

## **Planning: failure or recovery ?**

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Comments welcome

### Abstract

Currently the ex-USSR, creator of the planning method and of the planning system that covered all levels of economic operation, is reconstructing almost all its institutions under the slogan "building the market and global economy". Hopelessly one tries to interject so called market mechanisms (private interest, competition, or bankruptcy) expecting to achieve prosperity. This process is going on without any systematic analysis of mutual dependence among institutions in development and without any serious study of planning failure which has handicapped planning theory. By contrast, market failure was analyzed by many constituents of economic thought which does not apparently harm the market mechanism of economic organization and even enforce it by constructive criticism.

In this work, I argue that globalization does not necessarily go either with marketization of economies nor with enforcement of capitalism. I analyze the failure of soviet economic organization. I identify in the complex economic system some features that tend to strengthen the planning principles of economic organization such as: forecasting and strategic management. Each of these is in force in economic practices of all developed countries due to new technologies and scientific modes of information processing.

References to Anthropological Economics, Evolutionary Economics, Historical Economics and Russian Marxism allow me to revisit planning theory.

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## **Introduction**

The USSR was a very complex social organization, created *consciously*, I may say, scientifically. It collapsed. What was wrong? My first general answer, using A. Bogdanov writing will be:

*For surviving and development of the given complex in given environment, it is required, that the aggregate of environmental conditions in full should be propitious; but only one unfavorable condition is sufficient to disorganize the complex, only one maladjusted factor in one segment of environment is sufficient for that. It explains what we can call «wastefulness» of nature: Destruction of the enormous majority of the emerging forms, preservation and development extremely small share of them. That is why a human being incomparably better carries out business of negative selection, as far as it is easier to destroy, than to create. (Bogdanov (1912), p.140-141, our translation)<sup>2</sup>. It is obvious a posteriori, that the conditions were not completely favorable for planning experiments in USSR. Does it signify that market is a panacea for progress and economic growth in Russia as well as in the rest of the World ?*

Trade has existed from time immemorial but commodity exchanges were founded in the 16<sup>th</sup> century. But only at the end of 19<sup>th</sup> century, assuming an environment of perfectly free competition, Walras constructed a mathematical model, reproducing the mechanism of commodities exchange, in which productive factors, products, and prices automatically adjust in equilibrium. "Walrasian" pure exchange refers to the price-mediated process of exchange of endowments of goods (i.e. no production). According to this theory the production is the intermediary element: it translates consumers' desires for goods into a desire for productive factors. The limited availability of them makes outputs limited in availability. Thus, theoretically production solves both sides of the problem: productive factors have value because more of them are desired than are available; outputs have value because they become limited in supply. Consequently, factors have a price because the goods they produce are

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<sup>2</sup> Для сохранения и развития данного комплекса в данной среде, требуется, чтобы была благоприятна вся совокупность условий среды, для дезорганизации данного комплекса, достаточно одного неблагоприятного условия, непригодности хотя бы в одном отношении к одной части среды. Этим объясняется то, что называется «расточительностью» природы. Истребление колоссального большинства возникающих форм, сохранение и развитие неимоверно малой доли. Оттого и человек несравненно успешнее выполняет дело отрицательного подбора: насколько легче разрушать, чем творить.

demanded by consumers. If a factor produces goods, which are not in demand, then that productive factor will have no price and finally will not be created.

The market inefficiency was demonstrated very soon, it derived from the impossibility to adjust the vast heterogeneity of production unities and of agents' expectations. For instance, Russian economist S. Strumilin (1928) admitted that individual capitalist enterprise operates efficiently, from the point of view of its owner, but the aggregation of outlays of multiple organisms produced inevitably and regularly disequilibrium, inefficiency and "chaos", from a societal point of view. Strumilin saw the way out of this situation of "waste" in the elaboration of a unique plan in Russia, expecting to avoid the problem of disorder. The undeniable inability to communicate and to co-ordinate timing especially in the recession of 1929-1931, has been used also as a justification for public involvement in development efforts and a justification for national planning in European countries. Then the economic notions of competition and pricing lost their meaning over the 20<sup>th</sup> century.

But, planning is refuted after USSR collapse. Roger Guesnerie traces the origin of a distrust back to economic theory, saying: "*The study of market failure does not completely harm the market, even though the absence of symmetric study of planning failure has handicapped, by contrast, planning theory*". (Guesnerie (2001, p.30)).

This brings me to try to comprehend merits and short coming of planning theory.

First, I lay out political arguments of the USSR economic failure, which discharge planning principals of governance suspected of being the reason of this failure. After that I explore the context of social and economic mode of production in the capitalist world showing, that a favorable background for planning is readily available. There are categorized the various meaning given to planning at our present in arguments about economic organization and governance, and among them I consider two aspects which are largely present in modern organizational practices: forecasting and strategic management.

## ***1. Planning: unjustified oblivion***

### **Russian Marxists about planning**

Two theoretical streams, one called "genetic" and the other "teleological", challenged each other at the moment of planning conception started. The controversy concerned the following points: the indicative or directional nature of the plan, the generality of institutions of planning in an economy or planning as the specific institution of the socialist system, the

role of property and of personality in the results of production, the place of the market in the mechanism of adjustments.

The term "genetic" has been used in this context to mean an approach that analyses the revelation and the natural development of phenomena as opposed to their intentional establishment. The economists of the "genetic school" Kondratieff, Bazarov, and Groman advocated the approach of a scrupulous analysis of random processes, the revelation of their regularity, and the study of current economic trends. Economic theory was not able, according to them, to explain completely the economic processes, since each process is a combination of many factors, and the exact impact of the factors is difficult to evaluate. For this reason planning should not impose the dynamic of the factors, but should favor their evolution towards regular patterns deduced by empirical analysis, what Groman called "the empirical laws". For Bazarov the plan represented a synthesis of the instructions provided by anticipations. The plan had to have an objective and provide the scientific proof of its reliability. This synthesis foreshadowed the elaboration of some variants of evolution (indicative planning, in a sense).

The "teleological" doctrine emphasizes that the final objectives of the plan influence the sequence of the process. The originators of the "teleological school", Krjijanovsky, Strumilin, Miliutin, Motiliov, and Kovalevsky, put forward the elaboration of plan objectives and insisted on the use of directive methods for their realization. Their ideas have widely influenced the practice of Soviet planning. According to their concepts, the socialist (communist) economy is a system where all the attributes of capitalism are eliminated, namely capital, interest rate, salary, and revenue, but the technological process of production is preserved and perfected. The national economy is conceived as a single system of the people, whose wishes are represented by the State. This economy is organized on the basis of a national plan that takes into consideration all technological and environmental constraints. Since the economy is considered as a single and entire organization, commerce and money are not required. Products are no longer merchandises; they are goods distributed according to the plan. In this economic system, the State takes care of production and distribution plans, and achieves balance between them. (For more details, see Peaucelle (1992)).

Lange (1936) and Kantorovich (1939) also have shown later that a planned economy could allocate resources in much the same way as the competitive system. O. Lange formalized a planning process, that would follow the competitive rules for allocating resources. This trial and error method for finding the optimal allocation was similar to Walrasian tatonnement, and the *planned economy could play the competitive game* just as

well as the market, perhaps better. Factory managers would be instructed to minimize average cost, set output to equate marginal cost and price, and so on. The central planning authority would dictate prices. In each period, information about excess demands and excess supplies would be relayed to the central authority, which would revise prices with the aim of making exchange clear. In this procedure of trial and error, the system would co-ordinate itself by mimicking the self coordinating forces of the “market” economy.

In the middle of the 50s, interest in the improvement of economic control in the USSR increased significantly, and conditions for studies in the use of mathematical methods and computers for general problems of economics and planning became favorable. The book by L. Kantorovich "The Best Use of Economic Resources" (1959) contained a broad exposition of the optimal approach to such central problems of economics as planning, pricing, rent valuations, stock efficiency, "hozaschet" problems and *decentralization of decisions*.

Such were the theories of planning in 20<sup>th</sup> century.

## **Causes of USSR economic breakdown**

Obviously, globalization is a *conscious world-wide organization of economy*, for that it is the fertile field for planning process. Than why do economists claim that the planning forms of economic organization have failed and why are they not willing currently to accept any antithesis of market? Why the globalization process and advocacy of neo-liberalism go together in public fervor?

In fact the answer to these questions has been forthcoming since the 1960s. As Friedrich Hayek has put it: "*Much of the opposition to a system of freedom under general laws arises from the inability to conceive of an effective co-ordination of human activities without deliberate organization by a commanding intelligence*". (Hayek (1960, p.159)). Therefore recognizing that planning is not the same as the public commanding intervention as it was in USSR will enable research on planning for co-ordination of human activities.

In truth the USSR economy since 1950s contained hundreds of thousands of large enterprises, in mining, manufacturing, construction, transport, distribution, and services. Each of these needed to receive specific instructions from the central authority as to what to produce, what input to obtain and from whom. Other plan targets were related to wages, costs, productivity, investment, technical progress and other indicators. The number of different

products and services has been estimated as about twelve million. In such conditions the task of the planners was enormous. It is difficult to conceive that they trusted to fulfill such complex tasks in time and space without modern technology: they hoped to adapt production to concrete current circumstances, to transmit information and manage modifications in all rungs of the production chain. The Soviet plans were further elaborated in long and average terms, but they required enterprises to have a short-term vision, since any important transformation in the production process could hinder the execution of the long-run plan. In reality, as temporary perturbations could cause a production of inadequate quantities, the enterprises' directors would benefit by preserving the same organization of work or introducing only small modifications. Enterprises were continually confronted with management problems, with delays in deliveries, and with slowness of the administrative devices; all this incited them to avoid risks. They were thus inclined to preserve even obsolete equipment for long periods of time. The customer's position was weak in the USSR because the supplier was a monopolist and there was the tendency toward shortages. The absence of any incentive to economize had meant the proliferation of material-economy plans, which could conflict with the objective of providing what the customer required (Nove (1981)). A long list can be made of deficiencies attributable to this primary form of planning. I insist saying, Soviet planning system had the misfortune of having been developed before the era of new technologies for information processing, therefore failing as a system.

But, the Soviet form of economic organization failed principally for other reasons. I stress four of them, which must not be blamed on the Plan.

### *Compulsory industrialization*

Soviet economic organization, corresponding to Socialist society characteristics, intends to ensure the satisfaction of population needs; therefore health, education and research were important. To assure that the usual economic instruments of economic policy: prices, salaries, subsidizes were used differently than in market economy. The mission of prices consisted in promoting the development of activities that were considered as priorities or necessities, but were not necessarily profitable. Thus, the structure of prices in USSR was not the reflection of inter or intra branches competition. There the prices were planned and were not modified in long term. Wages were not the prices of the labor force; their levels were set in inverse relation with satisfaction at work. It was considered that monotonous or work that

was physically demanding must be remunerated better than intellectual pursuits, artistic work or any other kind of job that would result in the blossoming of workers' personality or individuality. These characteristics of the socialist economy could not easily explain the reasons for economic failure of the Soviet system. The difficulties begin if one tries to explain why Soviet socialism gave *priority to the development of heavy industry* when there was a permanent scarcity of consumer goods. It is evident incoherence, but it was not perceived as such during a long period for two principal reasons. 1) The Revolution of 1917 inherited an economy very weakened by the war. Certain essential sectors were in decline; for example, the production of machines and agricultural tools in 1916 represented only 20% of the production levels attained in 1913. The transportation system was also harshly damaged. Commercial relations and industrial exchanges with European countries were broken off at the same time as diplomatic relations. The hostile entourage necessitated a considerable effort for developing a military sector. Such was the historic context of the first 25 years of the socialist economy. Then a new war broke out. Massive distractions in the territory of the USSR during 1941/45 and the beginning of the cold war boosted specialization in heavy industry in order to gain economic independence, and in high technology, in particular for armament. 2) Economic theory and successful industrialization in European countries encouraged policy makers in USSR to privilege forced industrialization rather than an economy that was traditionally agricultural and intensive in labor development. The mechanism reproducing this industrial structure spiraled out of control and could not be modified despite the repeated attempts by planners. The population got used to deprivations during the wars and reconstruction periods, but this trust was broken in the 1980s when it finally refused to bear indefinitely the situation of continuous daily shortages in products of current necessity and of durable consumer goods. I consider that the low level of welfare standards of soviet population (and its deterioration in 1980s) could not be imputed to the fact, that prices and wages were planned.

### *Forms of labor socialization*

The second big failure of the Soviet economic system is attributable to the chosen *model of labour socialisation* that, since the period of the New Economic Policy (NEP), took the form of "state socialism". Already, in 1917, the theoreticians of socialism knew (e.g., Tugan-Baranovsky (1921)) that state centralization is accompanied by harmful consequences

such as: bureaucratization, the elimination of individual liberties and the development of coercion emanating from state institutions. The “state socialism” adapted economic mechanisms to its needs, privileging centralized and imperative planning. This type of planning introduces rigidities, some of which are too strong at the enterprise level. Enterprises seek to adopt some kind of self-sufficient development with serious negative consequences. Indeed, under such constraints, Soviet enterprise elaborated its own mechanisms against the requirements of the State. Because the very process of elaboration of an operational annual plan was a subtle game between the enterprise and the State administration, the enterprise benefited from non negligible trumps – especially being alone in knowing its real situation, its reserves, etc. Definitely, this was the Plan that decided, but in reality an enterprise, according to its importance, could influence more or less the decisions, by short-circuiting the customer - supplier links that passed normally through the intermediary of Plan or of the ministries concerned. Enterprises’ governance was primarily concerned with the administrative control of managers (directors) by the State.

An alternate convincing form existed: co-operation. It remained to Alexander Tchayanov (1925) and Mikhail Tugan-Baranovsky to study co-operation as a natural form of economic organization. From their point of view co-operative corporation has a strong resemblance to other forms of capitalist organization. As with every firm, the co-operative must pay its capital, even if profitability is not its objective, but a means to attain other objectives, and it must be as competitive as any corresponding capitalist firm, an industrial firm, for example. In this way, even co-operatives owned by the workers are able to create different economic structures, using the same tools as the capitalist firm. Strategic management and planning are among these tools.

### *State-enterprise relation as principal-agent problem*

Third remark concerns the property rights and enterprises governance. The definition of property rights corresponds to two requirements: reduction of uncertainty in the interactions among economic agents and the optimization of the usage of resources. The specifics of relations *between the State and enterprises* in the Soviet system concerning *property rights* had an impact on autonomy and decentralization of management, meaning that the ambiguities in the rights and obligations of each of actors carried to the detriment of general effectiveness. The State after nationalization of industry became the owner that had



the difficult task to manage production funds, which had structural deformities after the war economy of 1913-1919. From the beginning the situation was very complex because the State played the double role that of owner and that of principal consumer of industrial product. Depending on the periods, by reducing orders the Soviet State, as consumer, would diminish the production funds of the enterprises, but simultaneously, as owner it had to increase subsidies to cover the losses. On the other hand, the state being the owner of prosperous industries could appropriate their profits and finance industries incurring losses. In this way transfers occurred between profitable light industry and loss incurring heavy industry. In his book of 1926, Russian economist I. Kirillov wrote: *"The relations between the state and state industry in terms of budget financing are not the relations between credit customers and debtors, but are like the relations between the meeting of shareholders and the direction (managers) of the corporation. The title of the funds invested by budget in the industry is a share and not an obligation"*.

According to the civil code of the Soviet era and the new code of the Russia Federation (item 2961), business financed by the state budget "carries out in limits defined by the law, in accordance with the objectives of its activity, tasks foreseen by the owner and by the destination of the goods, consisting of right to possess (*ius possendi*), of right to use (*ius utendi*) and of right to manage (*ius abutendi*). The business has no right to the capital, implying the power to dispose of and transfer title of the resource, which can be sub-divided into the right to alienation, consumption and modification; the right to security, including the right against expropriation; of appreciation (right of the sovereign) and other qualitative rights of the owner.

Thus in Russia as in any modern society it is highly improbable that any economic agent will be able to claim all attributes in relation to any resources, because each resource is subject to planning restrictions as taxes and regulated through different ways. In practice this implies a limited range of rights in respect of the particular resource owned. The principle question about the institution of ownership in any society is precisely to know which rights and in which proportion to attribute to different actors. It signifies that the notion of firm ownership is far more complex than that described in the corporate governance literature, where the firm is assumed to be the absolute property of its shareholders or of the state. Therefore, almost certainly, the privatization of the industry could not resolve the difficulties related to management of enterprise – principal agent conflicts.

## *Large social sector into enterprises*

Certain economic inefficiency comes from the fact that soviet enterprises were *weakly specialized and there was too much auxiliary employment*. However it is important to emphasize that most often Russian auxiliary activities had a social character and that this comes from a very old national community tradition of social life. The post-revolution discussions on scientific forms of labor organization and on the nature of the socialist enterprise were infused with this tradition. In the 1920s executives were persuaded that the principal task of labor organization consisted in creating at the heart of collectives of workers a favourable social and psychological atmosphere, that Vitke (1925) called the "spirit of a hive". During all the Soviet era a part of the added value of the businesses was used for social objectives. These funds successively were called "Funds for improvement of life of the workers and employees", "Funds of director", "Funds of enterprise" and they collected up to 8% of the wage mass. The enterprises produced multiple social services: health and dental cares, rest houses, nurseries for children, management of estates, agricultural and other lands. At the periods of manpower shortage, thanks to these forms of indirect salary, enterprises could attract and keep personnel. The inequalities between enterprises in term of social benefits were also the principal causes of very important fluctuation of personnel in USSR.

These characteristics of failure of the economic organization of the soviet type cause us to review such notions as planning in the era of global economy based on knowledge, when property rights, the social role of firms and the very mechanisms of accumulation<sup>3</sup> change.

## **2. Social forms of production and corresponding forms of organization**

Marx studied the capitalist system of the 19<sup>th</sup> century, when it was evident that every economic activity intended to ensure the maximal extraction of surplus value. Surplus value is the form of profits on invested capital embodied in the merchandise value. Such purpose of capitalist enterprise has considerable short-scale efficiency because profitable enterprises proliferated with greater rate than feudal enterprises. The selection first operates on the short time scale, and so enterprises with low short-time profitability were eliminated. Nevertheless,

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<sup>3</sup> For analysis of anthropomical accumulation, see Peaucelle (2002).

the profitable micro-states of capitalist system have no long-time efficiency because, as it was brought out by Marx, the profitability purpose leads to the extinction of a system with all its enterprises. Indeed, pursuing the goal of surplus value maximization in the short run, a capitalist must produce his merchandise at a lower cost than the average of his competitors, since it is this average that determines the price of the good on the market. To lower the individual costs the capitalist (among other methods) increases work productivity, while improving through investments the technical means of production. The organic structure of capital (fixed capital per worker) is a structure of capital in value, if it reflects the technical structure and not uniquely the volatility of prices. In the long term the organic composition of capital tends to increase in favor of fixed capital. However surplus value is created only by the labor force, and when its relative share diminishes (number of worked time) the rate of surplus value (and profit rate) decreases also. In the long term a unit of capital invested in real economy picks up less and less profit. The capitalist form of economic organization goes dead.

The 20<sup>th</sup> century was characterized by relative stability of the organic structure of capital in the principal industrial countries, indicating the change in the system of accumulation. Theories of contemporary capitalism, and among others, "State-monopoly capitalism" (SMC (1971)), "Current Problems of political economy of contemporary capitalism" (Tulpanov & Cheinis, 1973), the theory of Regulation (Aglietta, 1976, Boyer & Mistral, 1978), empirical analysis for the USA by G.Dumenil and D.Levy (1996), study the causes and the consequences of this change in accumulation of the two components of capital: assets and labor force. Broadly speaking, a manager economizes fixed capital, without neglecting technical progress, and invests more in health, education and training in order to make the labor force more complex, that is, more efficient in the process of creation of values, but not necessarily in surplus value, which can be appropriated by the capitalist. Thus the capitalist nature of developed economies is still empirically questionable.

Deep analyses of national accounts series and of incomes in the United States, the UK and in France by Piketty (2001a,b) and Atkinson (2000) show that the aggregate capital income<sup>4</sup> share has not changed over the 20<sup>th</sup> century. In all three countries, top capital incomes fell considerably during the 1914-1945 period, and they were never able to come

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<sup>4</sup> Capital income is composed of 4 types of income: entrepreneurial income (business, farm, partnerships and small corporations income), dividends (general dividends and dividends received through partnerships and fiduciaries), interest (taxable interest only) and rents (rents, royalties, fiduciary income).

back to the very high levels observed at the eve of WWI. So, in 20<sup>th</sup> century capitalism has not progressed in old market and capitalist parts of the world.

The modern economics of organization helps to recognize the importance for growth of the new model of co-ordination, based on *strategic integration and co-operation*. On this basis, it became clear that some European countries are highly coordinated economies and in others co-ordination through market competition has declined. To perceive it empirically, some characteristics of corporate governance of a firm may be described using information on shareholder power over managers or dispersion of control in a country. The rate of control dispersion indicates how many firms are widely held in relation to the number with controlling shareholders. Using such variables and OECD data, Hall and Gingerich (2002) estimated the factor scores on the component for each nation in order to see the relative position on the axis liberal versus coordinated organization of economies. Authors hypothesized that where the balance of influence inclines toward dominant shareholders, ownership is relatively concentrated, and negotiating corporate control is more likely to involve firms in strategic interaction within corporate networks. Such a system represents an effective means of controlling certain firms. Also it supports and enhances the collective goals and values of the whole social network, including employees, suppliers and customers, creditors and shareholders. On the axis revealed by statistical analysis of data USA, UK, Canada and Ireland, countries with relative importance of institutions of liberal market co-ordination type, are opposed to Germany, Norway, Japan, Belgium, Finland, Denmark and Sweden as co-operating countries.

Recently, there has been a considerable increase of concentration of shareholdings by large institutional investors, such as insurance companies and pension funds, in many industrialized countries.

The existence of markets is questionable also for the simple reason that the production of goods and services aims more and more at the satisfaction of socially determined human needs than production for sale. In developing pre-capitalist countries the production for current needs is a traditional practice and in developed ones the changes in this sense seem here to stay.

In this context, we are revisiting the fundamentals of economic organization the Plan looking for its theoretical pertinence in the new era.

### 3. Planning at our present

#### 3.1. Forecasting: planning method to discover again

Forecasting is still useful to solve some questions linked to search of solution to deep social and economic modifications in modern societies, such as globalization and elaboration of the new development strategy.

These questions lead us aside from usual short-run forecasting problematic and place in closeness of philosophical problematic of “enlightened catastrophism” proposed by Dupuy (2002) or biosemiotic one of “expansion of sense in time and space” analyzed by Sharov (1991). Thus, we begin by description of forecasting, but understanding how it could evolve into development trajectory is certainly a main problem. It is briefly discussed below.

#### *Development trajectory: anthropomorphical view*

As philosopher Bergson (1930) highlighted: "*How not to see that if an event can be always explain after it happened, using one or either antecedent elements, an event quite different can be explain as well, in the same circumstances, using the antecedents chosen otherwise, what I say ? - using the same antecedents partitioned differently, allocated differently, finally perceived differently by retrospective attention? From the front to the back in time the constant remodeling of the past is pursued by the present, from the cause to the effect*" (p.114, our translation)<sup>5</sup>.

Till now the plan - makers target at fixed "bright radiate future" and they were seeking to discover the shortest trajectory for it achievement. Moreover they were trying by the way to cope with historically established and revealed material and psychological obstacles.

At present, the humanity must design a future system in order to reveal possibilities that are lying in the past with respect to this future, which is the present time or the near future for actually living humans. Discovering in that way the possible, one might hope to create niches that social organism modifying in time and space can occupy.

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<sup>5</sup> Comment ne pas voir que si l'événement s'explique toujours, après coup, par tels ou tels les événements antécédents, un événement tout différent se serait aussi bien expliqué, dans les mêmes circonstances, par des antécédents autrement choisis – que dis-je ? par les mêmes antécédents autrement découpés, autrement distribués, autrement aperçus enfin par l'attention rétrospective ? D'avant en arrière se poursuit un remodelage constant du passé par le présent, de la cause par l'effet.

Previously we saw that economists in early 20th century pointed out almost all defects of short-run vision of profit seeking economies and proposed “teleological” principal of planning. Scholars have been interested in final objectives and the consequences of intentional effort and control on observable processes. The work of planner in this case is partly a research activity, in the domains of anticipation and of analysis of the factors influencing economic evolution, and partly a personal intuition, principally of an ideological type. Krjijanovsky, the first president of Gosplan, suggested distinguishing two predicted trends of development: a minimal set of numbers and a maximal one. The first had to define the level of sufficient capacities for a continuous functioning of the economy. The outlay numbers close to the values of the minimal set had to signal potential "dangers" and provoke the appropriate interventions. The maximal set corresponded to the plan called "optimum". This method of planning engendered later the input-output analysis. It consisted in estimating of indicators of proportionality between the reciprocal offers by sectors in volume and in balancing in value. This approach leads also to the construction of structural models, which allow deriving trajectories or scenarios of development. Among these, one is minimal or feasible in any conditions, and the other one is more optimistic.

Now, this approach is very powerful even if it must be deeply rethinking and implemented. Indeed, for survive the humanity has to forecast not only economic, but a set of psychological and biological catastrophes (Dupuy (2002) proposition). Than after profound analysis of such projects, as a freighting off reality, the humanity can operate a way back, seeking the spaces into which the possibilities can be sit down. Since *"in the possible of each successive states there are more and not less than in the reality<sup>6</sup> (of these states)"* (Bergson (1930) p. 110, our translation).

## *Evolutionary approach*

### ***Economic trends***

The Kondratievs' works: "Problems of prognostic" (1926) and "Plan and anticipation" (1927) show the interest attributed, by the founder of the Moscow Institute of (Konjunktury) economic trends, to the methods of short-run forecasting usable in national planning. Long-run forecasting, according to Kondratiev (1926) (known principally as theoretician of the long

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<sup>6</sup> Nous trouvons qu'il y a plus, et non pas moins, dans la possibilité de chacun des états successifs que dans leur réalité.

economic cycles) can serve only to indicate general tendencies of evolution. Kondratiev introduces in these works a distinction between direct and indirect prognostics, especially interesting from a methodological point of view. The indirect prognostic signifies that one knows in advance what will happen, but does not know the intensity of the event. For example, the prognostic of the harvest level of different agricultural products and of their prices using the observations of climatic conditions in regions is an indirect prognostic. In this kind of prognostics, one does not need to do an analysis of internal (serial) development of the phenomena to make a forecast. The exactness of the forecasting depends in this case on the degree of precision and the force of correlation between the phenomenon to be foreseen and its symptoms. The direct prognostic consists in use of the data - series themselves - revealed to be cyclical and repetitive.

Some methods used by the Moscow Institute of (Konjunktura) Economic Trends, in the 1920s can be applied in our days with a slight modernization: the direct anticipation of basic macro-economic fundamentals on the one hand and, on the other hand, synthetic indexes of economic trends, representing the aggregates of simple indices. This last procedure is intuitively a variant of a model of advanced factors. In the panoply of methods used for forecasting nowadays we can find extrapolation, prognostic by aggregation of revealed short-run trends, and experts' predictions that are the direct prognostics, while the models of exogenous factors are indirect prognostics. In our study of the transformations of Russian economy and in our desire to monitoring the future reforms in this country we have followed these interpretations and used forecasting procedures. (Gouriériux & Peaucelle (1995), Ivanov & Peaucelle (1996)).

Other examples of reforms' monitoring are largely present in world practice. Actually the considerable problems of future development path are related to demography structure and ageing of population in particular. To envisage the viable social security, retirement programs, and medical expenditures the authors develop some scenarios using prognostic methods. (See among many others a collective work, coordinated by Gruber & Wise (2002)).

### ***Objective based forecasts and genetic algorithms for optimizer***

Objective based forecasts draws attention to two rather different aspects. One stresses to consider the reception side of planned indicators, the other, to use a set of approximations and simulations into the search of converging target (Köchel & Peaucelle (2003)).

Till now planning theory did not draw sufficiently attention to reception side of planned process. Undeniably, the impact of plan for action is not the impact of conceived plan, neither of produced one, nor of diffused one, but the impact of received plan. Since the planned program is received by different actors, planning theory must be fill out with some recent findings in cognitive science and semiotics, in ideological sociology on conformism and resistance, in anthropology of homework, and in cultural studies.

We are working at present time on the improvement of econometric tools for objective forecasting. In an unstable environment forecasts are usually performed on the basis of a misspecified model. Indeed, when the environment changes very quickly, it is impossible to check if the model used is well specified. The errors due to misspecification may have more or less important consequences. That is why we propose to choose the estimation and forecasting methods depending on the objective of interest. For instance, the estimation method will depend on the length of the forecast and on the functional form chosen for computing each variable. If a specification error in recursive relation between variables induces very small damage in the short run, it entails a large bias for medium and long run forecasts. It is important to consider each model, even badly specified, and each approximation, even with missecified lags as a help to constitute a set of parameterized approximations of the underlying forecast function. Such a set is sub-optimal, since it does not contain the optimal forecast, but it provides a reasonable forecast by finalizing the objective.

Another possible alternative to rework planning we see in the suitable completion of traditional techniques of control by “genetic” techniques developed in computer science. This implicates as well to use the possibilities of the information technology.

The idea is to combine a simulator of the supply chain with an optimizer (planner).The optimization process starts with the definition of an initial solution by the planner. The parameters of that solution are given to the receptor of elaborated program, which uses the simulator. Next, the data of a simulation experiment are transformed by a performance analyzer into a form admissible for the optimizer. The optimizer decides to stop the optimization process, and to declare the best of all considered solutions as optimal, or to continue the process. In the latter case the optimizer has to define another solution, which parameters are given again to the simulator and so on. Defining appropriate interfaces in fact arbitrary optimizer and simulators can be combined.

We want to point to two groups of advantages of such approach. The first group, connected with the approach itself, comprises among others the following: Once designed and



implemented the whole optimization or search process is carried out automatically without necessary control of the user. Using modern information technology distributed processing is possible e.g., different spatially separated simulators and optimizers can be used such that different members of the supply chain can realize corresponding simulation optimization from their own standpoint.

A second group of advantages is connected with our proposition to use Genetic Algorithms for the planner. Genetic Algorithms can be designed independently of the application domain, they are very robust with respect to the random output of simulation experiments, and the global optimum can be reached even in the case of existence of many locally optimal solutions.

### **3.2. Planning as mode of enterprise operating in world-wide economic environment**

#### *Systemic and modularity approaches*

The increase of direct foreign investment has contributed to the interpenetration of national economic systems. Therefore, a growing number of enterprises are multinational. The proliferation of national rules of economic organization in a context of globalization creates three types of problems. First, enterprises operating in many countries are forced to respect the national rules of each country in which they operate. These rules are not necessarily identical; they can differ in their procedures or in the fundamental rules that they contain. For example, in certain countries only set of practices that create a dominant position are forbidden while in others, the concentrations that restrict competition are prohibited, even if they do not create a dominant position. Global enterprises have to investigate all the rules in their production strategy. Secondly, national authorities of competition have lost some of their operational sovereignty because of globalization. Many practices or antitrust transactions applied on a national level are in reality introduced by enterprises situated abroad, where the competition authority in the affected country do not have the power of investigation or sanction. Thirdly, some transnational affairs in relation to competition rights (such as Boeing/Mc Donnell Douglas, Kodak/Fuji, General Electric/Honeywell, the international coalition of the vitamins, lysine etc...Jenny (2002)) have shown the necessity of enforcing the regulation in a multilateral framework of commerce. Current difficulties or even the

impossibility of evaluating the enterprises' value (Enron, Vivendi Universal, Halliburton examples from only 2002) demonstrate the defeat of financial market construction.

Management software has been elaborated, providing organizations with a framework that will support the rapid identification and implementation of production processes within the world-wide organization (Bazet (2002)). Enterprises are able to carry out distant diagnoses using so-called intelligent manufacturing systems. Such manufacturing systems produce soft products that are adaptive and co-evaluative with legislative environment and the modification of societal needs.

Acknowledgement of the complexities of organizational structure of global production networks tends towards approving coordinated and planned mode of economic interactions and modularity principals, in particular.

Modules are parts of a complex system that are combined to form the system and that some standardization is necessarily involved for this operation behind connective rules (social interactions). The confrontation of intellectual outlines from modeling, from simulations of communication and coordination pathways by means of genetic algorithms, and from deploying data generated from controlled experiments on human behavior could theoretically enlarge the field on investigation. It would be possible to appreciate the possibility to introduce some modules into the extraneous system without the lost of this lately created system.

“Modularization” refers to decomposing a complex system or process, based on the connective rules, into quasi-autonomous subsystems that can be designed independently. “Modularity” is to construct a complex system or process by integrating these subsystems (modules) based on the connective rules. (Aoki, Takizawa, 2002). To analyze both concepts is important in planning process because: Each of modules that together constitute a complex system is usually complex itself; Connective rules among modules are evolutionarily formed; Once the connective rules are determined, design and improvement of respective modules can be conducted independently of other modules. So, modularity is coped with complexity and make easier to analyze the system innovation from the bottom, and to analyze the viability of individual modules as well as the robustness of the system after the adoption of new external modules.

### *Regulation and projecting without pricing*

Coase's theory (1937) of transaction costs justifies the existence of firms as the substitute for the market mechanism. It explains how organizations (firms) characterized by the suppression of pricing mechanisms emerge in a market economy, where prices are justly supposed to assure the co-ordination of economic activities.

Nowadays the enterprises are changing their mode of operating, which continue to wander them from the market paradigm, by referring to regulation, responsibility, reengineering, and projecting. All of these are evolutionary characteristics of planning, since planning is a deliberate organizational activity of developing and deciding upon strategies for future action. Some modes of such systems are being developed or already exist:

- *European post-Taylorian enterprise* with notions of "fractal organization", when a set of independently acting entities (factories, departments, sections) elaborate the production processes and objectives precisely describing them. The fractal organization can be characterized by the self-similarity (between fractals or modules) and self-organization helping continuous enterprise development through dynamic replication.
- *The Japanese conception of autonomous and distributed production systems*, composed of distributed production modules, provided with tools of artificial intelligence and with computerized analogies of biological systems.
- *The American paradigm of agile manufacturing processes*. Agility is the ability to thrive in an environment of constant and unpredictable change. The blackboard-based systems to support the dynamic revision of the progress-planning and production-scheduling were elaborated in 1990s for managing various user tasks and objectives, and reacting to unexpected events.

All of these dynamic processes of targets adjustments are sociological in the sense that they are the outcome of the direct social interaction of the individuals, assisted by communication technologies, as opposed to the competitive interaction through price signals (Piore (2002), Beffa (2002)). Such is so called virtual enterprise - voluntary and temporary form of co-operation of many and sometimes autonomous partners (firms, institutions, persons,..), owing to optimization of production lines. With mutually agreed ideas on the basic nature of the economic process and a clearly conveyed culture of trust, the partners use jointly their respective material resources and key intellectual competencies in order to achieve, often on an international level, a target softly, quickly and at lower cost. Such a dynamic network appears to be an enterprise that uses the capabilities of modern technologies of information and communication. It creates the possibility of planning the products' quality,

buildings, working places, and tools before they materialize. Enlargement of the virtualization process requires modifications of traditional representation of manufacturing sectors and branches.

### **Concluding remarks**

Our first point – Russian economy collapse is not a consequence of planning theory disappointment. Our second point – human development and economic growth is possible because planning methods are largely used in co-ordination of economic activities at the macro level and in the management practice of enterprises, and especially of multinational firms. The development of planning theory proceeds now by elaboration of analytically coherent transition between micro and macro levels: from objective based forecasting to genetic programs of simulation-optimization.

Diverging from these practices, economies considered as liberal fulfill and sharpen their planning methodology, benefiting from new technology achievements. New means of communication and information treatment facilitate the work of observation, forecasting and regulation on a world-wide scale. We discuss how, given the circumstances, global and virtual enterprises might operate to satisfy the societal needs without market attributes, such as valorization and pricing.

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