Management and Planning

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"*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*"

Roger Guesnerie

Introduction

The USSR was a very complex social organization, created *consciously* and planned scientifically. It collapsed. What was wrong? It is obvious a posteriori that the conditions were not completely favourable for planning experiments in USSR. Does it signify that liberalism with some market mechanisms is a panacea for progress and economic development? The question is to know if competition is the unique stimulus for creative structuring of social life, and if it is still possible to coordinate the large economies using the theoretical mechanism of commodities exchange, formalised by Walras, in which productive factors, products, and prices automatically adjust. Indeed, market inefficiency has been clearly demonstrated, and derives from the impossibility to fit the vast heterogeneity of production units and of agents' expectations. In Russia since 1922 and in European countries, especially after the recession of 1929-1931, the undeniable inability to communicate and to co-ordinate timing by means of price-quantity adjustment has been used as a justification for public involvement in development efforts and a justification for national planning. Then the economic notions of competition and pricing mechanism lost their meaning over the 20th century in favour of coordinated cooperation, strategic management and other forms of planning and regulation.

Nevertheless, the term “planning” is refuted after USSR collapse, and one can trace the origin of distrust back to economic theory. This brings me to examine merits and shortcoming of planning. This revisiting is important in the context of economic integration, since the large-scale organisation is a priori the fertile field for planning process.

In this paper, I begin by laying out political arguments of the USSR economic failure, in order to discharge planning principles of governance suspected of being the reason of this failure. After that, I categorize the various meanings given to planning at present in arguments about management, regulation and governance, and among them, I consider certain non-market aspects, which are largely present in modern organizational practices: forecasting, credit regulation and strategic management.

1. Planning: unjustified drowsy state

Beginning of planning theory

Two theoretical streams, one called "genetic" and the other "teleological" challenge each other at the moment when planning conception starts. The controversy concerns 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 favour 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 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.

L. Kantorovich initiated in 1939 an original method for estimation the optimal management of resources, consisted in introduction of coefficients called “solving multipliers”. Such method was known since the beginning of 19th century by Jean Baptist Fourier and it had geometric interpretation in terms of Hermann Minkowski theory. The innovation by Kantorovich lied in the interpretation of “solving multipliers” as indicators of values of different material factors of production. The mathematical discipline created around this method was called linear programming and the “solving multipliers” were named by economists – the “objectively

determined values". More extensive program at macro level suggested the rational structure of economic indicators. On this way it was possible to form the price system in soviet planned economy, and using such prices it become theoretically possible to get over deficiencies in excessively centralized process of decision making. 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, "hozraschet" problems and *decentralization of decisions.*

Such were the Russian theories of planning in 20th century.

Technical problems of planning in USSR

The Soviet planning system had the misfortune of having been developed before the era of new technologies for information processing. In a sense, this explains the difficulties of stat-enterprises coordination. 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 at about twelve millions. The management of temporality was further objective. The Soviet plans were 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 such conditions, the task of the planners was enormous. It is difficult to conceive that they trusted to fulfil 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 modules of the production chain. Enterprises without modern integrated planning systems were continually confronted with management problems, with delays in deliveries, and with slowness of the administrative devices.

2. State socialism and main unsettled economic problems

> *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 unfavourable 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.*
>
> A.A. Bogdanov

The Soviet form of economic organization failed not for one unfavourable condition, but for many political faults and some theoretical shortcomings. I stress five of them, which must not be blamed on the Plan.

Prices and wages

Soviet economic organization, corresponding to Socialist society characteristics, intended to ensure the satisfaction of population needs; therefore, health, education and research were important. All Soviet enterprises had a mission of public service. To assure this mission, the usual economic instruments of economic policy: prices, wages, subsidizes were used differently than in liberal economy. The purpose of prices consisted in promoting the development of activities that were categorized 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 labour force, and their levels were set in inverse relation with satisfaction at work. For example, 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 specific characteristics of the socialist economy could not easily explain the reasons for economic failure of the Soviet system.

Compulsory industrialization versus satisfaction of population needs

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. In the long run this priority to heavy industry becomes incoherent with the above mentioned objective to satisfy population needs. This contradiction 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 pre-war period. 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 destructions 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 labour development.

The mechanism reproducing this industrial structure spiralled 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.

State socialism versus cooperation

The third reason of the Soviet economic system failure 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, and Tugan-Baranovsky (1921) has put it, that state

centralization adapts economic mechanisms to its needs, privileging centralized and imperative planning. It introduces rigidities, some of which are too strong at the enterprise level, is accompanied by harmful consequences such as: bureaucratization, the elimination of individual liberties and the development of coercion emanating from state institutions. F.Hayek wrote later (1960, p.159): *"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"*. A.Nove (1981) called attention to the fact that the customer's position is weak in such economy because the state is a monopolist supplier. This furthers the tendency toward shortages.

An alternate convincing form of labour socialisation existed historically in Russia, it was co-operation. It remained to Alexander Tchayanov (1925) and Mikhail Tugan-Baranovsky to study co-operation as a natural form of socialist economic organization. From their point of view, co-operative corporation has a strong resemblance to other forms of efficient organization. As with every firm, the co-operative must reimburse its assets and be as competitive as any corresponding firm, even if profitability is not its objective, but a means to attain other objectives. 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 resources planning are among these tools.

State-enterprises property rights

Next remark concerns the property rights and enterprises governance. The definition of property rights corresponds usually to two requirements: reduction of uncertainty in the interactions among economic agents and the optimization of the resources management. The policy of taking into state ownership industries in USSR did not obviate difficulties of decision making under uncertainty. 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. Under incompleteness of contracts between the state and enterprise, the former seeks to adopt some kind of self-sufficient development with serious negative consequences for society. The very process of elaboration of an operational annual plan turns out to be a subtle game between the enterprise and the state administration, in which the enterprise benefits from non-negligible trumps – especially being alone in knowing its real situation, its reserves, etc.

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 and state in particular. In any modern society it is highly improbable that any economic agent will be able to claim all attributes of ownership in relation to any

resources[1]. Each resource is subject to planning restrictions as taxes and is regulated through different procedures.

In his book of 1926, Russian economist I. Kirillov putted forward an interesting hypothesis saying: *"The relations between the soviet state and state industry in terms of budget financing are not the relations between creditor and debtor, 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 an action (share) and not an obligation"*. This problematic relating state budget and investment policy of industries became known some thirty years later in the context of the theory of perfect market. Indeed, a vast literature raised around the Ricardian theory initiated by Barro (1974), on the one hand, and Modigliani – Miller (1958), on the other hand, concerning the rational investment behaviour of firms. Both theories are analysing the structure of corporate portfolio in actions and obligations and the probable consequences on the state deficit.

In my opinion, the above-stated unresolved economic problems were sufficient conditions for system failure of a socialist economy of the Soviet type. This failure and long social, economic and political crisis that followed it called economic science for development of new principles of national economy management. It causes me to review such notions as planning and regulation in the era of global economy based on knowledge, when property rights, the social role of firms and the very mechanisms of accumulation[2] change. Indeed, macro-prudential policy of central banks pursues the objective to limit the risk of episodes of financial distress with significant losses in terms of real output for the economy as a whole. Thus, the principal regulator of economies at the macro level is no more the state but the central bank. Nevertheless, this regulator assumes the *business continuity planning* for the following reasons that remind you of "old" planning: Maintaining the economic activity of population in disaster occasions; preventing widespread payment, settlement disorder and possible defaults caused by accident failures[3]; reducing managerial risks. These reasons point to the broader relationship between accounting valuations and prudential norms. Accounting conventions, as Basel Accord 1988 or 1999, have a major impact on firms' management performance.

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

3. Planning at present: new issues and methods

The difference of institutions caused the multiples modes of regulation in the World, the variety of beliefs and option attitudes towards economic and social progress. Currently the idea dominates that the new wave of globalisation is associated with revolution of information and communication technology. I am attempting to explain that this process goes also with human values enforcement and planning.

[1] 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.
[2] For analysis of anthroponomical accumulation, see Peaucelle (2002).
[3] Indeed, the inability of financial institutions in one area to effect credit and payments could see default extending beyond the area directly affected

Planning as prevailing form of organisation and coordination manifests itself in forecasting, in integrated management of firms and in macro-prudential banking. Modern forecasting is more and further than national and international prognosis of economic development for middle or long run. It is a philosophical look on humanity's destiny and on possibilities to human interference. Enterprise Resources Planning (ERP) software is largely operated in enterprises around the world and the industrial structuring by means of bank credit is a regulation mechanism at international level. It is part of the dynamics of creative destruction, which characterises modernity, and contributes to the overall process of information and communication rationalisation. All these aspects of Planning are improving. However, this process would be more intensive if researchers and engineers acknowledge that they participate in it consciously, while they presume often that their programme consists of market promotion.

Forecasting: planning method to discover again

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.

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. This method of planning engendered 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. Now, this approach is very powerful even if it must be deeply rethought and implemented. To be sure, forecasting is still useful to solve some questions linked to search of solution to deep social and ecological modifications in modern societies, in relation with globalization and elaboration of the new development strategy. These issues lead us aside from usual short-run forecasting problematic and place in closeness of philosophical problematic of "enlightened catastrophism" proposed by Dupuy (2002) or bio semiotic 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.

Economic trends and reforms' monitoring

One type of forecasting is in fact a development of "genetic" stream of planning theory. 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. 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 in the 1920s are 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 a variant of a model of advanced indicators. 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 (Gouriéroux & Peaucelle (1995), Ivanov & Peaucelle (1996)).

Forecasting for reforms' monitoring is 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

Objective based forecasting is a development of "teleological" stream of planning theory. In its modern version one can see 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)).

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. Thus, a specification error in recursive relation between variables induces very small damage in the short run; it entails usually a large bias for medium and long run forecasts. The objective based forecasts considers each model, even badly specified, and each approximation, even with misspecified 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 usually the optimal forecast, but it provides a reasonable forecast by finalizing the objective.

The forecast of activity depends on the hypotheses that determine the structure of models. Until now, planning theory did not draw sufficiently attention to reception side of planned process, as regards to incentive with motivated executors of program. Undeniably, the impact of plan for action is not only the impact of conceived plan, neither of produced one, nor of diffused one, but also the impact on creative activity of potential or presupposed executors receiving aplan. The planed or mission-oriented organisations must be staffed by actors who subscribe to the plan - mission. These actors, receiving the planned program, are different from psychological and sociological points of view. To introduce the heterogeneity of motives (or perceived intrinsic labour satisfaction) deducible from the heterogeneity of actors, planning theory is filled 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.

Development trajectory: anthroponomical view

Forecasting assumes the solution of such complex task as this highlighted by philosopher Bergson (1930):

> "*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 explained 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 remodelling of the past is pursued by the present, from the cause to the effect*" (p.114, our translation).

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 what is possible, one might hope to create niches that social organism, modifying in time and space, can occupy. Indeed, for survive the humanity has to forecast not only economic, but a set of psychological and biological catastrophes. 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[4] (of these states)"* (Bergson (1930) p. 110, our translation).

Planning as mode of enterprise operating in world-wide economic environment

The concept of Planning is omnipresent in enterprise, since about all big industrial, financial groups and Telecom in USA, Europe, Russia, Japan adopted it. In this section, I focus successively on the background of phenomenon and on the software that "imposes" planning concept.

Regulation and projecting without pricing

The Enterprise Resources Planning (ERP) standards evolve since 1960s. On the one hand, the optimal management of production (see Kantorovich, L. (1939)) formulates the principles of Material Requirement Planning (MRP). On the other hand, 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 deviate them from the market paradigm, by referring to regulation, responsibility, reengineering, and projecting. The developing computerisation plus the generalisation of these concepts allows the first automatic systems of whole enterprise

planning in 1970s: Closed Loop MRP. Then is elaborated the concept of forecasting, planning and control, covering a production process from the resources purchase until the dispatching of output to consumers: Manufacturing Resource Planning (MPR II)[5]. The modules that compose MPR II are basic and can be incorporated in the planning systems of future generations. Since 1990s the big global corporations are using Computer Integrated Manufacturing systems, which work with financial information and reintegrate the principle of optimality (absorbing the Operational Research outcomes, Bazet (2002)). Some modes of such systems are known in the literature:

- *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, describing them precisely. 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 agile manufacturing processes are the blackboard-based systems to support the dynamic revision of the progress-planning and production-scheduling.

All of these dynamic processes of targets adjustments are the outcome of the *direct social interaction* of the individuals, assisted by communication technologies. This interaction is clearly opposed to the competitive one unfolding through price signals (Piore (2002), Beffa (2002)).

Systemic and modularity approaches

To rework planning one see also in the suitable completion of traditional techniques of control by matching techniques developed in computer science. 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 actor receiving the elaborated program, which uses the forecasting to appreciate his capability and willingness to perform the program. 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. Defining appropriate interfaces in fact arbitrary manager-optimizer and actors-simulators can be matched to realise a plan.

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 may be carried out automatically without necessary control of the user. Using modern

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[4] Nous trouvons qu'il y a plus, et non pas moins, dans la possibilité de chacun des états successifs que dans leur réalité.

[5] Standard APICS of MRP II level contents the description of 16 groups of functions or moduls: Sales and operation planning, Demand management, Master production scheduling, Material requirement planning, bill of materials, Inventory transaction subsystem, Scheduled receipts subsystem, Shop flow control, Capacity requirement planning, Input/output control, purchasing, distribution resource planning, Tooling planning and control, Financial planning, simulation, Performance measurement.

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 to the existence of "genetic" Algorithms for the planner. Genetic algorithms are 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.

A growing number of enterprises are multinational. The proliferation of rules of economic organization in a context of globalization creates new 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 does not have the power of investigation or sanction.

Management software has been elaborated, providing organizations with a framework that will support the rapid identification and implementation of production processes within the wide organizations, such as global firm or 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. Enterprises are able to carry out distant diagnoses using manufacturing systems and the information emanating from subdivisions in different countries. Such manufacturing systems produce soft products that are adaptive and co-evaluative with legislative environment, they are able also to manage multi-language and multi-currencies.

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 modelling, from simulations of communication and coordination pathways by means of genetic algorithms, and deploying information generated from controlled experiments on human behaviour could theoretically enlarge the field on investigation. "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).

Acknowledgement of the complexities of organizational structure of global production networks tends towards approving coordinated and planned mode of economic interactions and combination of modules.

Banking as mode of centralised regulation

Banking is without a doubt one of the most regulated activity in the modern economy, and the rules on bank credit are one of the leading aspects of this regulation. Bank capital regulation has international effect since Basle accord on capital standards. Lately, have researchers started to address the general questions of the optimal design of financial system. Two new justifications are usually proposed: the risk of a systemic crisis and the

inability of depositors to check banks' credit policy. The elaboration of optimal design of banks has to identify the threshold for interference in management and for transfer of control from shareholders (the state among them) to the depositors' supervisor. At the same time, such optimal governance would take economic organisation away from the pursuit of narrowly interpreted depositor protection objectives while macro-prudential design is dominant.

New rules are currently introduced by the regulator to control the risk taken by the banks, in particular to define the capital required to hedge a risky credit portfolio [the so-called Credit VaR]. The implementation of a regulation requires a careful analysis of corporate default risk and of its expected evolution. As a by product the rating agencies as Standard & Poor's, Moody's, Fitch, or some central banks, as the Banque de France, have been led to improve the quality of their proprietary rating data bases and to weaken their confidentiality constraints. Typically, they report regularly summary statistics of the rating histories under the form of transition matrices providing the migration probabilities between given rating classes for different years and industrial sectors.

These aggregate data on rating histories include a lot of information on the general state of the economy and in particular on business cycles. The observed migration probabilities are used as leading indicators for cycles, for macro-economic growth (Gagliardini & Gourieroux (2004))

Concluding remarks

Our first point –Soviet economy collapse is not a consequence of planning theory disappointment. A long list can be made of insufficiencies attributable to complexity of this primary form of planning. I insist saying, first, that recognizing that planning is not the same as the commanding intervention, as it was in USSR, will enable research on planning in future for *co-ordination of human activities* in a different way. Second, the insurmountable obstacles considered by planning activity in earlier 20th century can be resolved at modern state of science and technology of information and communication. 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.

Diverging from these practices, economies considered as liberal fulfil 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 worldwide scale. Given these circumstances, global and virtual enterprises might operate to satisfy the societal needs without market attributes, such as competition, valorisation and pricing. Planning manifests itself in the forecasting of national development trajectory, in the strategic management of firms and enterprise resources scheduling, in the creation of macro-prudential framework for financial regulation.

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