing laws of development, reflected in the forecasting process, and subjective special features of reality's perception, reflected in predictions. On the whole, the relation of prediction and forecasting is of a fairly complex character: forecasting as an instrumental analytical process has an impact on prediction as a subjective synthetic process, as a result of which self-adapting forecasts and self-realized predictions originate.

Integration of such gnoseological and ontological categories as space and time is also typical for the strategic approach. This parallelism is expressed in special features of human psychology, related to perception of time as changes in one's own condition and perception of space as changes in other subjects' condition.⁴

The "forecasting" term in the present economic discourse is most often used when speaking about analysis of the future in a relatively long time-period. It seems that it is not fully proper to speak about forecasting in the full sense of the word in a short-term perspective. The "prediction" term is more advisable to be used for a short-term "spurt". In particular, when speaking about a reaction of some system's closest circle to its some or the other actions, for example, increase

⁴ See I. Kant. The Critique of Pure Reason. Moscow: Eksmo-Press Publishing House, 2015. – 160 p.

or decrease of output, change of process, we should sooner speak about prediction of the circle's reaction.

The most natural forecasting field is “slow” socioeconomic processes, where forecasted processes' features change insignificantly in the long term, and changes are smooth. Thus, K. Marx's theory of social formations describes global socioeconomic development as a change of formations, each of which lasts for a long time and keeps the type of interrelations between production relations and production forces intact. The concept of the type of a certain country as a socioeconomic system can serve as a formation approach analogue for forecasting local (country) socioeconomic processes. We're speaking about four types of systems – object, environmental, process and project-type systems characterized by the degree of impact of spatial/temporal limitations of this system's functioning⁵. Consequently, four types of countries can be singled out among countries, characterized by sustainable perception (vision) of country's development prospects within the existing borders in the geopolitical space. A country seeing development prospects in intensification of its own territory's use is referred to the object type (e.g. the European Union); a country seeing its task in expanding its territory and influence in a short-term is referred to the process type (e.g. China); a country realizing its mission in developing innovative processes and projects within the existing territory is referred to the project type (e.g. North America). Finally, a country with predominantly extensive and technological character of development is referred to environmental-type countries (e.g. Russia). Referring a country to a certain type is stable and not changed for decades or even hundreds of years. Transformation is possible as a change, but it is most often the result of geopolitical upheavals (wars, revolutions, natural calamities, etc.). Thus, the basis of development forecasting for such countries for long periods of time is identification of their types as socioeconomic systems and prediction of possible socioeconomic or geopolitical mutations.

⁵ Kleiner G.B. System Economics as the Platform for Modern Economic Theory's Development // *Economic Issues*. 2013. No. 6. P. 4-28

Forecasting on historical scales or human development as a whole is also based on the “piece and line” approach related to singling out human development stages. Usually homo habilis (handy or skilled man), homo erectus (walking upright man), homo sapiens (sensible or wise man) are singled out. Yuval Harari characterizes the next stage of historical movement as origination of homo deus – a man-demiurge with unlimited power over nature and artificial factors. Consequently, forecasting here as in the case of the formation approach, is based on defining transformation points, when one type of man is to transform into another. To put it differently, forecasting here also links up with identification in essence.

“Pure” forecasting partly cedes the dominant place to “pure” prediction in tasks related to managing countries’ development and the global community as a whole during a significant time-period. Definite differentiation of the “forecasting” and “prediction” terms acquires special importance in this environment to research the processes of management and determination of manageability.

Management is understood as activities performed by the subject of management and directed to achievement of certain (targeted) characteristics of the condition or functioning of the managed object. Impacts on the managed object by the subject of management are a certain manifestation of such activities. Determination of the supposed result of such impact is based on the idea of prediction. In essence, a spatial jump from the system, representing the subject of management, to the system representing the managed object, is meant here. Thus, management supposes a natural reaction to managerial actions, worded in a supposition that the environment of the managed object can be forecasted.

Depending on the degree and direction of the managed object’s reaction to managerial impact, we are speaking about either a bigger or a smaller manageability of this object. Recently, in the context of world development, the range of possible impact measures used by one country as the subject of management in relation to the other as the managed object, considerably expanded. Such impact variants as targeted sanctions, electronic attacks and social network

actions are taking place in relations between countries besides traditional diplomatic influence and military interventions. Each kind of such impact brings about some change of the current state of urgent tasks and long-term plans of the object under effect. Evidently, the degree and character of reaction can be viewed as indicators of this country's external manageability.

Predictability and manageability in a number of situations are in contrast to each other. Predictability means a possibility to predict results of development. Manageability means a possibility to change the movement of the managed system with the help of subjectively appointed targets. At the same time, predictability and manageability are two sides of one coin. From the point of view of the systemic approach, management is interaction of two systems: the subject of management and the managed object, at the same time the managed object intersects the subject's environment, and the subject is included in the object's environment. As a result, the process of management is in a certain sense of a symmetrical character, including direct and inverse relationships if required. The manageability of the managed object in this context is based on predictability of its reaction, and predictability of the subject's actions is based on the subject's reflection as appraisal of the connection between management and its results. Both forecasting and prediction are included in the process of management. Forecasting is referred to slow and distanced in time and space processes, and prediction to quickly-changing and closely-placed to the subject and the managed object's processes. Management, as well as forecasting, deals with a set of already existing phenomena or processes, while origination of new essences is prediction's prerogative. It's not accidental that most traditional forecasting methods are based on temporal extrapolation, and prediction is based on spatial analogue (homomorphism).

In the today's world, attempts of external impact on a country's behaviour have become exceptionally widespread. This was assisted by the globalization process, enhancement of borders' transparency between states, formation of network communications and development of artificial intelligence systems.

Internet expansion led to origination of numerous informal and sometimes non-watched groups, with more or less clearly defined aims and interests. In their turn, generation of such groups in a number of cases helped to expand terrorism within the geopolitical spatial and temporal continuum. Regulation of negative manifestation of these processes considerably lacks behind both in urgency and efficiency if compared with the rates of origination, migration and reconfiguration of terrorist groups. Will this contradiction intensify in the period of further digitalization of the socioeconomic space? Before answering this question, let's word the digitalization concept within the framework of the foreseen future, to put it differently, within the "digital age". Let's proceed from the supposition that age here, like in other cases, will be the succession of decades, more or less in accordance with the periods of new elements' origination in the field of digital transformation of socioeconomic space. It's expedient to start calculating the significant impact of digitalization understood as the process of organic inclusion of computers and information and communication technologies in socioeconomic relations, from the 1950s – the time when electronic computers appeared. The important symbolic sense lies in the "digital age" idea if we number its decades from 0 to 9. According to B. Werber, the succession of numbers from 0 to 9 symbolizes the universal evolution development cycle from the simple to the complex⁶. If applied to development of computer systems based on digitalization, this cycle looks as follows:

- 0 – presentiments, futurological ideas;
- 1 – mechanical adding machines;
- 2 – desktop computers, mainframe;
- 3 – smartphones;
- 4 – man and computer symbiosis (chipping);
- 5 – hybrid man-computer;
- 6 – computer self-birth;
- 7 – dominance of robots, threat of computers' victory;

⁶ Werber B. Encyclopedia of Relative and Absolute Knowledge. Geleos, Ripol Classic, 2007, p. 180.

- 8 – prerequisites for man's and computer's split;
- 9 – man's dissolving in robot environment (“predatory things of the century”);
- 0 – new cycle of digital civilization.

Currently, the arrow of the “digital dial” (for the purpose of discussion) is between 3 and 4. Human chipping is only gaining momentum. In future, human-and-machine systems based on interlacing biological creatures, social formations and electronic constructions, will allow to extract, accumulate and process a lot of data, information, knowledge and models, in detail reflecting the condition and prospects of live, inanimate, social and spiritual matter. This will create prerequisites for the sought synthesis of forecasting and prediction, and that, in its turn, can change the foundations of interrelations between members of the geopolitical global community. It's already now possible to notice active formation of the new stratum in international relations based on individual information interaction via social networks between people living in different countries. We should think that the existing language barriers will be soon overcome by developing smart automatic translation tools. The “people's diplomacy” field will originate, adding to the inter-state diplomacy and allowing in particular to expand the possibilities of one country's impact on another. Formation of “augmented reality” including artificial intellectual and emotional companions or even friends creates opportunities for manipulating public conscience of people living in various countries. Collection, analysis and generalization of empirical data in the behavior of certain individuals combined with artificial intelligence methods will make not only inter-state borders, but also walls of offices and apartments transparent for information. We can mention that the amounts of collected data grow in geometric progression, while ciphering means and access limitations to individual data grow only in arithmetic progression. Attempts of non-sanctioned penetration into information and communication channels between the population and administrative bodies in the practice of interrelations between countries are often answered asymmetrically in the form of sanctions and other “crude” measures of state actions.

We should expect origination of hybrid world development forecasting/prediction systems, in which data of empirical observations over behaviour, psychological special features of perception and emotional special features of separate individuals' and social groups' reactions will be integrated. Such hybrid forecasting/prediction systems will allow to determine aims and means of some countries' managerial impacts on the others more precisely. Means of agent-focused, system-focused and intellect-focused modeling, combining methods of computer, mathematical and psychological reflections of real processes and phenomena, will be synthesized in such systems. To put it differently, natural intellect of individuals, social intellect of population groups and artificial intellect of computer systems will be engaged here as logical and computing program constructions and approximative possibilities of neural networks.

The problem of modeling new entities origination process will be solved – origination, as a result of synchronized evolution of live, inanimate, social and spiritual matter, including possible revealing of the secret of live matter's origination out of nonorganic compounds⁷. Integral functioning models for countries included in the global community can be built on this foundation, combining dynamic interaction and evolution models for object, project, process and environmental systems at macro-, meso-, micro- and nano-levels.

You should not think that all the variety of means and tools for forecasting, prediction and management described above will be focused on confrontation and imposing some countries' interests on the others. There is a wide stripe among possible ways of development for rapprochement and integration of countries' interests, preserving and possibly even enhancing the variety of the global sociopolitical landscape.

⁷ See Brown D. Origin. Moscow: AST, Neoclassic, 2018.